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SELECTED ISSUES

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LUXEMBOURG

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April 22, 2019

Approved By
European Department

Prepared by Luiza Antoun de Almeida, in collaboration with Keiko Honjo (RES)[1]

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[1] The author is grateful to the Luxembourg authorities, in particular Olivier Delobbe, Thomas Dominique, Kevin Everard, and Luca Marchiori for their helpful comments and suggestions on an earlier draft of the paper which was presented during the Article IV consultation. Special thