



LE GOUVERNEMENT
DU GRAND-DUCHÉ DE LUXEMBOURG
Ministère des Finances

19th UPDATE OF THE STABILITY AND GROWTH PROGRAMME OF THE GRAND DUCHY OF LUXEMBOURG FOR 2018-2022

Luxembourg, 27 April 2018

English courtesy translation of the official French version.



Table of Contents

I. OVERALL POLICY FRAMEWORK AND OBJECTIVES	3
II. ECONOMIC OUTLOOK	11
II.1. EU macroeconomic environment	11
II.2. Short- and medium-term economic outlook in Luxembourg.....	13
III. FISCAL OUTLOOK AND PUBLIC DEBT.....	18
III.1. Fiscal policy objectives	18
III.2. Medium-term objective (MTO).....	20
III.3. Fiscal outcomes in 2017 and 2018.....	21
III.4. Fiscal outlook for 2019 - 2022	25
III.5. Public debt developments	32
III.6. Sensitivity analysis	36
III.7. Comparison with the previous Stability Programme update	44
IV. QUALITY OF PUBLIC FINANCES.....	47
V. LONG-TERM SUSTAINABILITY OF PUBLIC FINANCES	49
VI. FISCAL GOVERNANCE FRAMEWORK AND INSTITUTIONAL ASPECTS.....	53
STATISTICAL APPENDIX.....	54

I. Overall policy framework and objectives

The Stability and Growth Programme (SGP) is an integral part of the annual economic policy coordination cycle in the European Union (EU), known as the "European Semester", and its preparation is notably also the result of the Government's consultations with social partners in the framework of the national social dialogue, organised under the auspices of the Economic and Social Council on 28 March 2018.

The SGP goes hand in hand with Luxembourg's National Reform Programme ("NRP"), also developed within the framework of the European Semester, for smart, sustainable and inclusive growth and implementing structural reforms addressing the medium and long-term challenges facing Luxembourg.

This 19th update of the SGP covers the period 2018-2022 and features an update of the main budgetary guidelines adopted last December in the Budget for 2018¹ as well as the multiannual financial programming for the period 2017-2021².

This update shows a clear improvement in the budgetary outlook for the upcoming years, taking into account the latest developments observed for the 2017 budgetary year, as well as updating the forecasts of revenue and public expenditure on the basis of the most recent macroeconomic projections by STATEC³.

The figures presented in this SGP confirm the sustained recovery of the Luxembourg economy and the excellent health of the country's public finances, thus emphasising the well-founded nature of the choices made by the Government since taking office at the end of 2013. The negative spiral produced by the economic and financial crisis has been reversed and a path of qualitative growth to the benefit of citizens and businesses has been initiated.

¹ Law dated 15 December 2017 on the revenue and expenditures budget for 2018:

<http://legilux.public.lu/eli/etat/leg/loi/2017/12/15/a1097/jo>.

² Law dated 15 December 2017 on multi-year financial programming for the period 2017-2021:

<http://legilux.public.lu/eli/etat/leg/loi/2017/12/15/a1099/jo>.

³ « Working Paper - *Économie et statistiques* N° 96/2018 - *Projections économiques à moyen terme 2018-2022* », STATEC, February 2018.

The widespread cyclical recovery on the international level, despite economic and political uncertainties, contributes to growth prospects that remain well-oriented and whose positive effects are also reflected in Luxembourg's public finances.

This SGP is set against the backdrop of a favourable international economic environment that proves that the crisis years are behind us. The European economy is firmly set on an expansionary path after having recorded a growth rate of 2.4% in 2017, the highest increase in ten years. All EU member states are now experiencing positive growth rates for the first time since the 2008 economic and financial crisis.

In accordance with European regulations, SGP budgetary forecasts are based on macroeconomic projections developed independently by STATEC⁴. These projections assume 2.2% growth in 2018 in the euro zone, which is gradually moving towards its growth potential of 1.2% at the end of the period⁵.

In Luxembourg, the economic outlook described in the previous update of the SGP and at the budget debates last autumn in the Chamber of Deputies has generally come to pass. Although the first estimate of real GDP for 2017, which is based on partial data and which will most likely be revised at a later stage, indicates a growth rate of 2.3%, the economic situation remains favourable, as evidenced by the sustained momentum in the labour market. In 2017, the unemployment rate continued its downward trajectory to reach a level of 5.7% in February 2018. Even with such a seemingly “disappointing” growth rate, the budgetary situation also clearly improved in 2017: contrary to the forecast in the Budget, 2017 should end with a substantially reduced central government deficit.

In the short term, growth in the Luxembourg economy is expected to accelerate, under the impetus of a favourable international situation and following the efforts made by the Government to promote economic activity. In the medium term, growth should stabilise at a high level before undergoing a slight deceleration at the end of the period, achieving a rate of growth around 3% by 2022.

In line with this growth profile, employment is also on the rise, with an annual growth rate above 3% over the next few years. Thanks to this favourable momentum, the unemployment rate, which recently fell

⁴ The budget estimates contained in this update of the SGP have been prepared under the responsibility of the Ministry of Finance.

⁵ Assumption used in developing the medium-term macroeconomic scenario.

below the 6% mark, should continue on a downward path towards a rate of 5% at the end of the period. This momentum in the economy is bolstering the surpluses in the pension system, keeping the spectre of a depletion of reserves at bay.

The economic outlook developed by STATEC therefore confirms that the measures undertaken by the Government will continue to bear fruit in the years to come. These measures will ensure a long-term qualitative growth that forms the necessary basis for sound public finances.

In light of the current legislative mandate coming to an end, it should also be recalled that the initial situation encountered by the Government when it took office at the end of 2013 did not suggest a development that would be as favourable as we observe today.

Indeed, when the 14th update of the SGP for the period 2013 to 2016 appeared in April 2013, which was the last one presented under the previous government, a significant skid was expected in the budget by 2015-2016, featuring a structural balance dipping below -1% of GDP (which would have entailed a breach of the rules of the Stability and Growth Pact), a central government with a deficit of more than €1.1 billion and public debt of up to 27.9% of GDP by 2016. The growth projections for Luxembourg were set at an average of 2.4% from 2014-2016, with employment growth under 3% and an unemployment rate of 6.5% in 2016.

After repeated one-off consolidation efforts in 2011 and 2013, the Government took a series of ambitious measures at the beginning of 2013 to restore the health of public finances, thus boosting the confidence of citizens and investors in the future of the Luxembourg economy.

By presenting a large plan for the modernization of public expenditure ("Zukunftspak") as well as modifying the VAT rates for certain items, the Government has succeeded in reversing the negative spiral. During this time, lost revenue following a change in the VAT regime applied to electronic commerce, which amounted to nearly €1 billion a year at the highest point, were fully offset.

The structural balance stood at + 2.2% of GDP in 2017, well above the medium-term budgetary objective ("MTO") of -0.5% of GDP; the central government featured only a small deficit of € 220 million, despite the impact of a major tax reform that came into effect at the beginning of the year; and public debt stands

at 23.0% of GDP, or 5.0 percentage points lower than foreseen for 2016 at the time of the 14th update of the SGP in 2013.

Meanwhile, growth averaged 3.5% over the period 2014 to 2017, below the average of 4.8% recorded in the pre-crisis period of 1996 to 2007. During that period, growth had even peaked at 8½% in 1999 and 2007. Strong economic activity has led to new job creation at an average rate of 3.0% per year since 2014, above the forecast in the 14th update of the SGP in 2013, but also at a slower pace than the 3.7% on average levels before the crisis, which were punctuated by peaks of 5.7% in 2001 and 4.8% in 2007.

As a result, the Government has managed to consolidate public finances and restore a balanced growth trajectory, which continues to remain below historic levels, proving that the country has been redirected towards a "qualitative" growth path. This positive movement of the Luxembourg economy is accompanied by a significant reduction in the unemployment rate to below the 6% mark.

The significantly improved economic and fiscal situation has mainly enabled the Government to allow citizens and businesses to share in the fruits of economic growth through a tax reform that came into effect on 1 January 2017. The tax reform, encompassing a total envelope of about €500 million, has moved the tax system towards greater justice, efficiency and competitiveness, and has benefited both natural and legal persons, with most of the tax relief benefiting individuals.

The positive trend has also been accompanied by a conscious government policy of high public investment. This choice was motivated by a desire to make up for past delays in modernising public infrastructure, especially in view of the obvious needs of a growing population, while laying the foundation for future qualitative growth. Public expenditure has increased from a level of 3.5% of GDP in 2013 to 4.0% in 2017, which amounts to a record level that exceeds €2.2 billion.

Local government was also able to benefit from this general improvement in the economic situation and the State's finances, which facilitated the implementation of a reform of municipal finances from 2017 aimed at ensuring greater stability of municipal finances and counterbalancing the inconsistencies prevalent in the former system.

The combination of the measures and governmental choices outlined above ensure the continuation of this favourable evolution, as evidenced by the budgetary forecasts presented as part of this 19th update of the SGP.

Following the offsetting of revenue losses through a change of the VAT on e-commerce and the impact of the tax reform, government revenue should gradually rise to robust growth rates, increasing on average by 5.2% per annum over the years 2018 to 2022. As for public spending, the fiscal discipline regained in recent years and the beneficial impacts of the "*Zukunftspak*" continue to maintain increases in spending to below the level of revenue.

The budgetary policy underpinned by the figures presented in this SGP update is based on the assumption of a continuation of the policy priorities followed in recent years, including:

- the preservation of a high level of public investment of around 4.0% of GDP over the entire period;
- the pursuit of a policy aimed at keeping public expenditure in check and making it more efficient, with the consistent and gradual implementation of the *Zukunftspak* measures;
- the continuous improvement and modernisation of the welfare state and public services serving citizens and businesses;
- the continued efforts in tax transparency and economic diversification within and outside of the financial sector.

As a result, public finances will gradually produce a central government surplus by 2021, for the first time since 2008, after hovering around a deficit of a billion euro under the previous administration. The measures taken by this Government, combined with a cyclical situation characterised by a general increase in confidence, are expected to fully eliminate the central government's deficit thus creating a situation that has not occurred in the past several years.

The situation in the other sub-sectors of the general government is also improving. Local government continues to benefit from the impact of the 2017 reform of municipal finances and a healthy economy to achieve a surplus of 0.4% of GDP at the end of the period, and the significant surplus in the Social Security continues to grow over the coming years as a result of the sustained momentum in the labour market.

This significant improvement is also accompanied by a declining public debt as from 2018, after having stabilised in recent years. The debt ratio will remain well below the Government's target of 30% of GDP, as set out in its 2013 governmental programme, and will gradually move to 18.8% of GDP by 2022, marking the first time since 2011 that it has been below 20% of GDP.

As such, it should be noted that these figures are subject to a certain number of assumptions, including the fulfilment of STATEC's macroeconomic scenario that forms the basis on which they were drawn up, as well as the absence of major economic shocks. Risks to the scenario obviously remain, particularly at the international and geopolitical levels, and Luxembourg will have to continuously adapt to changing financial and tax regulations, of which the cumulative effects are difficult to predict.

At the same time, it will be important to continue along the path taken by the current Government with regard to efforts at economic and financial diversification, adaptation to climate change and compliance with the rules of transparency in tax matters, while demonstrating Luxembourg's traditional ability to react to new economic and societal trends. This unique feature of Luxembourg's ecosystem is one of the keys to sustainably maintain and even strengthen the competitiveness of our country's economy in the face of future challenges and opportunities.

This also applies to the long-term sustainability of public finances, as this SGP update contains for the first time a new estimate of the evolution of ageing costs by 2060/2070. This report was compiled by the Ageing Working Group of the Economic Policy Committee at the ECOFIN Council.

According to previous projections included in the 2015 edition of the Ageing Report, ageing costs were assumed to reach 25.8% of GDP in 2060. The updated projections now show a rate of 28.1% of GDP in 2060 (30.9% in 2070), which represents an upward revision of 2.4 percentage points, mainly due to the pension system, which will increase from 13.4% to 16.0% of GDP in 2060 because of changes to demographic and macroeconomic assumptions.

In this context, it is worth recalling that the Government, following the actuarial report prepared by the IGSS in 2016, set up a working group composed of experts from various administrations and professional chambers. An initial report is currently nearing its completion and should contain a summary of the

actuarial report of the IGSS, an update of the long-term projections contained therein, as well as the findings that the working group has developed.

Finally, with regard to the rules of the European economic and fiscal governance framework, the following three concluding remarks should be made:

- i) The main rule of the preventive arm of the Stability and Growth Pact should be fully adhered to throughout the period under review, with a structural balance increasing from + 1.2% in 2018 to +2.4 % of GDP in 2022. This makes it possible to maintain at all times a considerable distance to the current MTO of -0.5% of GDP, while allowing the next Government to be formed after the October 2018 elections to have a substantial margin for manoeuvre, if necessary.
- ii) The 19th update of the SGP includes no request by the government to use the flexibility clauses as described in the 13 January 2015 Communication of the European Commission.
- iii) The 19th update of the SGP represents the "Medium-Term Fiscal Plan" under regulation 473/2013.

SUMMARY TABLE

PUBLIC FINANCES	2017			2018			2019			2020			2021			2022		
	level in billions of euros	% of GDP	rate of change	level in billions of euros	% of GDP	rate of change	level in billions of euros	% of GDP	rate of change	level in billions of euros	% of GDP	rate of change	level in billions of euros	% of GDP	rate of change	level in billions of euros	% of GDP	rate of change
TOTAL REVENUES	24,460	44,2	+5,5	25,689	43,9	+5,0	27,086	43,6	+5,4	28,660	43,8	+5,8	30,170	43,9	+5,3	31,515	43,7	+4,5
of which:																		
Taxes on production and imports ("indirect" taxes)	6,569	11,9	+4,1	6,988	11,9	+6,4	7,286	11,7	+4,3	7,638	11,7	+4,8	7,931	11,5	+3,8	8,202	11,4	+3,4
Current taxes on income, wealth, etc ("direct" taxes)	8,542	15,4	+6,6	8,925	15,3	+4,5	9,474	15,3	+6,1	10,166	15,5	+7,3	10,837	15,8	+6,6	11,502	16,0	+6,1
Social contributions	6,916	12,5	+7,0	7,257	12,4	+4,9	7,700	12,4	+6,1	8,154	12,5	+5,9	8,588	12,5	+5,3	8,979	12,5	+4,6
TOTAL EXPENDITURE	23,602	42,6	+5,7	25,042	42,8	+6,1	26,244	42,3	+4,8	27,605	42,2	+5,2	28,474	41,4	+3,1	29,780	41,3	+4,6
of which:																		
Public investment	2,241	4,0	+7,0	2,397	4,1	+7,0	2,475	4,0	+3,3	2,709	4,1	+9,4	2,552	3,7	-5,8	2,756	3,8	+8,0
Social transfers	11,158	20,1	+6,3	11,730	20,1	+5,1	12,245	19,7	+4,4	12,865	19,7	+5,1	13,466	19,6	+4,7	14,082	19,5	+4,6
Intermediate consumption	1,982	3,6	-0,1	2,110	3,6	+6,5	2,189	3,5	+3,7	2,250	3,4	+2,8	2,326	3,4	+3,4	2,390	3,3	+2,7
Compensation of employees	5,014	9,1	+8,2	5,239	9,0	+4,5	5,553	8,9	+6,0	5,820	8,9	+4,8	6,104	8,9	+4,9	6,385	8,9	+4,6
GENERAL GOVERNMENT BALANCE	0,858	1,5		0,647	1,1		0,842	1,4		1,055	1,6		1,696	2,5		1,735	2,4	
Central government balance	-0,220	-0,4		-0,587	-1,0		-0,453	-0,7		-0,352	-0,5		0,126	0,2		0,202	0,3	
Local government balance	0,081	0,1		0,194	0,3		0,228	0,4		0,252	0,4		0,329	0,5		0,282	0,4	
Social government balance	0,996	1,8		1,040	1,8		1,067	1,7		1,155	1,8		1,242	1,8		1,251	1,7	
STRUCTURAL BALANCE	2,2			1,2			1,0			1,2			2,2			2,4		
GROSS DEBT	12,709	23,0		13,296	22,7		13,749	22,1		13,901	21,3		13,775	20,0		13,573	18,8	
MAIN MACROECONOMIC INDICATORS	2017			2018			2019			2020			2021			2022		
GROWTH																		
Real GDP (in %)	2,3			4,6			4,6			4,2			3,6			2,9		
Nominal GDP (in %)	4,5			5,6			6,1			5,3			5,2			4,8		
Nominal GDP (level, in bln euros)	55,378			58,494			62,090			65,409			68,783			72,070		
PRICE DEVELOPMENTS																		
Inflation N1CP (in %)	1,7			1,4			1,8			1,9			1,8			1,8		
LABOUR MARKET DEVELOPMENTS																		
Employment (growth, in %)	3,3			3,5			3,4			3,2			3,1			2,6		
Unemployment rate (ADEM definition, in %)	5,9			5,6			5,3			5,2			5,1			5,4		

Source: Ministry of Finance, STATEC.

II. Economic Outlook

The underlying macroeconomic forecasts for the update of the SGP were produced by STATEC independently and were published as part of "Working Paper - Economics and Statistics N ° 96/2018 - Projections économiques à moyen terme 2018-2022"⁶ dated 8 February 2018. According to its annual work plan, a partial update of the economic projections will be presented by STATEC in its "Note de Conjoncture no. 1-2018".

II.1. EU macroeconomic environment

The euro area growth rate of 2.4% recorded in 2017 is the strongest economic expansion seen in over ten years. Among the factors enabling this growth are renewed confidence in the EU, as indicated by many surveys, and a vigorous labour market.

While in recent times this positive development was driven by domestic demand, more recently stronger external demand has been driving the improvement at European level. Since 2017 there has been a resumption of international trade, which has positively impacted exports of goods in the euro area (+ 6%)⁷. European industrial production is keeping pace with demand and recorded a growth rate of 4.4% in 2017⁸.

Fuelled by the sustained recovery of the global economy and the U.S. tax reform, confidence generally continues to prevail on stock markets. Apart from the brief episodes of volatility experienced in recent weeks, the financial markets have been growing steadily since mid-2017 and record highs have been successively broken.

According to STATEC, the current growth period can be described as balanced insofar as there has been no noteworthy direct impact on inflation and wages. In February 2018, the annual inflation rate in the euro area was estimated at 1.1%, whereas it had reached 2.0% at the beginning of 2017. This SGP update is also based on the assumption of a gradual but slow increase in the euro area inflation rate, which will remain below the 2% mark in the medium term. This is one of the reasons why accommodative monetary

⁶ « Working Paper - Économie et statistiques N° 96/2018 - Projections économiques à moyen terme 2018-2022 », STATEC, February 2018.

⁷ [AMECO database](#).

⁸ STATEC Conjoncture Flash February 2018, p.2.

policies will be lifted only gradually. The continuation of this monetary policy therefore contributes to providing an environment conducive to investment which, despite growth of 3% in 2017, is still below pre-crisis levels. Forecasts assume a gradual exit from the quantitative easing programme adopted by the ECB starting in 2019 and an increase in interest rates is therefore expected towards the end of the projection period.

The economic forecasts are based on the assumption of a favourable stock market evolution. The Eurostoxx50 index is expected to climb by 7.7% in 2018 and 13.2% in 2019⁹. Despite fluctuations across the projection period, the European stock market index should thus continue to attain record highs.

As a result of the assumptions used in this basic scenario, a gradual slowdown in euro area growth is anticipated in the medium term. This translates into a growth rate of 2.2% for 2018 which converges towards a potential growth level of 1.2% by the end of the projection horizon.

Risks and uncertainties

Despite the generally positive trend in the euro area, the macroeconomic scenario described above continues to be subject to risks and uncertainties. The introduction of tariffs by the U.S. administration may undermine the positive effects of the recent take-off of international trade. In the same vein, geopolitical tensions in the Middle East as well as on the Korean peninsula are grounds for concern.

At the European level, the specific arrangements for "Brexit" are still uncertain, particularly with regard to establishing a border between Ireland and Northern Ireland as well as the lack of clarity on the subject of future exchanges in financial services. The return of Eurosceptic tendencies in some Member States is also a risk factor to the economic forecasts of the euro area.

In the event of a faster-than-expected tightening of monetary policy, which may occur due to a faster-than-expected rise in inflation, financial markets could react negatively. The volatility episode in January reflected the nervousness surrounding a precipitous exit from accommodative monetary policies. Portfolio adjustments following such a change or the materialization of the risks described above are likely to trigger a fall in the stock market indices, thus leading to possible secondary impacts on Luxembourg's

⁹ « Working Paper - Économie et statistiques N° 96/2018 - Projections économiques à moyen terme 2018-2022 », STATEC, February 2018, p.16.

financial sector. Finally, a contraction in financial markets, following a growing aversion to risk or a reassessment of fundamentals, cannot be excluded.

In order to illustrate, albeit in a simplified way, the impact of possible divergences from the central scenario, a sensitivity analysis was carried out once more and its results are reported in section III.6. This analysis simulates various shocks to growth in the euro area, which are result in a more (or less) pronounced change in the stock market index, as well as a simulation of a faster-than-expected rise in interest rates.

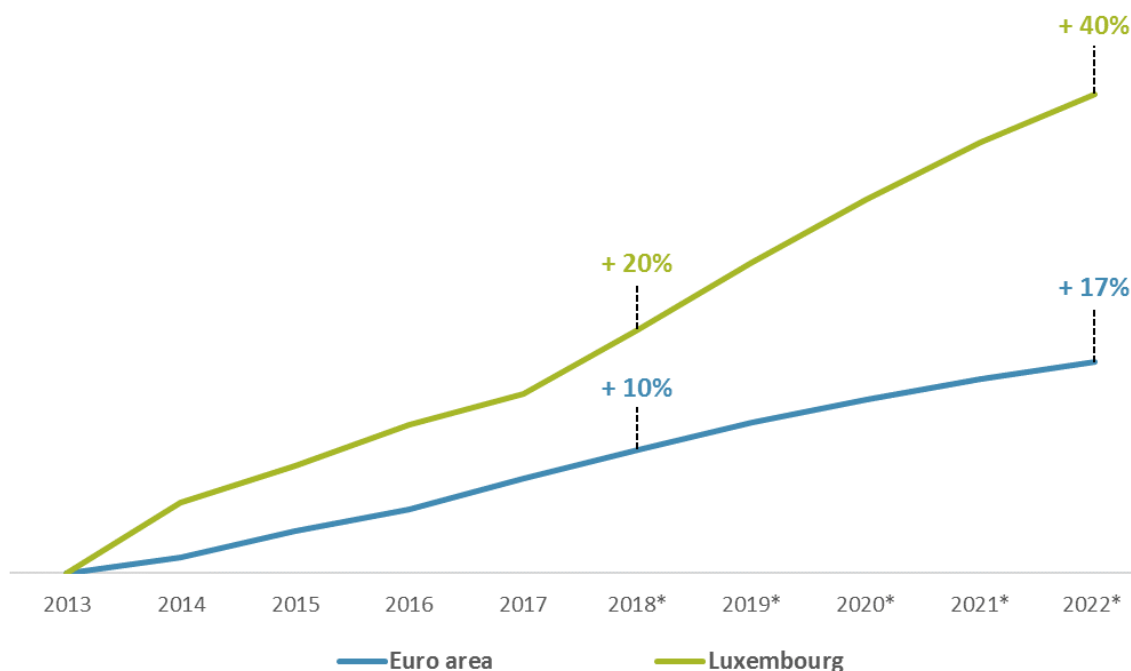
II.2. Short- and medium-term economic outlook in Luxembourg

Given its high degree of openness, its resolutely international outlook and the size of its financial sector, changes in the Luxembourg economy are strongly linked to the development of the international economic situation, as well as the performance of financial markets.

Whereas in 2016 growth registered an increase of 3.1%, the performance of Luxembourg's economy ended up being rather "disappointing" for 2017 in STATEC's initial provisional assessment. After a fourth quarter characterized by a virtual stagnation of real GDP (-0.1%), growth reached 2.3% in 2017 overall. This growth rate equals the growth rate of the euro area, whereas it was more than twice that rate in previous years, as evidenced by the trend outlined in Chart 1¹⁰.

¹⁰STATEC Conjuncture Flash March 2018, p.1.

Chart 1:
Real GDP in Luxembourg and the euro area (2013 = base 100)



Source: STATEC, AMECO database.

This seems all the more surprising insofar as the latest business and household surveys show a very favourable economic climate and a high level of confidence among economic actors regarding the status of Luxembourg's economy. Neither does this trend follow the acceleration of growth experienced in the euro area in 2017.

The overall robustness of the Luxembourg economy is therefore not put in doubt, as the growth rate for 2017 can be explained in part by the use of a number of quarterly indicators which, in the absence of available data, had to be estimated. For this reason, the 2.3% rate should be interpreted with caution and will likely be subject to further modifications.

In addition to the financial sector, it is noteworthy that other promising sectors contributed significantly to growth in 2017, including IT and communication services and logistics.

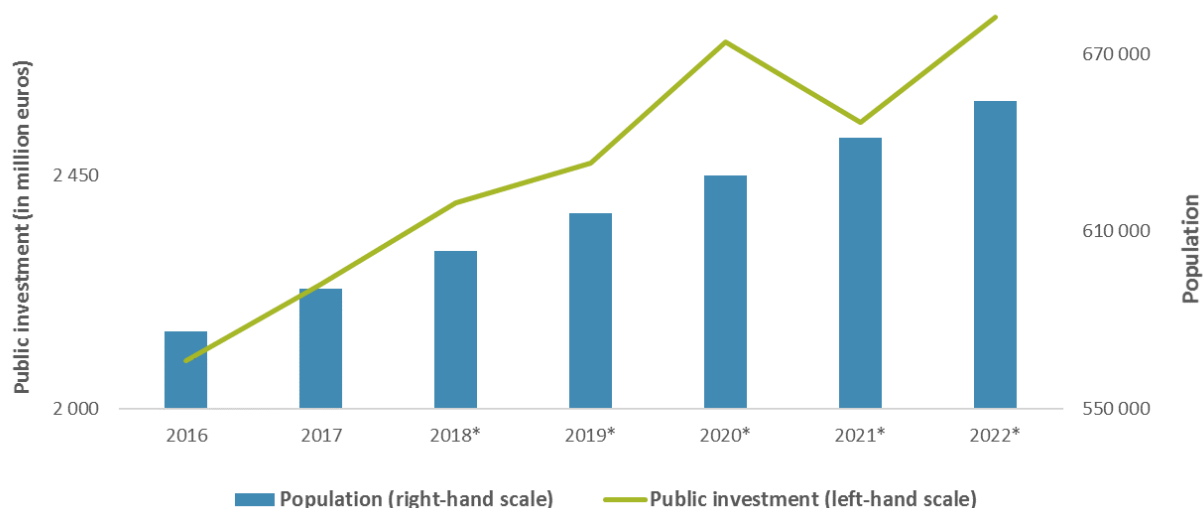
In 2018, Luxembourg should experience accelerated growth once more. Accordingly, the scenario on which budget forecasts are based projects real GDP to increase by 4.6% in 2018 and 2019. In the medium term, this indicator will gradually move towards a growth rate of 2.9% by the end of the period. Under the same scenario nominal GDP is expected to increase by 5.4% on average over the years 2018 to 2022.

Given specificities of the baseline scenario's model, growth should hover around the level of potential growth. Potential growth refers to the level of growth in an economy that is fully utilising its factors of production. The difference between these two standards represents the output gap (see the Methodological Box in Chapter III.4). Potential growth averages 3.5% between 2018 and 2022 with the output gap becoming positive in 2019.

Medium-term changes in the Luxembourg economy are characterized by the recovery in the euro area in the short and medium term and the resumption of world trade in 2017; by a financial sector that retains its robustness throughout the analysed period, benefiting especially from high performing European stock market indexes, which are assumed to be rising in the coming years¹¹; growing household consumption, thanks to the impact of a tax reform that has increased disposable income and following sustained momentum in the labour market; and, lastly, by the Government's policy favouring public expenditure to prepare the country for the challenges of the future, including continued growth in its resident population (see Chart 2), and to build the infrastructure needed for a qualitative kind of growth.

¹¹ « Working Paper - Économie et statistiques N° 96/2018 - Projections économiques à moyen terme 2018-2022 », p.4.

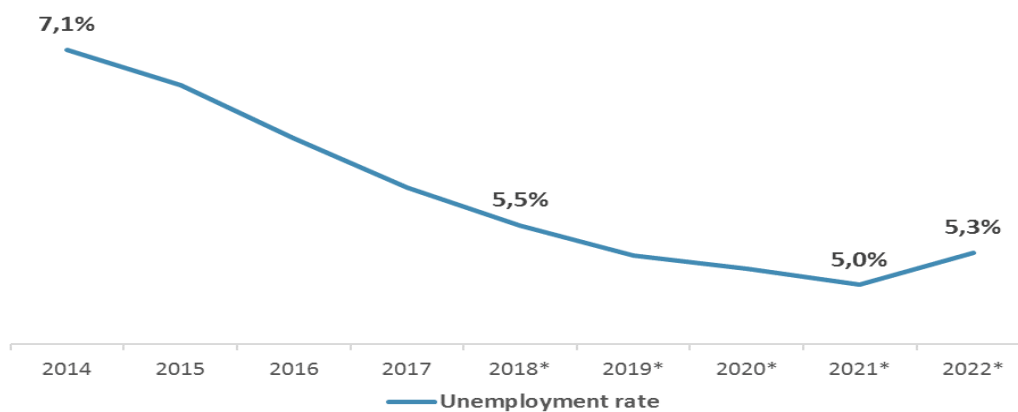
Chart 2:
Public investment and population in Luxembourg



Source: Ministry of Finance, Eurostat.

STATEC's economic forecast for this SGP update assumes average employment growth of 3.2% per year over the years 2018 to 2022, which would represent only a slight deceleration from the momentum recorded in 2017 (3.3%). Expansion of the labour market goes hand in hand with a decline in unemployment over the projection period. After rising to 5.9% in 2017, the unemployment rate is expected to fall to 5.1% by 2021, then rise slightly again to 5.4% in 2022 (see Chart 3).

Chart 3:
Unemployment rate in Luxembourg (2014-2022).



Source: STATEC.

According to the baseline scenario, inflation, as measured by the National Consumer Price Index (NCPI), would stabilise in the medium term at around 1.8%. The forecasts also call for an upcoming indexation of salaries in the third quarter of 2018, followed by two more rounds of indexation adjustments in the third quarter of 2019 and the first quarter of 2021. However, given the volatility of the factors affecting the projection, these dates represent only a provisional and hypothetical indication that is subject to the fulfilment of the assumptions.

Risks and uncertainties

The economic forecasts underlying the budgetary projections described in this SGP imply that a "central" baseline scenario takes place, i.e. a scenario for which the positive and negative risks are presumed to be balanced. The economic scenario therefore does not recognise shocks of a positive or negative nature. However, some policy measures have been included by STATEC, namely: the tax reform, the wage agreement in the civil service and the loss of revenue from the e-commerce VAT.

In addition to the international uncertainties and risks listed in the previous section, Luxembourg will continue to face a number of unique, and structural, challenges at the national level. Regulatory and financial supervision reforms, as well as the overhaul of the international tax environment (BEPS, CCCTB, ATAD, digital taxation, etc.) will present significant challenges, even as they open up new opportunities, and they will require the pursuit of an economic diversification strategy and openness to the international community in order to sustainably maintain qualitative growth.

In the medium and long term, the profound transformation of the labour market, brought about by the economy's increasingly advanced digitization, will require both a capacity for innovation and a growing adaptability in the future.

In order to have a more concrete idea of the consequences of a potential shock for the Luxembourg economy, the SGP once again includes a chapter dedicated to sensitivity analyses articulating alternative growth trajectories. These analyses utilise two scenarios, namely: the impact of positive and negative shocks on the growth rate of the euro area, and a greater-than-expected increase in interest rates. These analyses, which are presented in Chapter III.6, make it possible to conceptualise the impact of these shocks on Luxembourg's main macroeconomic and budgetary variables.

III. Fiscal outlook and public debt

III.1. Fiscal policy objectives

Luxembourg's public finances deteriorated markedly as a result of the economic and financial crisis. Even though Luxembourg has kept its public deficit below the reference value of 3% of GDP (thus remaining in the preventive arm of the Stability and Growth Pact¹²), public debt increased considerably, both in absolute terms and as a percentage of GDP, although it remained well below the Maastricht threshold of 60% of GDP.

Despite full compliance with the main European criteria, the economic and financial crisis revealed a number of vulnerabilities and confronted the country with several structural challenges, namely:

- the decrease of potential growth in the wake of the economic and financial crisis, implying the risk of a structural reduction in the growth of public revenue;
- the degree of openness of the Luxembourg economy, implying that changes in public revenue depend to a large extent on external economic developments;
- the exposure of the financial sector to a number of structural and regulatory adjustments, involving significant risks for growth and employment in the country;
- the reform of the international taxation framework for companies and the switch to the automatic exchange of information, presenting new challenges for the tax environment in Luxembourg;
- lower public spending, with a significant share of public spending growing "autonomously", independent of trends in the economic cycle; and
- a central government with deficits of almost €1 billion, which exerts increased pressure on public debt.

In addition to these structural elements, the prospect of a change in the VAT regime applied to electronic commerce presented a major challenge, given the revenue stream to be offset as of 2015.

The government took decisive action as soon as it entered into office in December 2013 in response to these challenges and in view of the VAT revenue stream shock, quickly reversing the negative trend. As a

¹² The structural balance was also kept above the medium-term budgetary objective ("MTO") throughout the crisis.

result, public finances recovered considerably and 2017 closed with a general government balance of € 858 million, the equivalent of 1.5% of GDP. This result is even more remarkable inasmuch as a major tax reform, whose estimated ex ante impact is € 373 million for 2017, came into effect on 1 January of the same year. The structural balance, the calculation of which depends on estimates of potential GDP and real GDP (which remain subject to possible future revisions), amounted to + 2.2% in 2017, well above the MTO of -0.5% of GDP.

In view of this substantial improvement of public finances, the fiscal policy underlying the figures presented in this update of the SGP is based on the assumption of a continuation of the priorities pursued in recent years, including:

- a continued high level of public investment of around 4.0% of GDP over the entire period;
- the pursuit of a policy aiming at controlling public expenditure and making it more efficient, with the consistent and gradual implementation of the *Zukunftspak* measures;
- a continuous improvement and modernisation of the welfare state and public services for citizens and businesses; and
- continued efforts in fiscal transparency and economic diversification within and outside of the financial sector.

The figures in this SGP also respond to the budgetary strategy set out in the governmental programme of December 2013, with the following two objectives as a priority:

- i. compliance with the MTO throughout the entire projection period; and
- ii. sustainable stabilisation of public debt below 30% of GDP.

Regarding the long-term sustainability of public finances, and despite the positive effects of the 2013 pension reform, the ageing of the population will lead to increasing pressures on public expenditures over the long term.

This update of the SGP contains a new estimate of the evolution of ageing costs by 2060/2070. This report was compiled by the Ageing Working Group of the Economic Policy Committee at the ECOFIN Council.

The implicit liabilities emerging from this report remain high, both in terms of absolute value and international comparison. A working group was set up by the Government at the end of 2016 whose task is to discuss the financial sustainability of the pension system and an initial report of this working group is currently being finalized.

In terms of European economic governance, the Government is not submitting a request for the use of the flexibility clauses as the budgetary guidelines described in this update of the SGP ensure full compliance with the rules of the preventive arm of the Stability and Growth Pact throughout the entire projection period.

III.2. Medium-term objective (MTO)

The Stability and Growth Pact is a set of rules designed to regulate the fiscal policies of EU Member States. These provisions have been supplemented in the wake of the economic and financial crisis by the Treaty on Stability, Coordination and Governance in the EU (TSCG), also known as the "Fiscal Compact", which aims to preserve the economic and financial stability of the euro area.

The rules of the preventive arm of the Stability and Growth Pact and the Fiscal Compact are essentially based on adherence to a budgetary objective called the Medium-Term Budgetary Objective (MTO).

The MTO to be achieved by each country differs according to the specific situation of each Member State, so as to take into account the diversity of economic developments and budgetary positions as well as differing degrees of risk in terms of the sustainability of public finances.

The MTOs are expressed in "structural" terms, meaning that they are adjusted for fluctuations in the economic cycle as well as to address possible exceptional events and budgetary measures.

In setting MTO levels, each Member State is obliged to adjust the value every three years, as part of the updating of the SGP, adhering to a minimum MTO calculated by the European Commission. The last MTO was set in 2016 and covered the period 2017-2019.

In accordance with a harmonized methodology, every three years the European Commission submits a minimum reference value ("minimum MTO ") for each Member State, to which it must adhere in setting its respective MTO¹³. This methodology particularly takes into account changes in budgetary costs linked to population ageing as well as the public debt target of 60% of GDP laid down in the European treaties¹⁴.

For Luxembourg, the minimum reference value calculated in 2016 by the European Commission was -1% of GDP, in view of the less pronounced trends of ageing costs as described in the 2015 ageing report. As a TSCG signatory country, however, Luxembourg is also required to set its MTO at least at a level of -0.5% of GDP. It is for this reason that the Government chose to set its MTO at -0.5% of GDP for the 2017-2019 period in the course of the 17th update of the SGP in April 2016.

The next time the MTO will be set is in 2019, and therefore at the next SGP update, which will take into account the budgetary implications of ageing costs as updated in the 2018 Ageing Report to be published in the course of 2018. The projection horizon is now extended to 2070 (contrasting with 2060 in the 2015 report) and Eurostat's updated population projections (ESSPOP2015) are taken into account. The results of this update for Luxembourg are also presented for the first time in Table 7 (Statistical appendix) of this SGP update¹⁵.

III.3. Fiscal outcomes in 2017 and 2018

For 2017 and especially 2018, the SGP is based on the most recent estimates available, which implies that differences may appear between the figures supplied to Eurostat on 1 April 2018 for the excessive deficit procedure and the figures used for this update.

The differences are mainly due to the inclusion of information that was not yet available when the final notification was made at the end of March, and also the result of the "base effects" of the improvement noted for the 2017 budgetary year.

¹³ The European Commission calculates minimum reference values, which does not restrict a Member State from setting a more ambitious MTO.

¹⁴ For a fuller description, readers are referred to Chapter 1.2 of the *Vade mecum on the Stability & Growth Pact* of the European Commission: https://ec.europa.eu/info/sites/info/files/economy-finance/ip075_en.pdf.

¹⁵ As the new projections point to a more pronounced increase in age-related expenditure, an upward revision of the minimum MTO as calculated by the European Commission could take place in 2019. If so, the Luxembourg MTO should be revised upwards.

2017

The state of public finances in 2017 remained almost identical to that of 2016. The nominal balance of general government rose marginally from € 856 million or + 1.6% of GDP in 2016 to € 858 million or + 1.5% of GDP in 2017. This result is all the more remarkable given that the Budget for 2017 still projected a surplus of only € 97 million or 0.2% of GDP in 2017. This represents a significant improvement amounting to € 761 million or +1.3 points of GDP.

This improvement can be seen as follows for the various sub-sectors: while the central government's deficit remains virtually unchanged compared to 2016, it is reduced by € 819 million or +1.4 points of GDP compared to the Budget for 2017, which projected a deficit of 1.8% of GDP or € 1,039 million. In local government, the surplus of € 132 million or + 0.3% of GDP in 2016 drops to a surplus of € 81 million or + 0.1% of GDP in 2017. Regarding Social Security, the surplus improved slightly from € 953 million or + 1.8% of GDP in 2016 to € 996 million or + 1.8% of GDP in 2017, which represents an outperformance of € 113 million or +0.3 points of GDP compared to the balance projected in the Budget for 2017.

The 2017 budgetary year was mainly characterized by the following five factors:

1. The impact of the tax reform that came into effect on January 1 of that year. Despite the impact of this ambitious reform, whose cost for 2017 is estimated at € 373 million, the central government's balance has improved significantly compared to the 2017 Budget.
2. The change in the VAT system linked to e-commerce¹⁶, which provides that from 2017 Luxembourg can only claim 15% of related revenue instead of 30% for the two previous years. In the wake of revenue losses of € 522 million, and € 171 million respectively, for 2015 and 2016, additional short-fall of € 295 million were recorded in 2017.
3. A record level of capital spending that continues to increase compared to previous years at an annual rate of 7% year-on-year, which exceeds the threshold of € 2 billion for the second time in absolute terms and represents about 4% GDP.
4. Controlling operating costs, which even decreased by 0.1% compared to 2016, mainly due to the "Zukunftspak" measures.

¹⁶ For more details, see Methodological Insert no. 1 of the 16th update of the SGP:
http://www.mf.public.lu/publications/programme/16e_progr_stabilite_croissance.pdf.

5. The improvement compared to the 2017 Budget is occurring despite a significant revision of growth compared to the rate underlying projections in the budget, which fell from 4.6% to 2.3%. Despite this significant downward revision, tax revenue have improved positively, up 5.5% compared to 2016. It should be noted that corporate income taxes (CIT) are the main contributors, outperforming forecasts of the 2017 Budget by an amount of € 312 million.

2018

In 2018, macroeconomic conditions would again appear to be more favourable, with STATEC providing an estimate of growth of 4.6% and a labour market that maintains its positive momentum with an increase of 3.5% in terms of job creation.

Unlike previous years, the budgetary forecast for the current year has now been revised and adapted to better reflect the results observed in the previous year, i.e. incorporating the "base effects" resulting from an improved situation in 2017, both in terms of revenue and expenditure. This is why the balance of the public administration for 2018 is also being revised upward, by an amount of € 314 million or 0.5 percentage point of GDP, compared to that in the 2018 Budget.

Accordingly, the public administration balance is € 647 million or + 1.1% of GDP in 2018, which represents a decrease of € 211 million or 0.4 point of GDP compared to 2017. This development stems particularly from the delayed impact of the 2017 tax reform as well as from the fact that only part of the impact of the 2017 outperformance of the CIT has been felt in 2018. The central government's deficit has therefore increased from € 220 million or -0.4% of GDP in 2017 to € 587 million or -1.0% of GDP in 2018. Nevertheless, this represents a more favourable balance than the one projected in the 2018 Budget, which was still projecting a deficit of € 890 million or -1.5% of GDP. As for local government, the surplus rose from € 81 million or + 0.1% of GDP in 2017 to € 194 million or + 0.3% of GDP in 2018. The Social Security's surplus increased slightly from € 996 million or + 1.8% of GDP in 2017 to € 1,040 million or + 1.8% of GDP in 2018.

The situation of public finances in 2018 is mainly characterized by investment spending, which, despite its already high level, will increase by 7.0%. This is in line with the Government's desire not only to make up

for delays, but also to prepare the country's infrastructure for the challenges of the future. Public investment priorities include education for children, housing and public transportation.

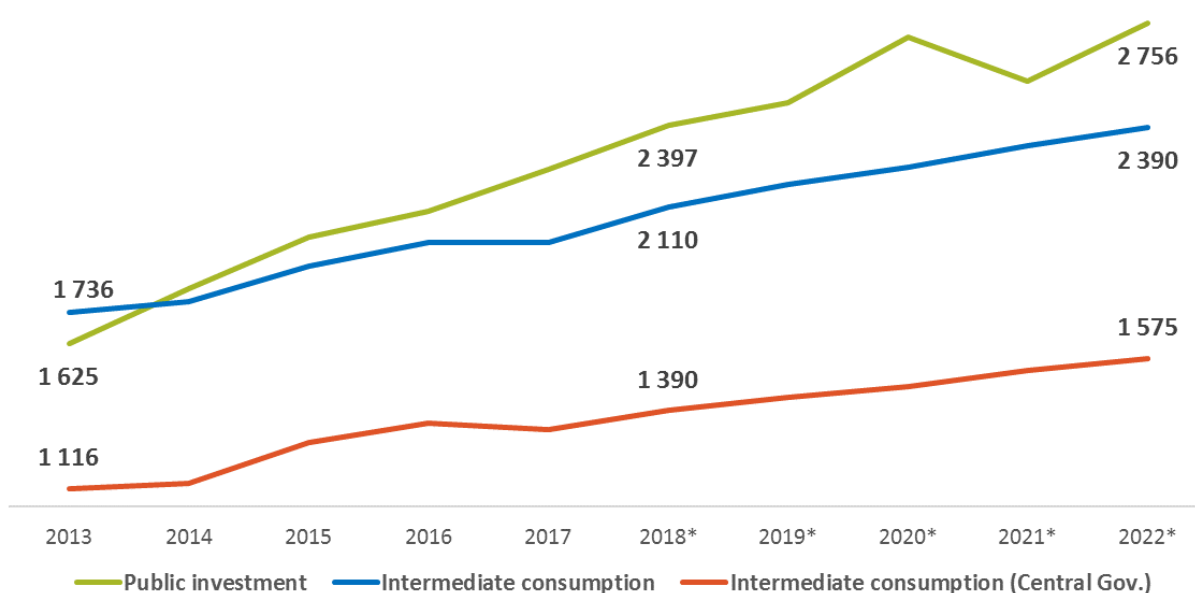
In the field of education for children, the implementation of a multilingual education, as well as the free 20-hour per week supervision for young children under the childcare vouchers scheme are flagship measures. On top of this, the reform of parental leave has been introduced, which, together with an increase in allowances, has made holiday periods more flexible.

Compensation of employees increased by 4.5% due to the significant increase in the number of government employees, especially in the areas of education, internal security and tax administrations, to cope with the economic and demographic growth of the country. This increase, however, remains below the increase rate of the previous year.

Finally, the share of intermediate consumption in overall government spending remains stable at 8.4%, reflecting the Government's desire to control this category of expenditure.

Chart 4:

Public investment and intermediate consumption (in million euros)



Source: Ministry of Finance, STATEC.

Compliance with the rules of the preventive arm of the Stability and Growth Pact

As regards compliance with the budgetary rules of the preventive arm of the Stability and Growth Pact, the following points should be noted:

- in 2017, the structural balance, estimated on the basis of STATEC calculations made using the harmonized methodology at European level, amounts to + 2.2% of GDP and is thus well above the MTO of -0.5% of GDP for the 2017 to 2019 period.
- in 2018, the structural balance will increase to + 1.2% of GDP, affected by the combined impact of a slight deterioration in the nominal balance and a tightening output gap, yet remaining well above the MTO of -0.5% of GDP;
- as regards the expenditure benchmark, it should be noted that this does not apply to Member States whose structural balance is above the MTO¹⁷.

Luxembourg therefore continues to fully respect the Stability and Growth Pact in 2017 and 2018, while maintaining a considerable margin over the MTO of -0.5% of GDP.

III.4. Fiscal outlook for 2019 - 2022

In the medium term, the situation of public finances is characterized by the following elements:

- favourable developments in macroeconomic conditions, in particular with regard to economic growth and employment trends, as assumed in the base scenario for the preparation of the budget estimates;
- maintenance of an ambitious public investment policy to meet the infrastructure requirements linked to economic and demographic growth expected over the coming years;
- the pursuit of efforts to diversify and identify new niches for the Luxembourg economy;
- budgetary discipline in terms of public spending which is expected to be maintained in the medium term as a result of the “Zukunftspak”’s modernisation efforts;

¹⁷ Page 48, “Vade Mecum on the Stability and Growth Pact - 2018 Edition” (European Commission, March 2018): *“Member States that have exceeded their MTO do not need to be assessed for compliance with the benchmark”*.

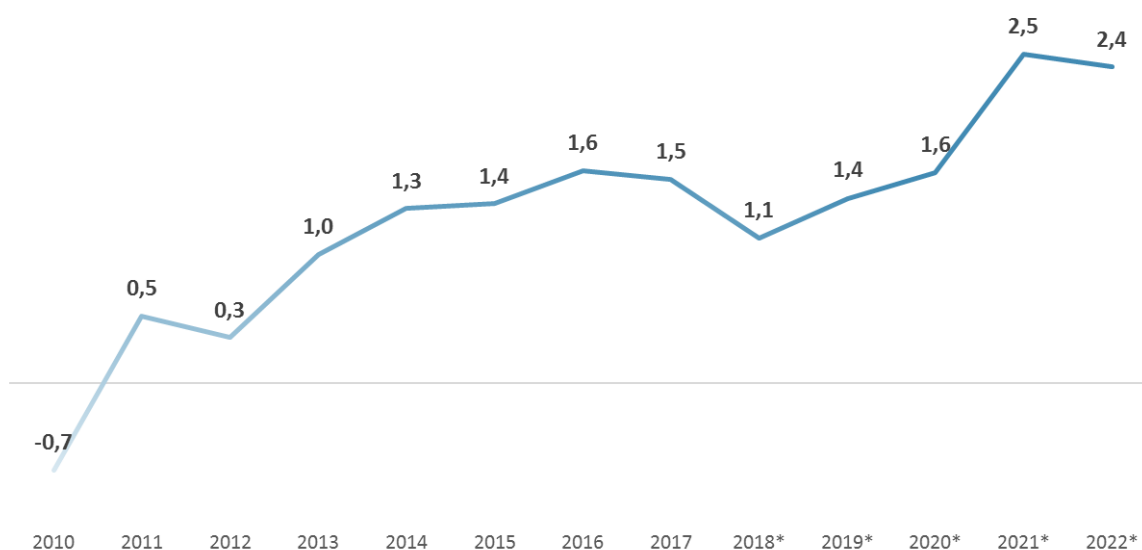
Link: https://ec.europa.eu/info/publications/economy-finance/vade-mecum-stability-and-growth-pact-2018-edition_en.

- the implementation of the 2017 tax reform whose impact on public finances continues to increasingly materialise simultaneous to the positive effects on the economy in general.

In 2019, the general government's budgetary position should improve from a surplus of € 647 million or + 1.1% of GDP in 2018 to one of € 842 million or + 1.4% of GDP. This positive movement manifests itself as follows with regard to the three sub-sectors:

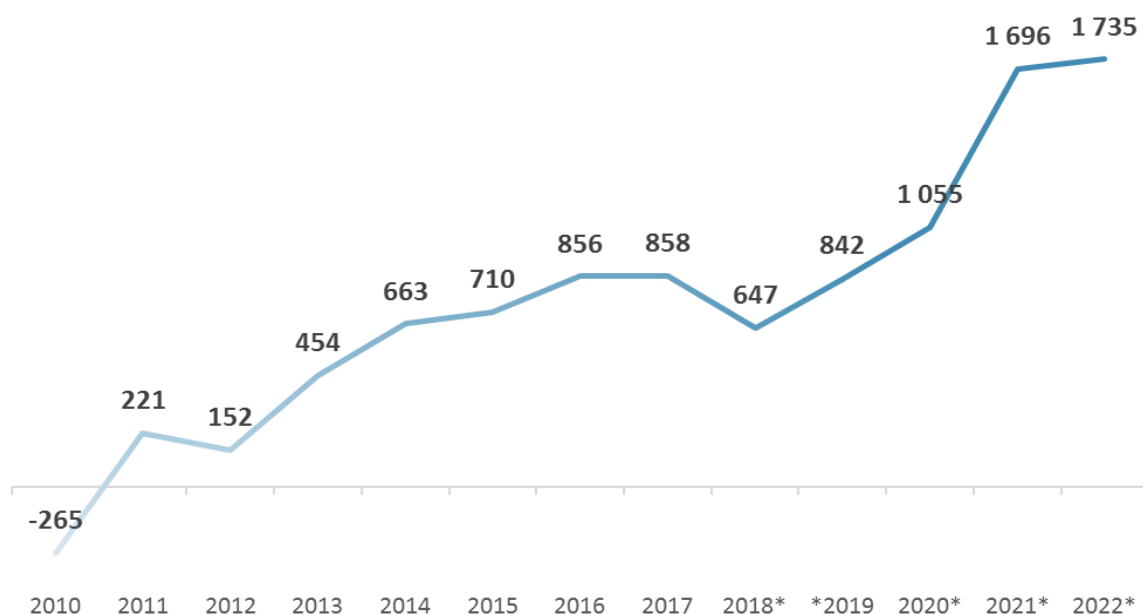
- Central government displays another improvement, moving from a deficit of € 587 million in 2018 to a surplus of € 453 million in 2019. This is attributable to moderate expenditure developments, which are increasing at a slower rate than that of revenues, despite a high level of public investment and growing spending on social transfers.
- The local government's surplus will increase again, following the reform of municipal finances that came into effect in 2017, to reach € 228 million or + 0.4% of GDP.
- The balance of Social Security will amount to € 1,067 million or + 1.7% of GDP in 2019 thus remaining almost unchanged compared to 2018.

Chart 5:
Nominal general government balance (as a % of GDP)



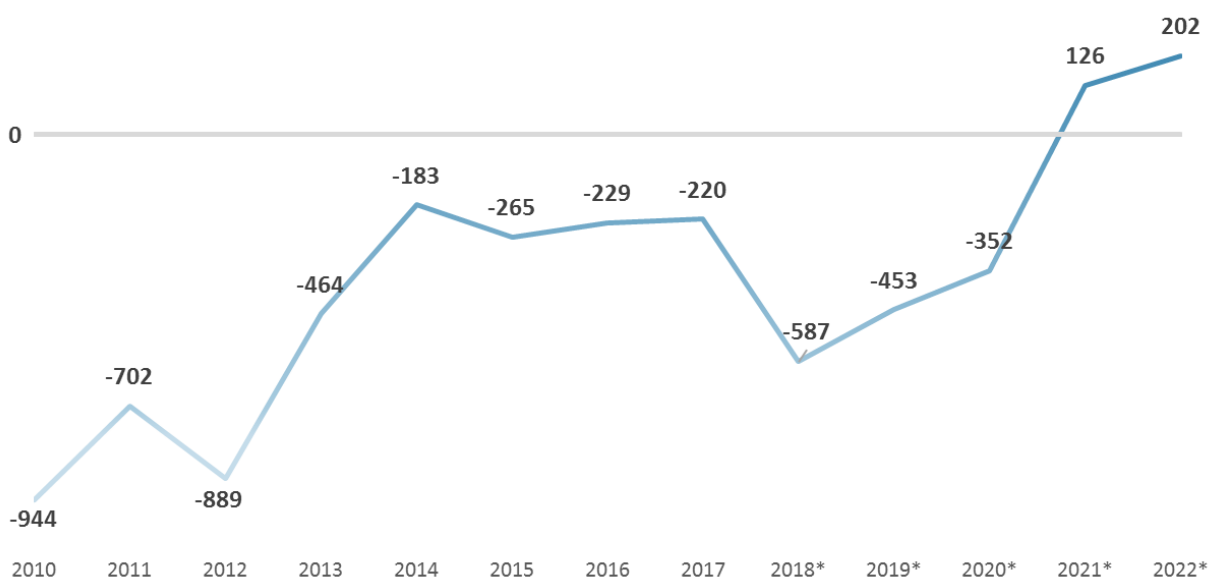
Source: Ministry of Finance.

Chart 6:
Nominal general government balance (in million euros)



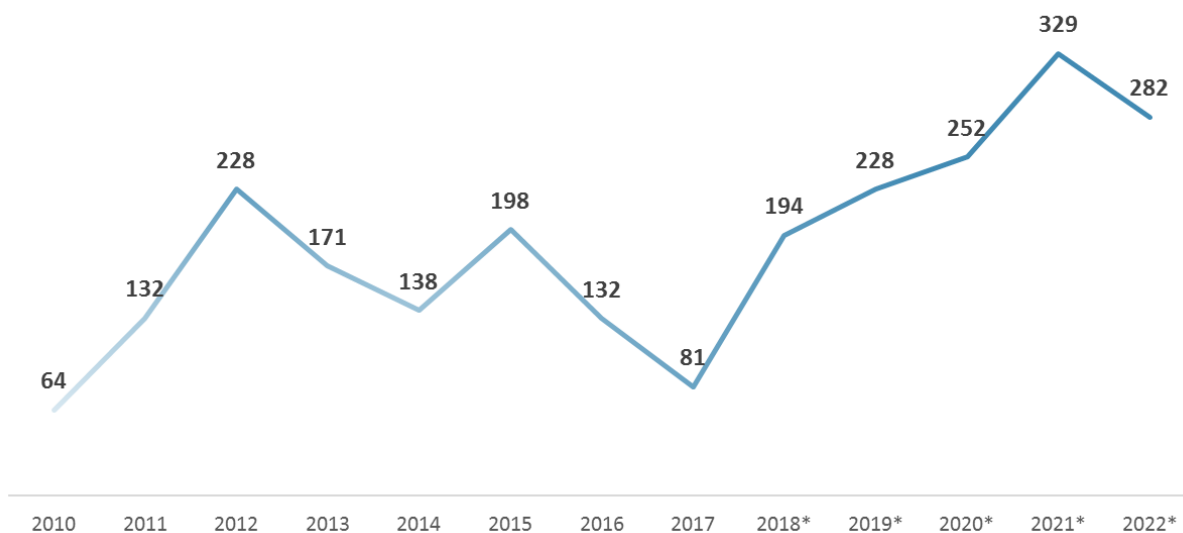
Source: Ministry of Finance, STATEC.

Chart 7:
Nominal central government balance (in million euros)



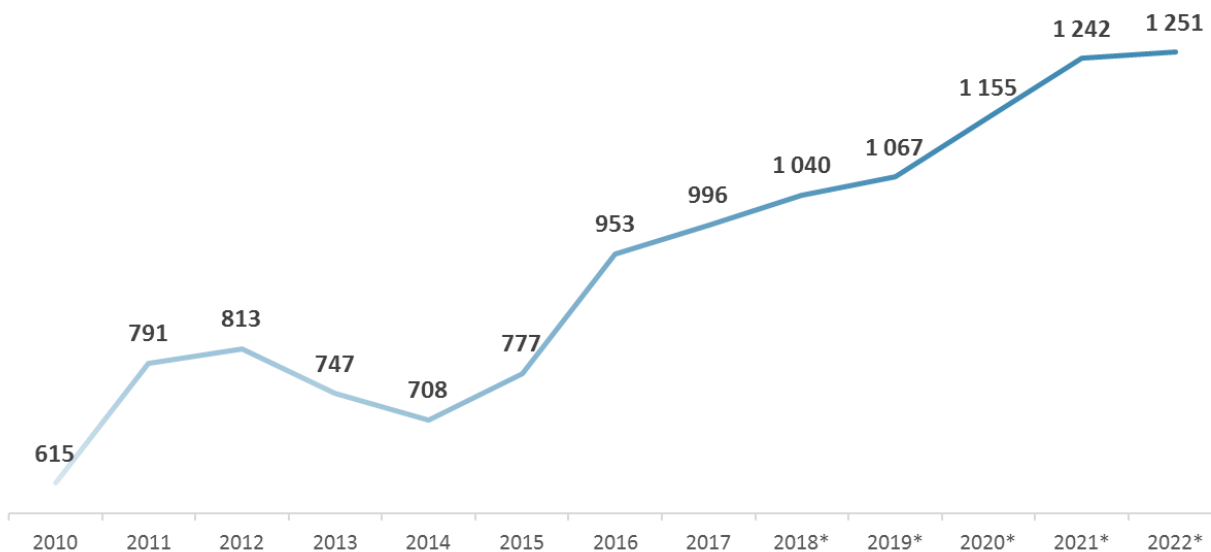
Source: Ministry of Finance, STATEC. It should be noted that, in accordance with ESA 2010, the central government balance for 2020 takes into account the full acquisition cost of a military aircraft (€ 200 million), whereas the corresponding payments were actually made in instalments extending over several previous years. The balance displayed masks a more significant improvement in the deficit in 2020.

Chart 8:
Nominal local government balance (in million euros)



Source: Ministry of Finance, STATEC.

Chart 9:
Nominal Social Security balance (in million euros)



Source: Ministry of Finance, STATEC.

In the medium term, i.e. from 2020, public finances will continue to improve, against a continuing solid economic backdrop, resulting in a general government balance of € 1,735 million or + 2.4% of the GDP in 2022, which will be almost twice the balance of 2019.

This improvement is mainly due to the positive trends of central government whose balance moves from a deficit of -€ 453 million or -0.7% of GDP in 2019 to a surplus situation from 2021 onwards, for the first time since 2008, leading to a surplus of € 202 million or + 0.3% of GDP in 2022. This movement is mainly attributable to the following factors:

- i. the stabilization of public investment at a high level of 3.9% of GDP on average, with an average rate of increase of 3.9% over the 2020-2022 period¹⁸;
- ii. widespread restraint in public spending, which remains at a lower level than inflows of revenue (4.3% vs. 5.2%), and especially the control of intermediate consumption expenditure;
- iii. the return of a sustained momentum of government revenue, increasing at an average of 5.2% per year over the period 2020-2022, which is explained by the macroeconomic assumptions used and in particular by a sustained revenue trend from taxes on income and wealth¹⁹.

Chart 10:

Annual variation of public revenue and expenditure – with detail (% change)



Source: Ministry of Finance, STATEC.

¹⁸ Despite the fact that new projects will only be announced or approved over the next few years, increased public investment remains in force and is likely to increase further once new investment projects materialise.

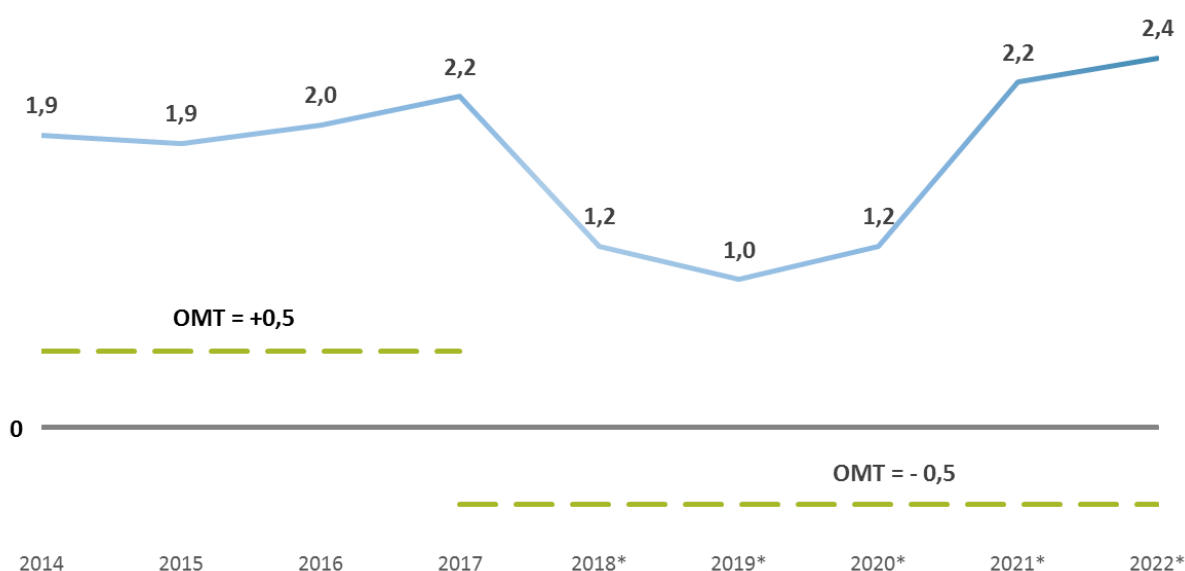
¹⁹ According to a STATEC econometric study, the elasticity rate of taxes deducted from wages and salaries of households compared to payroll deductions has historically been at 1.75. This tax category could undergo significant change in the medium term, because the STATEC macroeconomic scenario, which was used as the basis for revenue estimates, also counts on a significant change in salaries, that would move along the trajectory as follows: 2018: +5.4% ; 2019 : +6.3% ; 2020 : +6.3% ; 2021 : +5.4% ; 2022 : +4.9%

As for the European fiscal rules, Luxembourg should continue to fully respect the rules of the preventive arm of the Stability and Growth Pact, while maintaining a considerable margin vis-à-vis the MTO throughout the period under consideration.

The structural balance, prepared using calculations made by STATEC on the basis of the harmonised methodology at European level²⁰, should lie above the current MTO²¹ of -0.5% of GDP: + 1.0% in 2019, + 1.2% in 2020, + 2.2% in 2021 and + 2.4% in 2022. In 2019 and 2020, the structural balance will remain at almost the same level as in 2018 because of a closed output gap, which will move into positive territory following higher real GDP. In 2021 and 2022, the interaction between a continuously improving general government surplus and a tightening output gap will lead to a structural balance of + 2.4% of GDP in 2022.

As for the expenditure benchmark rule, it should be recalled that it does not apply to Member States whose structural balance is above the MTO.

Chart 11:
Structural general government balance (as a % of GDP)



Source: Ministry of Finance, STATEC.

²⁰ See the Methodological Insert on the next page.

²¹ As noted in Chapter III.2, the MTO level for 2020-2022 will need to be set in the next SGP update, taking into account the new long-term projections on ageing expenditure in the 2018 report.

Methodological insert: Structural balance and estimate of the output gap

The rules of the preventive arm of the Stability and Growth Pact are mainly based on compliance with (or gradual adjustment towards) a budgetary objective called the medium-term budgetary objective (MTO).

The MTO is defined in "structural" terms, i.e. by correcting for fluctuations in the business cycle and the impact of exceptional fiscal measures and other temporary measures. The purpose of the structural balance is therefore to determine the underlying budget balance of the general government.

In order to calculate the structural balance, it is important to assess the impact of cyclical variations on the government balance by estimating the difference between real GDP and potential GDP to obtain the output gap. The formula for moving from the nominal balance to the structural balance is as follows:

$$\text{Structural Balance} = \text{Nominal Balance} - 0.445 \times (\text{Production Gap})$$

The output gap measures the difference between the real state of the economy and a theoretical state in which an economy would make the best use of its factors of production without creating tensions on prices and wages. The GDP in such a situation is called potential GDP.

The formula for determining the output gap is:

$$\begin{aligned} \text{Output gap} \\ = \\ (\text{Real GDP} - \text{Potential GDP}) / (\text{Potential GDP}) \end{aligned}$$

One of the major difficulties in calculating the output gap is that potential GDP and the output gap are two variables that cannot be observed and therefore need to be estimated using statistical and econometric methods.

Due to the volatility of growth in a small open economy such as Luxembourg, these estimates are traditionally characterised by a very high degree of uncertainty, combined with the fact that there are a multitude of different methodologies for estimating potential GDP and the output gap.

As the assessment of the structural balance by the European Commission is based on a harmonised European methodology for all EU Member States, since 2015 the Government has been using the same method in calculating the structural balance.

In doing so, it uses the expertise and data of STATEC ("LUX-COM method"), given the complexity of the calculations to be carried out and that the European Commission's forecast figures are generally not available at the time when SGP updates are finalised.

Despite the "imperfect" nature of this methodology, and because of the unavailability of the European Commission's forecasts, the approach taken should in principle make it possible to get as close as possible to the European Commission's foreseeable estimates.

Finally, it should be noted that research work at STATEC continues to focus on studying and further refining ways to estimate the output gap. Under the joint initiative of the Ministry of Finance and STATEC, the European Commission has recently agreed to adapt the European methodology to the specificities of the Luxembourg economy, to better take into account the employment of cross-border workers when calculating Luxembourg's output gap.

The updated national accounts published at the end of March 2018 and the February 2018 STATEC macroeconomic forecasts for 2018-2022 were taken into account for this update of the SGP. The calculation of the structural balance is based on the following elements:

	2017	2018	2019	2020	2021	2022
Nominal balance	+1.5%	+1.1%	+1.4%	+1.6%	+2.5%	+2.4%
Real growth	+2.3%	+4.6%	+4.6%	+4.2%	+3.6%	+2.9%
Potential growth	+2.9%	+3.4%	+3.5%	+3.6%	+3.6%	+3.5%
Output gap	-1.4%	-0.2%	+0.9%	+1.0%	+0.5%	0.0%
Structural balance	+2.2%	+1.2%	+1.0%	+1.2%	+2.2%	+2.4%

Source: Ministry of Finance, STATEC.

III.5. Public debt developments

At the end of 2017, Luxembourg's public debt stood at € 12.709 billion, or 23.0% of GDP. In absolute terms, it is in line with the level assumed in the previous update of the SGP and, relative to GDP, it remains below the level of 23.7% observed at the beginning of the current legislative term in late 2013.

Luxembourg continues to be one of the Member States with the lowest debt ratios in the euro area (only Estonia has less debt than Luxembourg), while remaining well below the reference value of 60% of the GDP laid down in the European treaties.

Outstanding bond issuances are as follows:

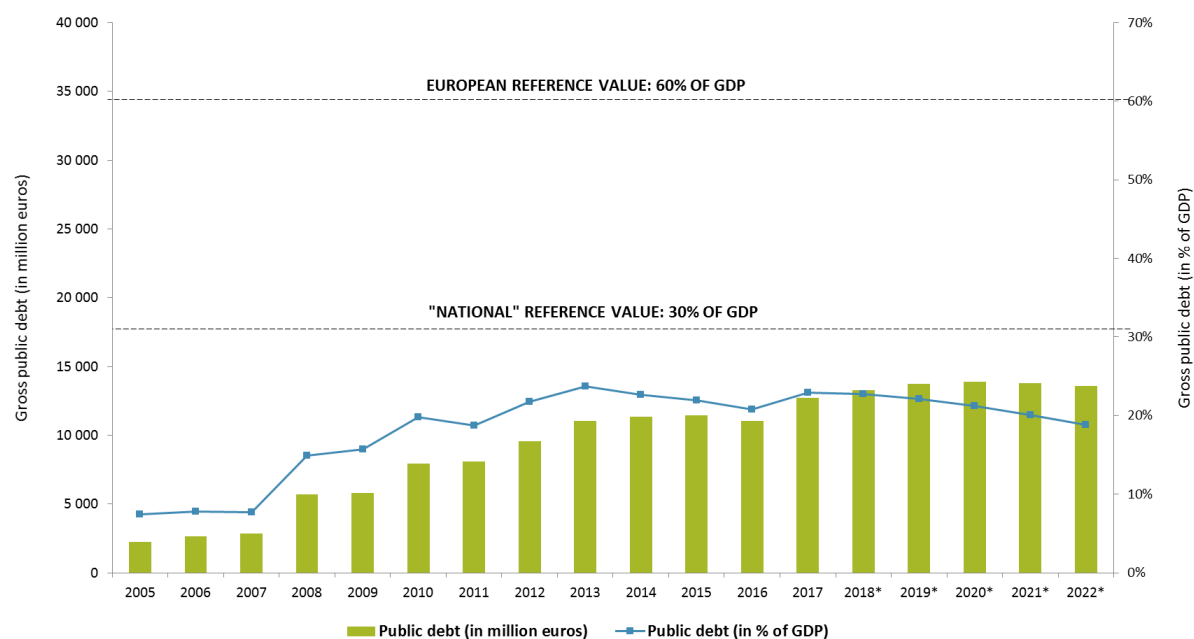
Security name	Instrument	Issuance date	Maturity	Amount (in euro mn.)
LGB SUKUK 0.436%	Institutional loan	October 2014	October 2019	200
GRAND-DUCHY 3.375%	Bonds	May 2010	May 2020	2,000
GRAND-DUCHY 2.25%	Bonds	March 2012	March 2022	1,000
GRAND-DUCHY 2.125%	Bonds	July 2013	July 2023	2,000
GRAND-DUCHY 0.625%	Bonds	February 2017	February 2027	2,000
GRAND-DUCHY 2.25%	Bonds	March 2013	March 2028	750
GRAND-DUCHY 2.75%	Private placement	August 2013	August 2043	300

Source: Luxembourg State Treasury. By maturity date.

The new public debt forecasts assume in a purely mechanical manner that central government deficits will be entirely financed by the issue of new bonds or loans over the 2018-2022 projection period. Similarly, surpluses generated from 2021 will be used to repay and thus reduce the public debt. In addition, central government would fully refinance all borrowings and loans maturing in the period under review, which explains the projected trajectory shown below. Total financing requirements would therefore be approximately € 5 billion over the 2018-2022 period (see Chart 13)²². In practice, financing needs will, however, be dictated by changes in the country's liquidity situation, respective market conditions, the choice of refinancing instrument as well as the actual budgetary developments, which could lead to a profile different from that mechanically assumed in these public debt projections (see Chart 12).

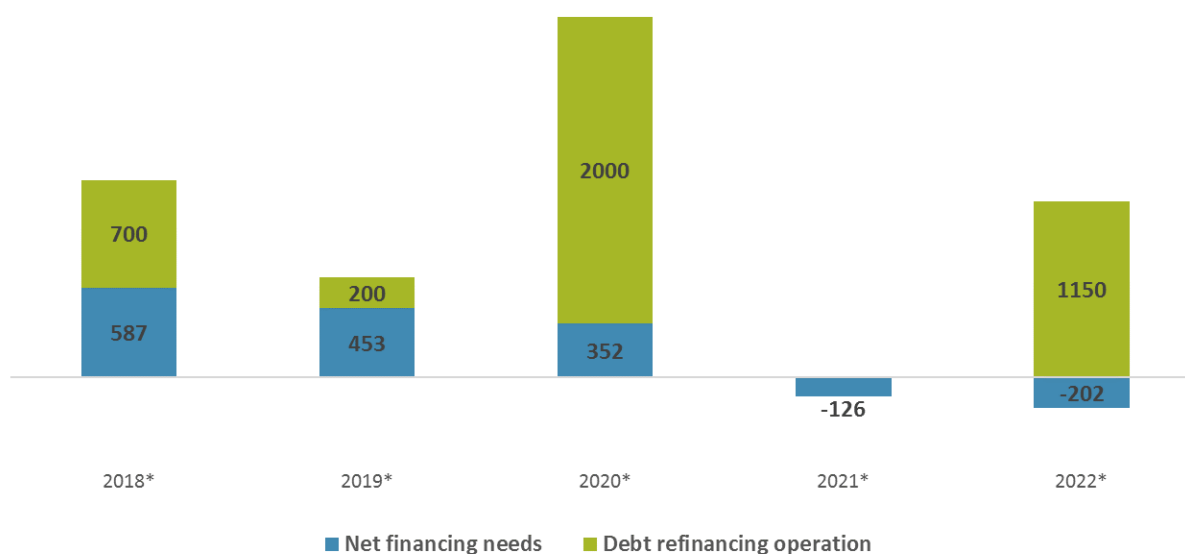
²²The break of total funding requirements would be as follows: € 1,287 million in 2018 (of which € 700 million to repay loans falling due), € 653 million in 2019 (of which € 200 million to repay the Sukuk), € 2,352 million in 2020 (of which € 2,000 million to pay off a bond issue), no financing requirements in 2021 and € 948 million in 2022 (to repay borrowings or loans falling due).

Chart 12:
Gross public debt



Source: Ministry of Finance, STATEC.

Chart 13:
Financing needs over the period 2018-2022



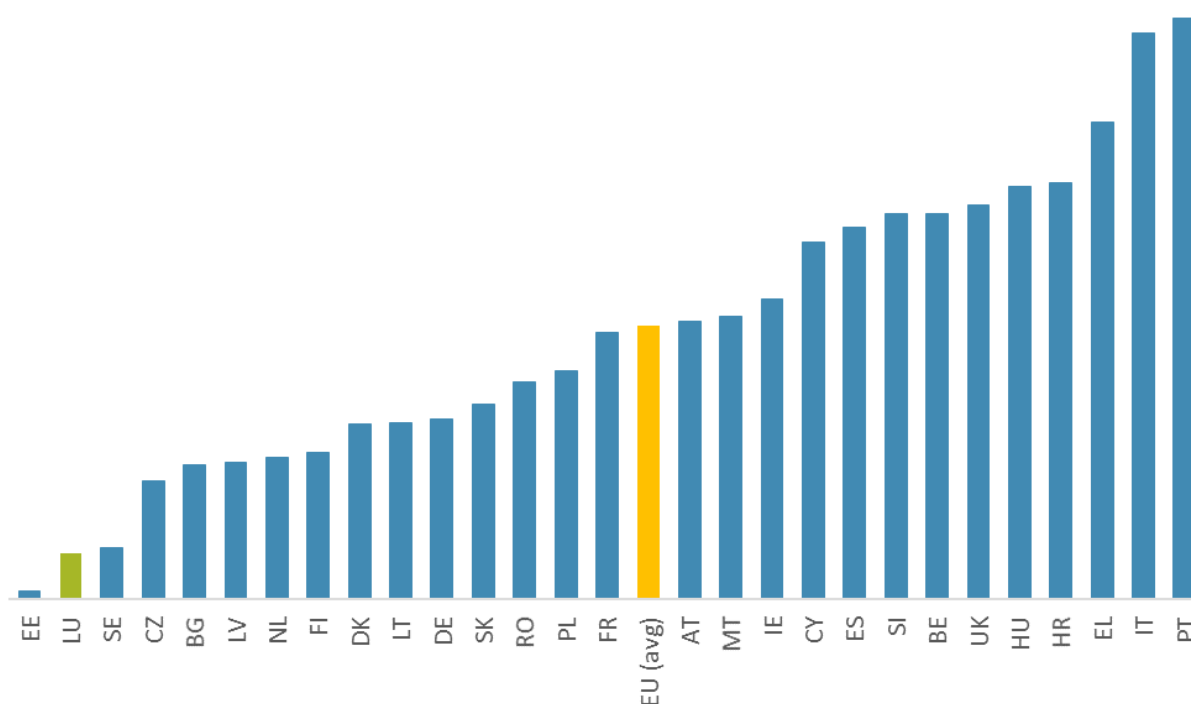
Source: Ministry of Finance.

Changes to the public debt and financing needs are explained by the mechanical addition of the central government's annual deficit to the stock of public debt, whereas recent experience has shown that deficits are often lower than forecasts.

After having increased by € 1.6 billion in 2017, public debt is assumed to increase slightly in absolute terms, while falling relative to GDP. As of 2018, the level of public debt relative to GDP should continue its downward trajectory to reach 18.8% of GDP by 2022, the lowest level since 2011. It is well below the 30% of GDP threshold set in the 2013 government program at all times.

Luxembourg holds an AAA credit rating with stable outlook with all major rating agencies, which allows it to refinance at relatively low interest rates, implying that the cost of servicing the public debt (i.e. the interest expense) remains relatively stable at around 0.3% of GDP or around € 180 million. This compares favourably on a European level, as only Estonia has a lower interest burden (see Chart 14).

Chart 14:
Interest burden in the EU (as % of GDP)



Source: STATEC, AMECO database.

Central government debt and, to a lesser extent, local government debt make up the main components of the public debt. This also includes the debt of public institutions as well as guarantees granted by the government under PPP (guarantee law) contracts and those granted as debts issued by the EFSF. According to a Eurostat decision, these must be recorded as loans in the general government accounts.

As the Social Security sub-sector remains largely in surplus, its surpluses are allocated to a reserve fund, the Compensation Fund, to provide funding for future pension benefits. This reserve reached a level of € 18.09 billion euros on 31 December 2017, or 32.7% of GDP. The general government debt ratio is therefore much lower than the pension reserve.

The Luxembourg State also holds stakes in commercial and non-commercial companies with an estimated value of around 10% of GDP and, since 2015, an intergenerational sovereign wealth fund (FSIL) has been set up to create savings for the future. The assets of the FSIL amounted to approximately € 240 million at the end of April 2018.

Luxembourg therefore holds financial assets totalling around 53% of GDP, which is more than double the level of its public debt.

III.6. Sensitivity analysis

This SGP update contains two sensitivity analyses. The first simulates two symmetrical shocks to euro area growth, a negative and a positive one, of 0.5 percentage point per year beginning in 2018. The second sensitivity analysis simulates an interest rate shock of an additional increase of 50 basis points per year from 2019 onwards²³.

a. Growth shock in the euro area

A shock applied to the euro area growth rate would be mainly reflected in three aggregates, namely the stock market index, investment and world trade.

The shocks are mostly felt through changes in the stock market index, whose relevance in STATEC's macroeconomic forecasts is typically important. At the beginning of the period, from 2018 to 2020, the shock would involve a less (or more) favourable change of 3 to 5 percentage points compared to the assumptions of the central scenario. However, towards the end of the projection period, the impact of the shock diminishes.

²³ This analysis was conducted in collaboration with STATEC. The analysis uses a number of additional assumptions to simplify the calculations and to best illustrate the impact of shocks on public finances.

Negative growth shock in the euro area

A negative shock scenario would result in a decrease in Luxembourg's real growth rate of around 0.7 percentage point on average over the period 2018-2022 compared to the base scenario. Real growth would therefore average 3.3% compared to 4.0% in the central scenario (see Table A).

Less dynamic economic growth in Luxembourg would also imply a less favourable expansion of employment. The growth rate of employment would thus suffer an estimated reduction of between 0.1 and 0.3 percentage points per year. As a result, the unemployment rate would rise to a higher level as from 2018 with a widening gap to the central scenario, reaching 5.7% at the end of the period, compared with 5.4% in the central scenario. It should be noted that even under this negative shock, the downward trend in the unemployment rate is expected to continue until 2021.

As for public finances, a negative shock on the euro area growth rate would imply a significant worsening in comparison with the central scenario. At the level of government revenue, the loss compared to the central scenario is estimated at around € 160 million in 2018 and is estimated at about € 1,526 million in 2022. As a result, the general government balance in 2018 would decrease by around € 121 million to reach 0.9% of GDP, compared to 1.1% in the central scenario. The effects on the government balance would accumulate over the 2018-2022 period, resulting in a loss of 1.2 percentage points of GDP, or € 914 million. Nevertheless, a significant tax surplus situation would continue for each year of the 2018-2022 period.

Despite the negative shock, public debt as a percentage of GDP would increase only to 23.6%. Even in a negative scenario, the government's target of 30% of GDP would thus continue to be met. The negative shock would, however, lead to a substantial increase in public debt of 4.8 percentage points of GDP compared to the central scenario, in which the public debt falls to 18.8% in 2022.

Positive growth shock in the euro area

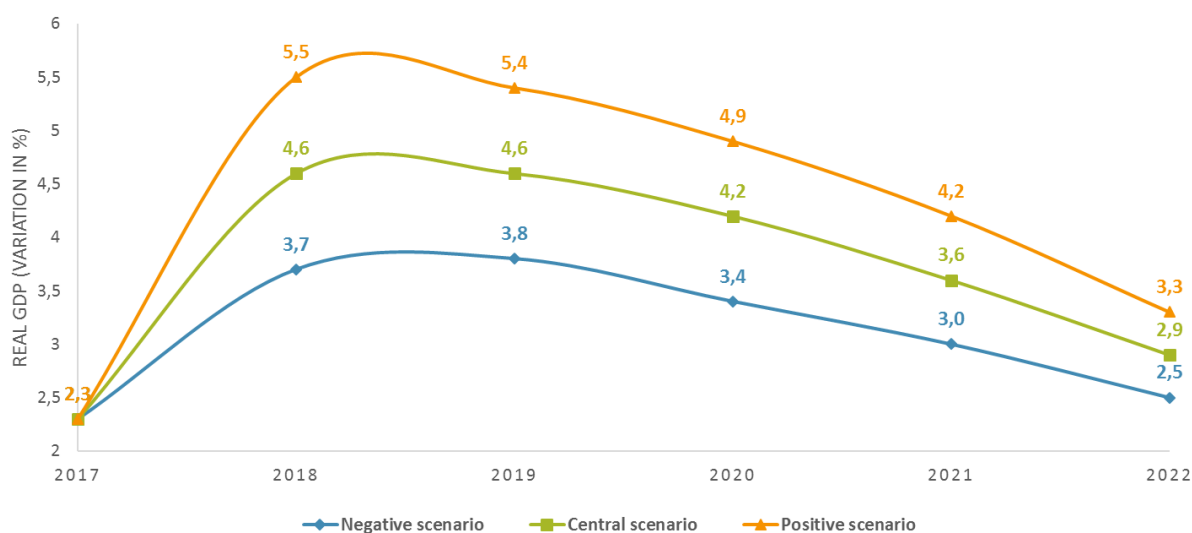
A positive shock of the same size on growth in the euro area has the opposite effect of the scenario presented in the previous section. Assuming a positive shock, Luxembourg would experience average growth of 4.7% over the next five years. This more pronounced growth is reflected by an increase in employment and, consequently, by an accelerated decline in the unemployment rate. Employment would grow by 3.4% on average compared to 3.2% in the central scenario. The unemployment rate even drops

below the threshold of 5.0% to reach 4.7% in 2021 before climbing to 5.0% at the end of the period. Stronger growth is accompanied by higher inflationary pressures, which translate into inflation rates above 2% as early as 2019.

In contrast to the situation described earlier, public finances would benefit from a positive shock to euro area growth. General government would be able to reap an average of € 800 million in additional revenue, which would improve the average balance by 0.7 percentage point over the baseline scenario. In 2022, the balance would even increase by € 914 million euros compared to the central scenario, resulting in a surplus of + 3.5% of GDP.

Due to a better performing economy and improving public finances, the debt ratio would decrease more rapidly than in the central scenario. It would reach a ratio of 14.5% of GDP in 2021, compared to 18.8% in the central scenario.

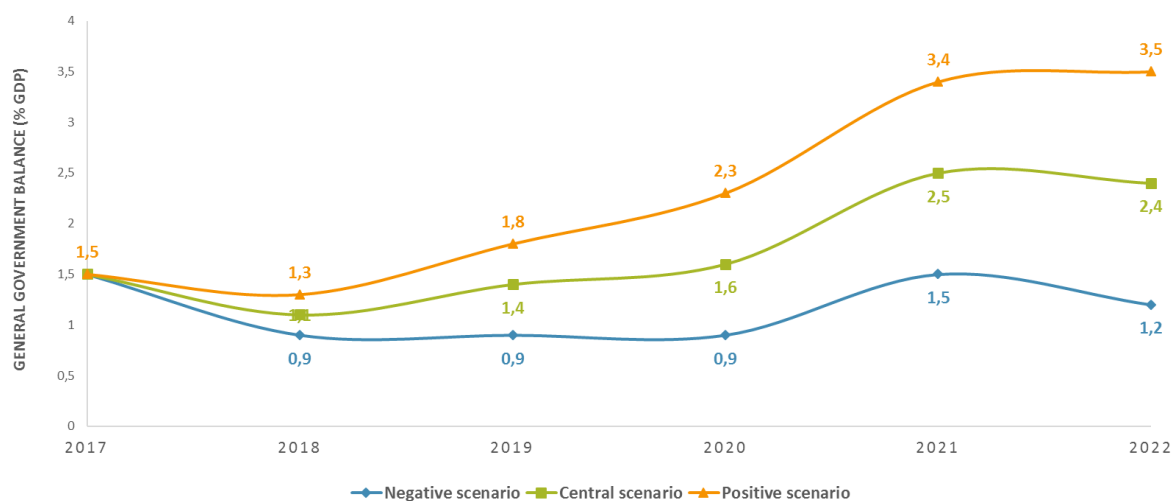
Chart 15:
Euro area growth shock – Real GDP in Luxembourg (year-on-year change in %)



Source: Ministry of Finance, STATEC.

Chart 16:

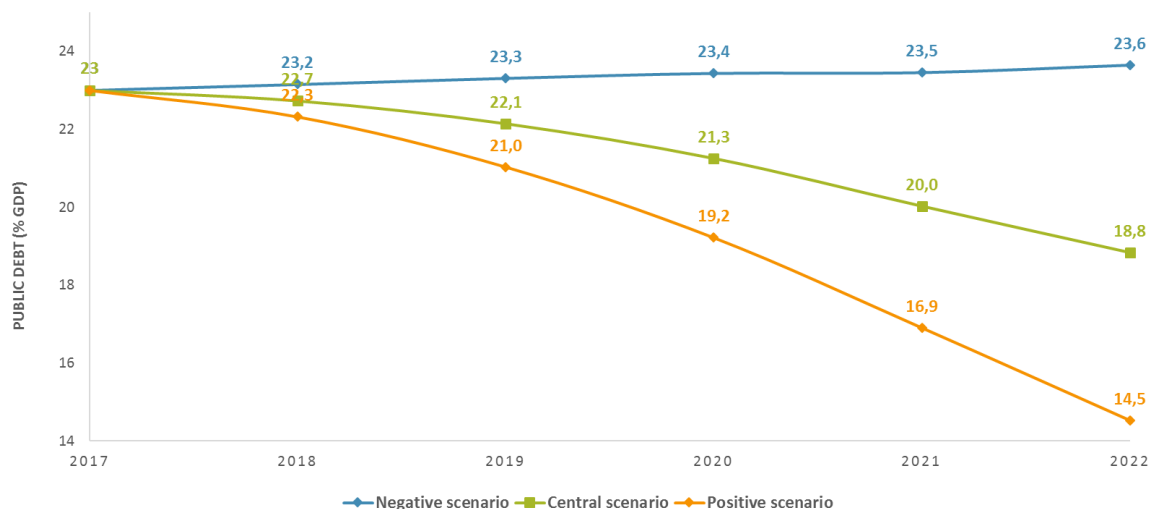
Euro area growth shock – Nominal general government balance (as a % of GDP)



Source: Ministry of Finance, STATEC.

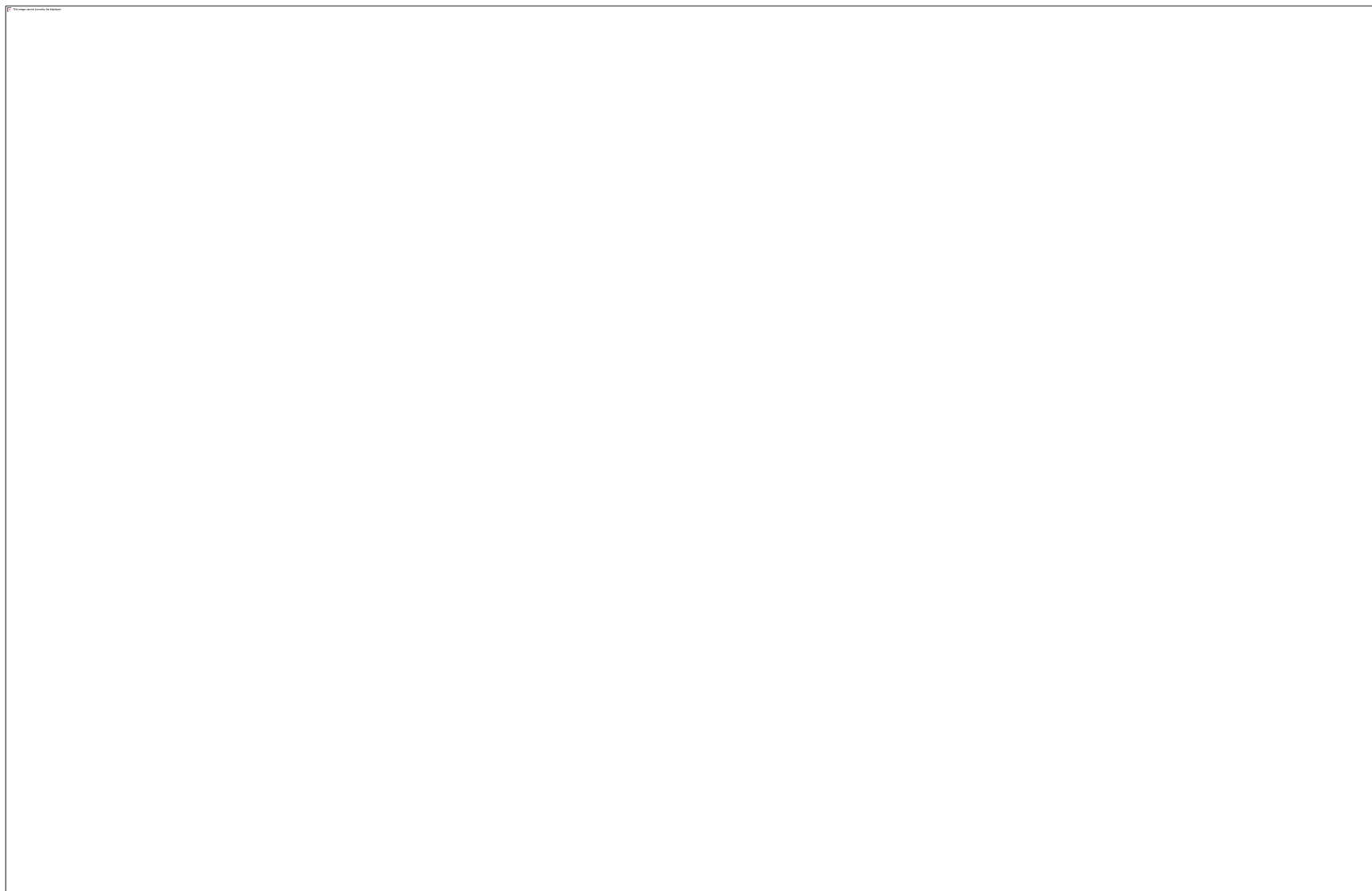
Chart 17:

Euro area growth shock – Gross public debt (as a % of GDP)



Source: Ministry of Finance, STATEC.

Table A: Sensitivity analysis 1 – Euro area growth shock (+/- 0.5 percentage point)



Source: Ministry of Finance, STATEC.

b. Shock to interest rates in the euro area

To illustrate the impact of another factor influencing financial markets, and hence economic growth in Luxembourg, a sensitivity analysis of a shock on short-term interest rates is also carried out (see Table B).

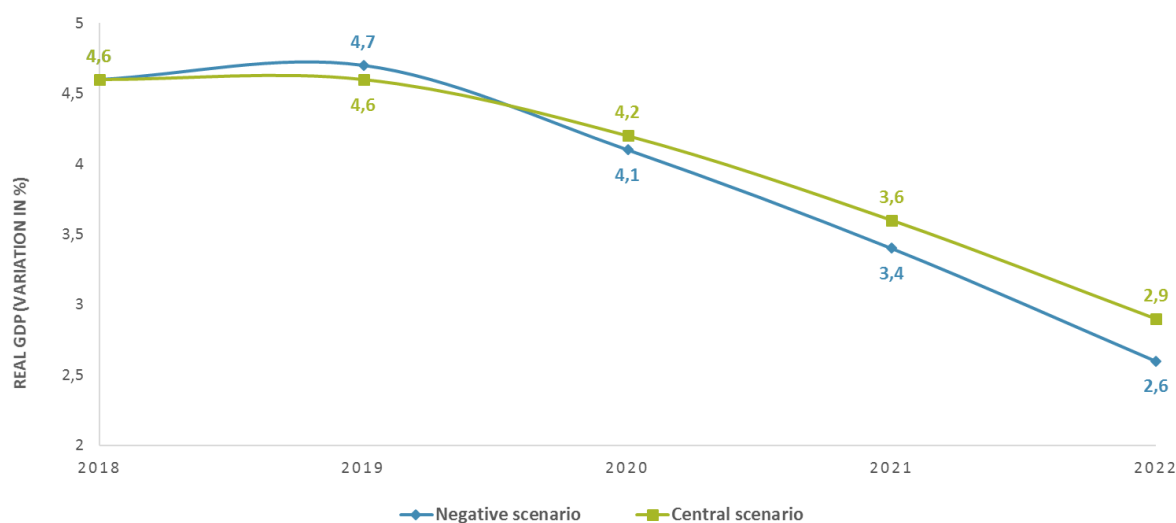
Short-term interest rates that increase annually by 100 basis points instead of 50 as in the central scenario would, according to the model, have a relatively low impact on Luxembourg's growth. Accordingly, a higher-than-expected interest rate hike will reduce Luxembourg GDP growth by 0.3 percentage points by 2022 compared to the central scenario.

The effects of such a shock on employment and unemployment would be negligible, while the faster rise in interest rates is also accompanied by slightly higher average inflation over the projection period (1.8% compared to 1.6%).

Public finances would only be marginally affected by a shock on interest rates, according to the model used in this simulation, which is reflected by an average improvement of the general government balance of € 32 million compared to the base scenario. The public debt follows this trend in the scenario and would therefore reduce further to 18.8% by 2022.

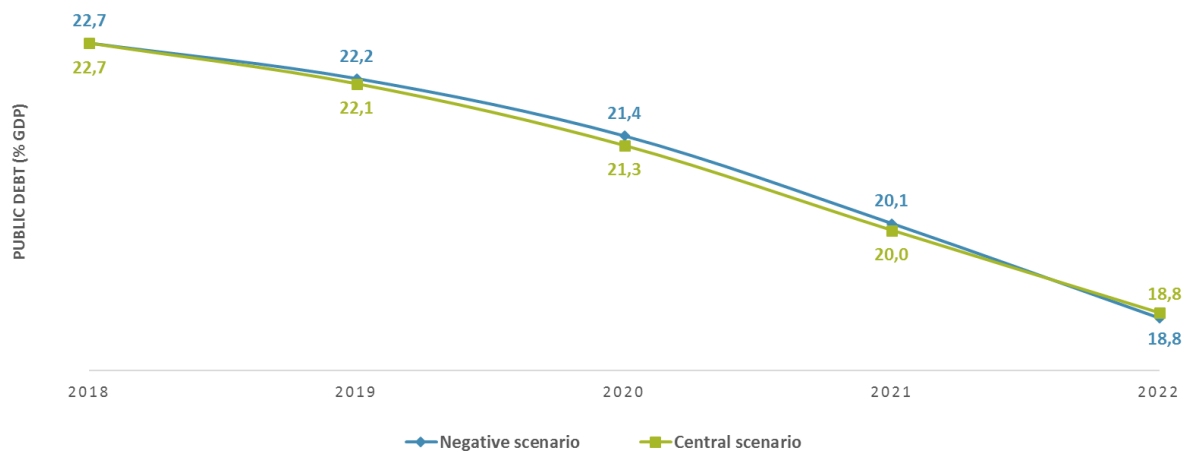
Chart 18:

Euro area interest rate shock – Real GDP in Luxembourg (year-on-year change in %)



Source: Ministry of Finance, STATEC.

Chart 19:
Euro area interest rate shock – Gross public debt (as % of GDP)



Source: Ministry of Finance, STATEC.

Table B: Sensitivity analysis 2 – Interest rate shock

	2019		2020		2021		2022	
	shock -	central	shock -	central	shock -	central	shock -	central
Main macroeconomic variables								
Short-term interest rates (%)	0.6	0.1	1.9	0.9	2.9	1.4	3.9	1.9
Long-term interest rates (%)		0.9		1.3		1.7		2.3
Real GDP (change in %)	4.7	4.6	4.1	4.2	3.4	3.6	2.6	2.9
Total domestic employment (% change)	3.4	3.4	3.2	3.2	3.0	3.1	2.5	2.6
Unemployment rate (%)	5.3	5.3	5.2	5.2	5.1	5.1	5.4	5.4
Stock market index Eurostoxx (% change)	14.1	13.2	5.7	4.4	3.6	2.4	2.3	1.4
Public finances								
General government								
Total public expenditure (in million euros)	26 257	26 244	27 664	27 605	28 614	28 474	30 039	29 780
Total revenues (in million euros)	27 100	27 086	28 716	28 660	30 339	30 170	31 874	31 515
General government balance (in million euros)	843	842	1 052	1 055	1 725	1 696	1 835	1 735
General government balance (as % of GDP)	1.3	1.4	1.6	1.6	2.4	2.5	2.3	2.4
Central government								
Central government balance (in million euros)	-452	-453	-355	-352	155	126	302	202
Central government balance (as % of GDP)	-0.7	0.7	-0.5	-0.5	0.2	0.2	0.4	0.3
Public debt								
Public debt (in million euros)	13748	13749	13904	13901	13749	13775	13447	13573
Public debt (as % of GDP)	22.2	22.1	21.4	21.3	20.1	20.0	18.8	18.8

Source: Ministry of Finance, STATEC.

III.7. Comparison with the previous Stability Programme update

The comparative analysis between the 18th and 19th update of the SGP can be summarised by two principal observations:

- 1) In the short term, macroeconomic conditions have been revised downwards, in contrast to the much-improved public finances.
- 2) In the medium term, over the period 2019-2021, macroeconomic conditions and public finances are both improving.

As to the short term (see also Chapter III.3):

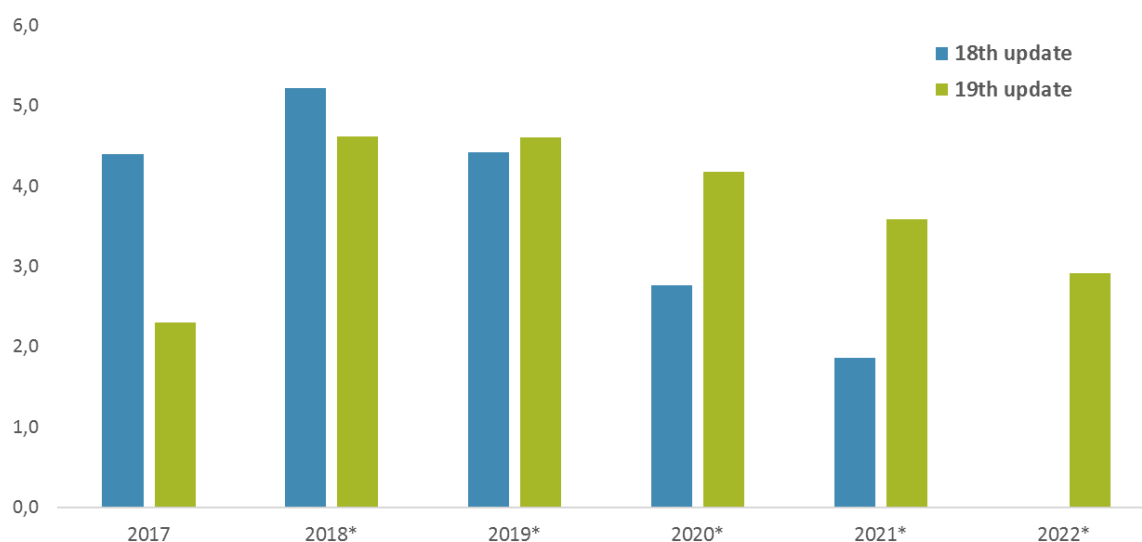
- For 2017, the general government balance is revised upwards considerably, from 0.2% of GDP to 1.5% of GDP. This revision is explained by a significant increase in tax revenue (partly due to a larger-than-expected collection of CIT revenue), by budgetary discipline resulting from the implementation of the Zukunftspak measures, as well as a certain delay in carrying out investment projects. The total revenue of the general government moves from € 23,853 million to € 24,460 million, while total expenditure are revised downwards, from € 23,733 million to € 23,602 million.
- As for 2018, the general government balance is also revised upwards, but to a lesser extent than for 2017 - to + 1.1% of GDP - due to the base effects resulting from the outperformance recorded in 2017. The smaller upgrade than for 2017 is especially due to the fact that the gain recorded in tax revenue is not fully modelled as a permanent gain.
- At the end of 2017, public debt stood at € 12.7 billion, or 23.0% of GDP, which is in line with the € 12.8 billion forecast in the 18th update. The same holds true for 2018 when public debt amounts to € 13.3 billion euros, or 22.7% of GDP, which is even lower than the € 13.8 billion forecast in the 18th update and may be explained by the downward revision of the central government deficit.

As to the medium term, from 2019-2021 (see also Chapter III.4):

- The general government balance will be significantly better than in the previous update of the SGP. The difference is +0.8 percentage point of GDP in 2019, +0.8 point in 2020 and +1.3 point in 2021, due to the improvement of the starting point (base effect) and following the improvement in macroeconomic conditions assumed in the baseline scenario.

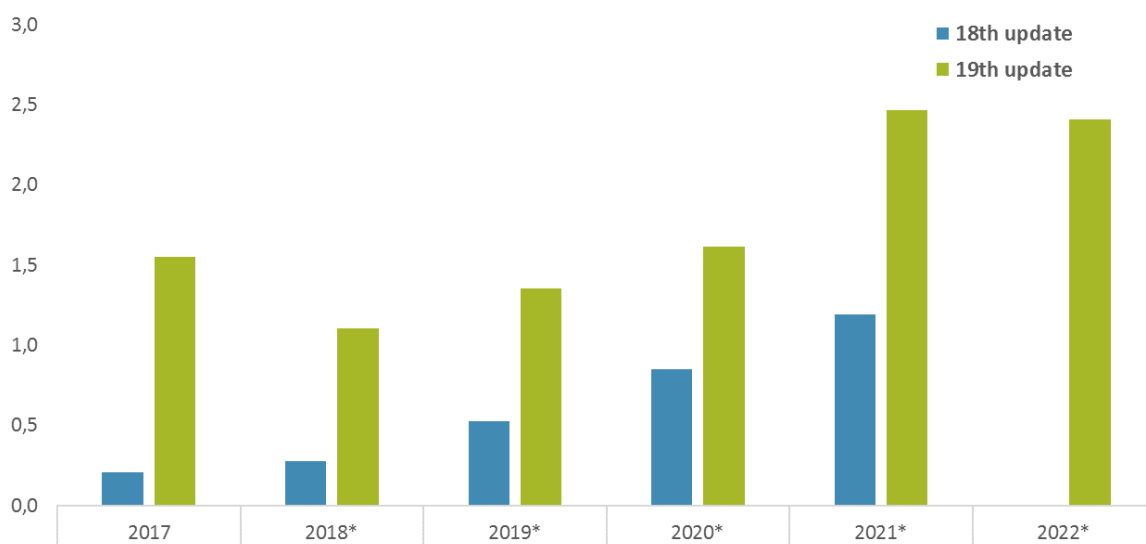
- In line with the improvement of the budgetary situation, the multiannual trajectory of public debt is much more favourable over the medium term. Public debt is now on a downward trajectory throughout the period under review and will, for the first time since 2011, fall below 20% of GDP in 2022.

Chart 20:
Real GDP growth (year-on-year change in %)



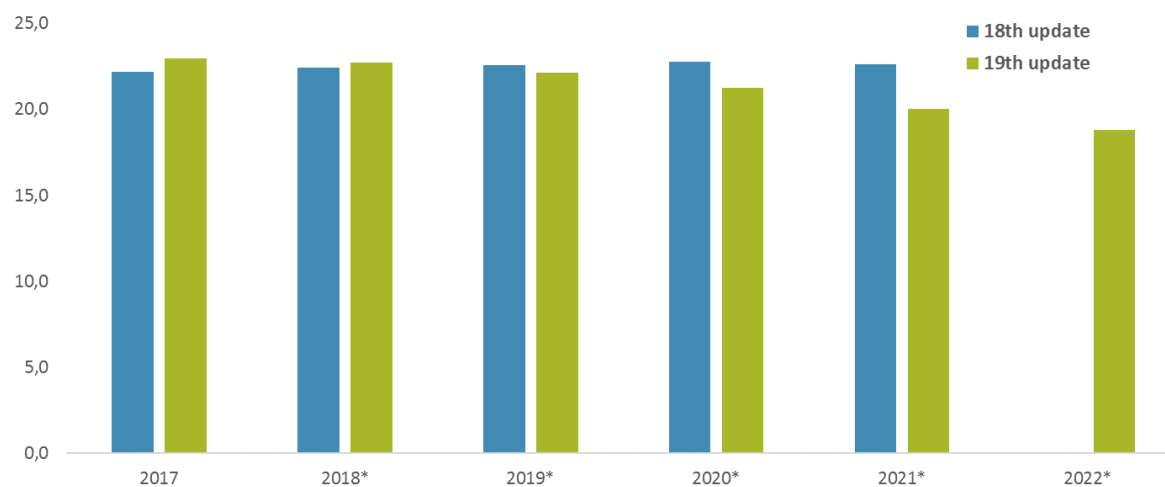
Source: 18th Update of the SGP, Ministry of Finance, STATEC.

Chart 21:
General government balance (year-on-year change in %)



Source: 18th Update of the SGP, Ministry of Finance, STATEC.

Chart 22:
Gross public debt (year-on-year change in %)



Source: 18th Update of the SGP, Ministry of Finance, STATEC.

IV. QUALITY OF PUBLIC FINANCES

Upon taking office, the Government committed itself to restoring a healthy fiscal position, through its two main budgetary objectives, namely compliance with the MTO and the durable stabilization of the public debt to below 30% of GDP. The measures pursued to this end are now bearing fruit, as the economic recovery has set in firmly and public finances are in good shape for the coming years.

However, the quality of public finances is measured not only in quantitative terms, but also in qualitative terms. In this sense, the Government has decided to complement its quantitative objectives by also emphasizing the quality of public finances. This determination can be illustrated both in terms of expenditure and revenue:

- On the expenditure side, public finances tend to prioritise measures conducive to economic and social development: an ambitious level of investment which has remained at record levels throughout the Government's term in order to prepare the infrastructure of the country for the challenges of the future; a considerable increase in financial resources made available for the supervision of children (implementation of multilingual education and free care for 20 hours per week); substantial expenditures on social inclusion, a better balance between work and home life, with parental leave now more flexible, and continued diversification of the country's economy.
- On the revenue side, the 2017 tax reform contained specific measures aimed at strengthening the country's competitiveness through the lowering of the CIT rate for businesses and increasing tax credits for investment, and making the tax system more equitable by adapting the tax brackets, adjusting tax credits and introducing optional individual taxation for married spouses.

The importance attached to the quality of public finances is also reflected in a comparison with the European average:

- The level of public expenditure in relation to GDP remains below the European average, despite a sharp increase following the financial and economic crisis in 2008: thus, the share of public expenditure with in relation to GDP amounted to 42.6%. % in 2017 compared to 47.2% in the euro area²⁴.

²⁴ AMECO database for the euro area average.

- The same observation applies to government revenue: in 2017, the share was 44.2% of GDP in Luxembourg compared to 46.1% of GDP on average in the euro area.

Regarding the medium-term trajectory of public finances, it should be noted that:

- the share of public expenditure in GDP is projected to decrease as from 2019 as a result of less pronounced growth in social benefits; the share of expenditure linked to intermediate consumption is expected to decrease from 3.6% in 2016 to 3.3% of GDP in 2022; the share of public investment in GDP remains high at around 4.0% of GDP; and, debt-related spending remains low, even slipping to 0.2% of GDP.
- regarding government revenue, their share in GDP declines only slightly from 44.2% in 2017 to 43.7% of GDP in 2022, despite the ambitious tax reform; in terms of composition, the share of direct taxes moves from 15.3% in 2018 to 16.0% of GDP in 2022, while the share of indirect taxes decreases slightly from 11.9% of GDP in 2018 to 11.4 % of GDP in 2022.

V. LONG-TERM SUSTAINABILITY OF PUBLIC FINANCES

The various social security systems are regularly analysed to ensure their strategic management and their long-term financial viability. It is in this spirit that the reform of the general pension scheme, which came into effect on 1 January 2013, stipulates that the General Social Security Inspectorate (IGSS) analyses the financial position of the scheme every five years. One of the purposes of the reform was to align the replacement rate with life expectancy, to provide for compensating mechanisms in the event of insufficient financial resources, and to close the gap between the statutory and effective retirement ages, through an active policy making it easier for older employees to remain employed.

Although an analysis of the overall scheme was to be carried out in 2017, the Government decided in its programme to make an initial assessment of the impact of the reform already in 2016. To this end, the Government created a "Pensions Working Group" composed of experts from different ministries and professional chambers, whose task is to check the compatibility of newly introduced provisions, especially those of the readjustment mechanism, during the legislative period and based on an actuarial opinion established by the IGSS. The actuarial report on the financial situation of the general pension scheme was presented on 2 December 2016 to the working group and to the press²⁵.

The balance sheet concludes that the general pension scheme is currently in a relatively comfortable financial position. The consecutive surpluses have resulted in the accumulation of a compensation reserve which at 31 December 2016, corresponded to 4.5 times the amount of annual benefits paid out, well above the required minimum level of 1.5 times the amount of annual benefits. Medium-term forecasts and long-term actuarial projections confirm that the current overall contribution rate of 24% makes it possible to comply with the conditions of Article 238 of the Social Security Code relating to minimum reserve levels up until the end of this coverage period from 2013 to 2022. The report also highlights the fact that while the impact of the 2012 pension insurance reform on the financial situation of the scheme are not yet highly visible, the actuarial projections confirm that the mechanisms introduced by the pensions reform will have a positive effect on the financial situation of the general scheme in the long term. However, the different scenarios analysed show that it is essential to ensure that the favourable development in the labour market continues. Obviously, high employment growth implies a steady influx of contributors into the system and thus produces an improvement in its financial situation. It is important, however, not to overly rely on the current high level of the compensation reserve. On the contrary, the analysis of demographic and financial

²⁵ <http://www.gouvernement.lu/6548714/02-bilan-assurance-pension>

projections implies that it is a question of taking advantage of the accumulated reserve in order to discuss effective mechanisms allowing upcoming generations to continue to have an efficient pension system.

The report of the working group is being finalised. It is expected that this report will include a summary of the IGSS's actuarial report, an update of the long-term projections contained therein as well as the findings that the working group has reached.

This SGP update takes into account the new projections for ageing costs that have been made in the framework of the Working Group "Ageing Working Group" of the Political Economy Committee at the ECOFIN Council, with a view to the forthcoming publication of the 2018 ageing report (Table 7). According to projections included in the 2015 edition of the Ageing Report, ageing costs were assumed to reach 25.8% of GDP in 2060. An update of these projections now shows a rate of 28.1% of GDP in 2060 (30.9% in 2070), which represents a relative increase of 2.4 percentage points, and mainly comes from pension spending, rising from 13.4% of GDP in 2060 to 16.0% of GDP in 2060.

This increase in spending as a percentage of GDP is the result of a revision of the demographic and macroeconomic assumptions. In fact, the lower dynamism of the new demographic trajectory drawn up by EUROSTAT (ESSPOP2015) leads to lower growth in employment in the medium and long term. This, combined with a more pronounced change in productivity before 2040, generates a higher level of GDP until 2040 (where the productivity impact overcompensates the employment impact), but a lower level between 2040 and 2060 (where the employment impact is dominant).

As a result, the upward revision of ageing costs, as a percentage of GDP by 2060, can be summed up as a numerator effect corresponding to the delayed impact of greater momentum of economic activity up until 2040 on pension pay-outs in 2060 and, to a lesser extent, a denominator effect corresponding to the downward revision of the level of GDP in 2060.

In addition to the reform of the pension scheme, the Government has shown its willingness to introduce additional incentives to delay the effective retirement age and allow for a more gradual transition to retirement. This can be illustrated by the measures listed below:

- **New mechanism for combating long-term unemployment:** In effect since July 2017, this system aims to support the creation of new jobs in the municipal, para-public or social sector that address

real needs. These jobs must be new, not jobs targeting temporary replacement of staff and, above all, not creating situations of unfair competition compared to the private sector. Specific measures are aimed at job seekers aged 50 and over.

- **Reform of the professional reclassification system:** in effect since January 1, 2016, the reform aims to speed up procedures, better protect the rights of people in external reclassification as well as to create the necessary conditions to favour internal reclassification. The idea is to support the efforts of companies to improve working conditions, by providing counselling experts, to favour internal reclassification, that is to say within companies, over external reclassification and especially to improve reclassified persons' reintegration into employment. According to the latest data available, the reform has had a positive effect on the number of people in reclassification who are unemployed, and who consequently registered with ADEM, the national employment agency. Thus, the number of jobseekers in reclassification decreased by 15% between January 2016 and January 2018, from 2,564 in January 2016 to 2,174 in January 2018. On the basis of the initial conclusions drawn from the implementation of the law, it is expected that certain points of it will be adjusted in close consultation with the social partners.
- **The professional placement programme²⁶ and the professional reinsertion contract²⁷** are two measures that have been introduced in 2016 and that are intended for jobseekers who are at least 45 years old, those in reclassification or those with the disabled worker status. The first measure is a placement lasting a maximum period of 6 weeks that offers jobseekers the opportunity to highlight their professional abilities within a company. The second measure provides the opportunity for jobseekers to improve their professional knowledge and skills within a company for a maximum of 12 months. These measures are intended for companies that can offer a real chance of subsequent hiring under permanent contracts.
- **The reform of the early retirement schemes²⁸** (including the solidarity, progressive and early retirement systems of shift and night workers, excluding adjustments), in effect since 11 December 2017, aims to target more specifically employees with difficult jobs, consequently placing greater emphasis on the working conditions of employees, while favouring the retention

²⁶ For more information, see: <http://www.adem.public.lu/fr/demandeurs-demploi/beneficier-mesures-aides/mesures-emploi/stage-professionnalisation/index.html>

²⁷ For more information, see: <http://www.adem.public.lu/fr/demandeurs-demploi/beneficier-mesures-aides/mesures-emploi/Contrat-reinsertion-emploi/index.html>

²⁸ Law dated 30 November 2017 <http://legilux.public.lu/eli/etat/leg/loi/2017/11/30/a1032/jo>

of older workers in companies. More specifically, the law abolishes the early retirement-solidarity scheme and adapts the other early retirement schemes.

- **Lifelong learning:** In order to support and improve lifelong learning (LLL), a key factor for the retention of employed workers, especially older ones, the Government will continue to progressively implement the measures of the White Paper on national strategy for lifelong learning²⁹. The strategy is comprised of eight measures, including the adaptation of the LLL system to the life cycle of the learner and to the diversity of the Luxembourg society, and the quality development in adult education.
- **The reform of long-term care scheme:** Long-term care is one of the fundamental pillars of the Luxembourg social security system. Long-term care was instituted by the law dated 19 June 1998 as the fifth pillar of Social Security and its purpose is *"to bear the cost of services in kind of assistance and care for dependent persons provided (...) within the home or in a nursing care establishment as well as technical support and alterations in the home."* Today, the long-term care scheme supports more than 13,500 people and the challenge was to modernize it to meet the challenges of a constantly changing population and to continue to guarantee equitable access to quality services³⁰. The main objectives of the reform³¹, which came into effect on January 1, 2018, consist of a better individualisation of the offer of quality services that meet the daily needs of each person, a reinforcement of quality through clear standards and criteria with adequate checks, a simplification of procedures and a consolidation of the system in the light of societal change and compliance with the fundamental principles of the 1998 Basic Law. In addition, the law provides for the establishment of tools to better monitor the entire system of long-term care, also allowing better anticipation of future changes. Thus, the system is better prepared to continue to ensure access to quality care in the future while ensuring financial balance.

²⁹ For more information, see: <http://www.men.public.lu/catalogue-publications/adultes/informations-generales-offre-cours/livre-blanc-lifelong-learning/131025-s3l-livreblanc.pdf>

³⁰ Presentation of the key elements of the reform: http://www.mss.public.lu/actualites/2016/07/art_ass_dep/index.html

³¹ Law dated 12 July 2017

VI. FISCAL GOVERNANCE FRAMEWORK AND INSTITUTIONAL ASPECTS

As a result of the reforms approved in the wake of the economic and financial crisis, Luxembourg's budgetary framework has been modernised and its institutional aspects have been strengthened.

Law dated 12 July 2014

With the entry into force of the law of 12 July 2014 on the coordination and governance of public finances³², the legal framework governing the institutional aspects of public finances has undergone an important evolution, having been adapted to the new European requirements. The aforementioned law has thus transposed the provisions of the Treaty on Stability, Coordination and Governance (TSCG)³³, the Six Pack³⁴ and the Two-Pack regulations into national law³⁵.

The main new elements introduced by the law of July 12, 2014 were the following:

- the transposition into national law of a rule stipulating that the general government's budgetary situation must be balanced or show a surplus;
- the setting of a medium-term objective (MTO) as well as a corresponding adjustment path;
- a budget rule on central government expenditure;
- a medium-term budgetary framework including 4-year programming;
- a correction mechanism triggered in case of significant deviation;
- a special procedure in case the annual budget of the State cannot be adopted;
- provisions to promote the transparency of public finances³⁶; and
- the establishment of the "National Council of Public Finance" (CNFP) as an independent body responsible for monitoring public finances.

The 2018 budget law³⁷ made additional adaptations to the above-mentioned law, incorporating the following aspects:

³² Text of the law: <http://www.legilux.public.lu/leg/a/archives/2014/0122/a122.pdf#page=2>.

³³ Text as approved by the law dated 29 March 2013: <http://data.legilux.public.lu/eli/etat/leg/div/2013/04/26/n1/jo>

³⁴ The "Six Pack" regulations consist of the following texts: Directive 2011/85 / EU, Regulation 1173/2011, Regulation 1174/2011, Regulation 1175/2011, Regulation 1176/2011 & Regulation 1177/2011.

³⁵ The "Two pack" regulations consist of the following texts: regulation 472/2013 and regulation 473/2013.

³⁶ With particular focus on tax expenditures, implicit commitments (guarantees, etc.), and equity investments in private and public companies.

³⁷ The law dated 15 December 2017 on the budget of the receipts and the expenditure of the State for 2018 <http://data.legilux.public.lu/eli/etat/leg/loi/2017/12/15/a1097/jo>.

- the obligation to present a comparative analysis between the economic forecasts of different organizations and explanations of any significant differences as part of the budget documentation;
- details on the assessment of the economic projections to be carried out by CNFP and STATEC's obligation to take all necessary measures in the event of significant distortion discovered by CNFP; and
- additional reporting requirements of ministerial departments to improve the preparation of monthly figures and multi-year forecasts.

Involvement of the country's stakeholders in the European Semester

Since 2016, the Government regularly and systematically involves stakeholders in the annual coordination cycle of the European Semester. The basis for this Government initiative is the desire to improve consultation with Parliament and the social partners, and thus to further strengthen the governance of public finances in Luxembourg.

For example, a social dialogue meeting between the social partners and the Government was organized under the auspices of the Economic and Social Council (ESC) on 28 March 2018 to discuss the government's priorities for preparing the SGP and NRP.

Parliament's involvement was ensured by the presentation and debates on the NRP and the SGP in Parliament, before their submission to the European Commission, at the occasion of the State of the Nation speech during the week of 23 April 2018.

Establishment of the National Economic and Financial Committee

As planned in the 2013 government programme, the former "Planning Committee", comprising the main public participants involved in the preparation of economic and budgetary forecasts, was institutionalized in 2017 under the title of "National Economic and Financial Committee" following the publication of the corresponding legal act³⁸.

³⁸ Text of the Grand-Ducal Regulation of 9 October 2017 establishing a National Economics and Finance Committee: <http://legilux.public.lu/eli/etat/leg/rgd/2017/10/09/a881/jo>.

Under the authority of the Ministers of Economy and Finance, the National Economic and Financial Committee (CEFN) is called upon to coordinate the work enabling the Government to meet its obligations under the European economic and fiscal governance.

The main tasks entrusted to the CEFN are as follows:

- coordinating the work on the development of the SGP, the NRP and the draft budgetary plan;
- coordinating the preparation of no-policy-change forecasts based on macroeconomic forecasts prepared by STATEC;
- facilitating the exchange of data and information between the competent national authorities; and
- at the request of the Government, developing analyses of the potential impact of measures having a substantial repercussion on public finances or the economic situation.

Other initiatives

Other initiatives to improve the institutional aspects of public finances have been or are currently being prepared, namely:

- In October 2017, the Ministry of Finance concluded an agreement with the National Council of Public Finance (CNFP)³⁹. Its purpose is to provide an appropriate framework for the transmission of data so that the CNFP can carry out its work. The agreement also provides for a more formalised framework of the "comply or explain" procedure. Under this procedure, CNFP agrees to distinguish between main recommendations and subsidiary recommendations, while the Ministry of Finance commits to respond in writing within two months.
- As regards data transparency, since 2015 the Government has published monthly data on changes in public finances for central government and Social Security⁴⁰. Additional efforts have been made in recent months to incorporate quarterly data for local government as well as to shorten timeframes for data collection and publication.
- In a similar vein, technical work has been launched to develop initial paths for reconciling the budget figures prepared by Luxembourg accounting standards (in accordance with the law dated 8 June 1999 on Budget, Accounting and Treasury of the State⁴¹) to the figures presented

³⁹ Text of the agreement: http://www.mf.public.lu/publications/divers/cnfp_241017.pdf.

⁴⁰ Link: <http://www.budget.public.lu/lu/budget2016/evaluation-mensuelle/index.html> (data for the municipal administration are being prepared).

⁴¹ Text of the law: <http://data.legilux.public.lu/eli/etat/leg/loi/1999/06/08/n2/jo>

in accordance with the European System of Accounts (SEC2010). Following an initial exchange of views with members of Parliament in March 2018, this technical work will continue in the coming months in order to present specific solutions for the upcoming budget.

- Following the efforts devoted to the study and analysis of the European methodology to be used to establish the structural balance, Luxembourg has succeeded in integrating a first national specificity into the European Commission's harmonized model. In part, this adaptation responds to the particularities of the Luxembourg economy, as it better takes into account the large number of cross-border commuters in the Luxembourg labour market and models these flows in the work component of the formula for calculating potential GDP. This change was agreed to by the European Commission and the Member States in February 2018 and is a follow-on of an in-depth analysis presented by Luxembourg in the relevant European fora. In this context, it should be recalled that the structural balance is not observable but must be estimated on the basis of the "nominal" (observed / measured) budgetary balance and of the output gap, which cannot be directly observed. Thus, the transition from the nominal balance to the structural balance is also dependent on the methodology used to calculate potential GDP and the output gap (see the Methodological Insert in Chapter III.4).
- In line with the 2013 government program, the Government also intends to pursue gradual reforms to the budget preparation and implementation process, drawing on the recommendations of the 2011 OECD report⁴² and best practices observed on the international level.

⁴² Working Party of Senior Budget Officials: Budgeting in Luxembourg, Analysis and recommendations, OECD, 2011.

STATISTICAL APPENDIX

Table 1a. Macroeconomic prospects

	ESA Code	Year 2017	Year 2017	Year 2018	Year 2019	Year 2020	Year 2021	Year 2022
		Level	rate of change	rate of change	rate of change	rate of change	rate of change	rate of change
1. Real GDP	B1*g	48 821	2,3	4,6	4,6	4,2	3,6	2,9
2. Nominal GDP	B1*g	55 378	4,5	5,6	6,1	5,3	5,2	4,8
Components of real GDP								
3. Private consumption expenditure	P.3	15 307	2,7	3,5	3,8	3,4	3,0	3,0
4. Government consumption expenditure	P.3	8 056	1,8	2,1	2,3	2,7	2,7	3,1
5. Gross fixed capital formation	P.51	8 490	1,9	10,9	9,7	6,7	3,8	2,7
6. Changes in inventories and net acquisition of valuables (% of GDP)	P.52 + P.53		0,3	0,0	0,4	0,5	0,5	0,6
7. Exports of goods and services	P.6	102 585	3,9	8,6	8,3	7,9	7,1	6,5
8. Imports of goods and services	P.7	85 927	3,9	9,5	9,1	8,4	7,4	7,1
Contributions to real GDP growth								
9. Final domestic demand		-	1,4	3,4	3,5	2,8	2,1	2,0
10. Changes in inventories and net acquisition of valuables	P.52 + P.53	-	-0,6	0,0	0,0	0,0	0,0	0,0
11. External balance of goods and services	B.11	-	1,4	1,2	1,2	1,3	1,5	1,0

Table 1b. Price developments

	ESA Code	Year 2017	Year 2017	Year 2018	Year 2019	Year 2020	Year 2021	Year 2022
		Level	rate of change	rate of change	rate of change	rate of change	rate of change	rate of change
1. GDP deflator		1,13	2,1	1,0	1,5	1,1	1,5	1,8
2. Private consumption deflator		1,09	1,6	1,4	1,7	1,7	1,7	1,6
3a. HICP		102,15	1,7	1,5	1,7	1,8	1,7	1,7
3b. NICP		102,03	1,7	1,4	1,8	1,9	1,8	1,8
4. Public consumption deflator		1,13	1,1	1,4	1,6	2,0	1,9	1,8
5. Investment deflator		1,11	1,6	1,2	1,0	1,0	1,1	1,3
6. Export price deflator (goods and services)		1,24	4,5	1,9	2,9	1,3	1,7	1,9
7. Import price deflator (goods and services)		1,25	4,7	2,5	3,3	1,5	1,7	1,9

Table 1c. Labour market developments

	ESA Code	Year 2017	Year 2017	Year 2018	Year 2019	Year 2020	Year 2021	Year 2022
		Level	rate of change	rate of change	rate of change	rate of change	rate of change	rate of change
1. Employment, persons ¹		432,4	3,3	3,5	3,4	3,2	3,1	2,6
2. Employment, hours worked ² (in thousands of hours worked)		656,3	3,2	3,1	3,0	2,8	2,7	2,2
3a. Unemployment rate (%) (harmonized definition Eurostat)		-	5,9	5,5	5,3	5,2	5,0	5,3
3b. Unemployment rate (%) (ADEM definition)		-	5,9	5,6	5,3	5,2	5,1	5,4
4. Labour productivity, persons ³		-	-1,0	0,9	0,9	0,7	0,2	-0,1
5. Labour productivity, hours worked ⁴		-	-0,9	1,3	1,3	1,1	0,6	0,3
6. Compensation of employees (in billion of euros)	D.1	27,7	6,5	5,4	6,3	6,3	5,4	4,9
7. Compensation per employee (in thousand of euros)		68,2	2,9	1,6	2,6	2,8	2,0	2,1

¹Occupied population, domestic concept national accounts definition.²National accounts definition.³Real GDP per person employed.⁴Real GDP per hour worked.

Table 1d. Sectoral balances

% of GDP	ESA Code	Year 2017	Year 2017	Year 2017	Year 2017	Year 2017	Year 2017
1. Net lending/borrowing vis-à-vis the rest of the world	B.9	-	-	-	-	-	-
2. Net lending/borrowing of the private sector	B.9						
3. Net lending/borrowing of general government	EDP B.9	1,5	1,1	1,4	1,6	2,5	2,4
4. Statistical discrepancy		-	-	-	-	-	-

Table 2a. General government budgetary prospects

	ESA Code	Year 2017	Year 2017	Year 2018	Year 2019	Year 2020	Year 2021	Year 2022
		Level	% of GDP	% of GDP	% of GDP	% of GDP	% of GDP	% of GDP
Net lending (EDP B.9) by sub-sector								
1. General government	S.13	858	1,5	1,1	1,4	1,6	2,5	2,4
2. Central government	S.1311	-220	-0,4	-1,0	-0,7	-0,5	0,2	0,3
3. State government	S.1312	...	...	...	...	...	...	...
4. Local government	S.1313	81	0,1	0,3	0,4	0,4	0,5	0,4
5. Social security funds	S.1314	996	1,8	1,8	1,7	1,8	1,8	1,7
General government (S13)								
6. Total revenue	TR	24 460	44,2	43,9	43,6	43,8	43,9	43,7
7. Total expenditure	TE ¹	23 602	42,6	42,8	42,3	42,2	41,4	41,3
8. Net lending/borrowing	EDP B.9	858	1,5	1,1	1,4	1,6	2,5	2,4
9. Interest expenditure	EDP D.41	180	0,3	0,3	0,3	0,3	0,2	0,2
10. Primary balance ²		1 038	1,9	1,4	1,6	1,9	2,7	2,6
11. One-off and other temporary measures ³		...	...	...	...	...	...	...
Selected components of revenue								
12. Total taxes (12=12a+12b+12c)		15 171	27,4	27,3	27,1	27,3	27,4	27,4
12a. Taxes on production and imports	D.2	6 569	11,9	11,9	11,7	11,7	11,5	11,4
12b. Current taxes on income, wealth, etc	D.5	8 542	15,4	15,3	15,3	15,5	15,8	16,0
12c. Capital taxes	D.91	60	0,1	0,1	0,1	0,1	0,1	0,1
13. Social contributions	D.61	6 916	12,5	12,4	12,4	12,5	12,5	12,5
14. Property income	D.4	730	1,3	1,3	1,3	1,3	1,2	1,2
15. Other ⁴		1 642	3,0	2,9	2,9	2,8	2,8	2,6
16=6. Total revenue	TR	24 460	44,2	43,9	43,6	43,8	43,9	43,7
p.m.: Tax burden (D.2+D.5+D.61+D.91-D.995) ⁵		22 087	39,9	39,7	39,5	39,8	39,9	39,9
Selected components of expenditure								
17. Compensation of employees + intermediate consumption	D.1+P.2	6 996	12,6	12,6	12,5	12,3	12,3	12,2
17a. Compensation of employees	D.1	5 014	9,1	9,0	8,9	8,9	8,9	8,9
17b. Intermediate consumption	P.2	1 982	3,6	3,6	3,5	3,4	3,4	3,3
18. Social payments (18=18a+18b)		11 158	20,1	20,1	19,7	19,7	19,6	19,5
of which Unemployment benefits ⁶		473	0,9	0,8	0,7	0,7	0,6	0,6
18a. Social transfers in kind supplied via market producers	D.6311, D.63121, D.63131	2 553	4,6	4,7	4,6	4,6	4,6	4,6
18b. Social transfers other than in kind	D.62	8 605	15,5	15,3	15,1	15,0	15,0	14,9
19=9. Interest expenditure	EDP D.41	180	0,3	0,3	0,3	0,3	0,2	0,2
20. Subsidies	D.3	742	1,3	1,4	1,3	1,3	1,2	1,2
21. Gross fixed capital formation	P.51	2 241	4,0	4,1	4,0	4,1	3,7	3,8
22. Capital transfers	D.9	462	0,8	1,0	1,2	1,3	1,3	1,4
23. Other ⁷		1 823	3,3	3,4	3,3	3,2	3,1	3,1
24=7. Total expenditure	TE ¹	23 602	42,6	42,8	42,3	42,2	41,4	41,3

¹ Adjusted for the net flow of swap-related flows, so that TR-TE=EDP B.9.² The primary balance is calculated as (EDP B.9, item 8) plus (EDP D.41, item 9).³ A plus sign means deficit-reducing one-off measures.⁴ P.11+P.12+P.131+D.39+D.7+D.9 (other than D.91).⁵ Including those collected by the EU and including an adjustment for uncollected taxes and social contributions (D.995), if appropriate.⁶ Includes cash benefits (D.621 and D.624) and in kind benefits (D.631) related to unemployment benefits.⁷ D.29+D4 (other than D.41) + D.5+D.7+P.52+P.53+K.2+D.8.

Table 2b. No-policy change projections

		Year 2017	Year 2017	Year 2018	Year 2019	Year 2020	Year 2021	Year 2022
		Level	% of GDP	% of GDP	% of GDP	% of GDP	% of GDP	% of GDP
1. Total revenue at unchanged policies		24 460	44,2	43,9	43,6	43,8	43,9	43,7
2. Total expenditure at unchanged policies		23 602	42,6	42,8	42,3	42,2	41,4	41,3
3. General government balance at unchanged policies		858	1,5	1,1	1,4	1,6	2,5	2,4
3.a. Central government balance at unchanged policies		-220	-0,4	-1,0	-0,7	-0,5	0,2	0,3
3.b. Local government balance at unchanged policies		81	0,1	0,3	0,4	0,4	0,5	0,4
3.c. Social government balance at unchanged policies		996	1,8	1,8	1,7	1,8	1,8	1,7

Tableau 2c. Amounts to be excluded from the expenditure benchmark

		Year 2017	Year 2017	Year 2018	Year 2019	Year 2020	Year 2021	Year 2022
		Level	% of GDP	% of GDP	% of GDP	% of GDP	% of GDP	% of GDP
1. Expenditure on EU programmes fully matched by EU funds revenue		90	0,2	0,2	0,2	0,2	0,2	0,2
2. Unemployment benefit expenditure ¹		473	0,9	0,8	0,7	0,7	0,6	0,6
3. Effect of discretionary revenue measures		-373	-0,7	-0,2	0,0	0,0	0,0	0,0
4. Revenue increases mandated by law		...	...	...	...	...	...	...

¹ Absolute level of unemployment expenditure, based on COFOG 10.50

Table 3. General government expenditure by function

% of GDP	COFOG Code	Year 2017	Year 2017
		% of GDP	% of total
1. General public services	1	4,6	10,7
2. Defence	2	0,5	1,1
3. Public order and safety	3	1,1	2,5
4. Economic affairs	4	5,5	13,0
5. Environmental protection	5	1,1	2,5
6. Housing and community amenities	6	0,5	1,1
7. Health	7	4,9	11,4
8. Recreation, culture and religion	8	1,3	3,0
9. Education	9	5,0	11,7
10. Social protection	10	18,3	43,0
11. Total expenditure	TE	42,6	100,0

Table 4. General government debt developments

% of GDP	ESA Code	Year 2017	Year 2018	Year 2019	Year 2020	Year 2021	Year 2022
1. Gross debt ¹		23,0	22,7	22,1	21,3	20,0	18,8
2. Change in gross debt ratio		2,2	-0,2	-0,6	-0,9	-1,2	-1,2
Contributions to changes in gross debt							
3. Primary balance ² (General government)		1,9	1,4	1,6	1,9	2,7	2,6
3.b. Primary balance (Central government)		-0,1	-0,7	-0,5	-0,3	0,4	0,5
4. Interest expenditure ³		0,3	0,3	0,3	0,3	0,2	0,2
5. Stock-flow adjustment		1,8	-1,2	-1,3	-1,4	-1,0	-0,9
p.m.: Implicit interest rate on debt ⁴		1,6	1,5	1,2	1,3	1,0	1,1

¹ As defined in Regulation 3605/93 (not an ESA concept).² Cf. item 10 in Table 2.³ Cf. item 9 in Table 2.⁴ Proxied by interest expenditure divided by the debt level of the previous year.

Table 5. Cyclical developments

% of GDP	ESA Code	Year 2017	Year 2018	Year 2019	Year 2020	Year 2021	Year 2022
1. Real GDP growth (%)		2,3	4,6	4,6	4,2	3,6	2,9
2. Net lending of general government	EDP B.9	1,5	1,1	1,4	1,6	2,5	2,4
3. Interest expenditure	EDP D.41	0,3	0,3	0,3	0,3	0,2	0,2
4. One-off and other temporary measures¹			...	...	...	...	...
5. Potential GDP growth (%)		2,9	3,4	3,5	3,6	3,6	3,5
6. Output gap		-1,4	-0,2	0,9	1,0	0,5	0,0
7. Cyclical budgetary component		-0,6	-0,1	0,4	0,4	0,2	0,0
8. Cyclically-adjusted balance (2 - 7)		2,2	1,2	1,0	1,2	2,2	2,4
9. Cyclically-adjusted primary balance (8 + 3)		2,5	1,5	1,2	1,4	2,5	2,6
10. Structural balance (8 - 4)		2,2	1,2	1,0	1,2	2,2	2,4

¹A plus sign means deficit-reducing one-off measures.

Table 6. Divergence from previous update

	ESA Code	Year 2017	Year 2018	Year 2019	Year 2020	Year 2021	Year 2022
Real GDP growth (%)							
Previous update		4,4	5,2	4,4	2,8	1,9	...
Current update		2,3	4,6	4,6	4,2	3,6	2,9
Difference		-2,1	-0,6	0,2	1,4	1,7	...
Nominal GDP growth (%)							
Previous update		6,6	7,1	5,6	3,7	3,5	...
Current update		4,5	5,6	6,1	5,3	5,2	4,8
Difference		-2,1	-1,4	0,5	1,7	1,7	...
General government net lending (% of GDP)	EDP B.9						
Previous update		0,2	0,3	0,5	0,9	1,2	...
Current update		1,5	1,1	1,4	1,6	2,5	2,4
Difference		1,3	0,8	0,8	0,8	1,3	...
Structural balance (% of GDP)							
Previous update		0,4	-0,1	-0,1	0,6	1,6	...
Current update		2,2	1,2	1,0	1,2	2,2	2,4
Difference		1,8	1,3	1,1	0,6	0,7	...
General government gross debt (% of GDP)							
Previous update		22,2	22,4	22,6	22,8	22,6	...
Current update		23,0	22,7	22,1	21,3	20,0	18,8
Difference		0,8	0,3	-0,5	-1,5	-2,6	...

Table 7. Long-term sustainability of public finances

(in % of GDP)	AR 2018 *)					AR 2015 **)		
	2016	2060	2060-2016	2070	2070-2016	2016***)	2060	2060-2016
Age-related expenditures	18.1	28.1	10.1	30.9	12.9	20	25.8	5.7
Pension expenditure	9	16	6.9	17.9	8.9	9.9	13.4	3.5
Health care expenditure	3.9	4.9	1	5.1	1.2	4.6	5.1	0.5
Long-term care expenditure	1.3	3.5	2.2	4.1	2.8	1.6	3.2	1.6
Education expenditure	3.3	3.3	0	3.4	0.1	3.2	3.5	0.3
Unemployment expenditure	0.5	0.4	-0.1	0.4	-0.1	0.7	0.5	-0.2
<i>Reserve pension fund ("fonds de compensation") in billions of euros</i>	<i>17.8</i>	<i>0</i>		<i>0</i>		<i>18.3</i>	<i>0</i>	
Assumptions	AR 2018 *)					AR 2015 **)		
	2016	2060	2060-2016	2070	2070-2016	2016***)	2060	2060-2016
Labour productivity growth	0.5	1.5	1	1.5	1	0.1	1.5	1.5
Potential growth	3	1.7	-1.4	1.7	-1.3	2.3	1.9	-0.3
Participation rates (men, aged 15-64)	75.2	71.8	-3.5	72.1	-3.2	75.6	73.3	-2.4
Participation rates (women, aged 15-64)	64.8	66.4	1.6	66.5	1.8	64.1	66.6	2.5
Total participation rate (aged 15-64)	70.1	69.1	-1	69.3	-0.8	70	70	0
Population (in million)	0.6	1	0.4	1	0.5	0.6	1.1	0.6
Working-age population (15-64/total)	69.3	58.8	-10.5	57.2	-12.1	68.7	61.3	-7.4
Ratio non-active/active (65+/15-64)	20.6	44.6	24	48.9	28.2	20.8	35.6	14.8
Ratio elderly active/active (55-64/15-64)	16.9	21.1	4.2	20.1	3.2	16.9	19.3	2.4
Unemployment rate (15-64)	6.2	5	-1.2	5	-1.2	5.5	4.2	-1.2

Sources:

*) 2018 Ageing report (AR) baseline scenario, 2018 constant policy scenario

**) 2015 Ageing report baseline scenario, 2015 constant policy scenario

***) estimated values for 2016 expenditure

Table 7a. Contingent liabilities	
% of GDP	Year 2017
Public guarantees	9,1
<i>Of which: linked to the financial sector</i>	5,5

Table 8. Basic assumptions

	Year 2017	Year 2018	Year 2019	Year 2020	Year 2021	Year 2022
Short-term interest rate (annual average)	-0,3	-0,3	0,1	0,9	1,4	1,9
Long-term interest rate (annual average)	0,8	0,7	0,9	1,3	1,7	2,3
USD/€ exchange rate (annual average)	1,1	1,2	1,2	1,2	1,2	1,2
Euro area GDP growth	2,4	2,2	2,0	1,7	1,5	1,2
Growth of relevant foreign markets	5,1	4,8	4,3	3,8	3,3	2,8
Oil prices (Brent, USD/barrel)	54,3	69,7	69,7	69,7	69,7	69,7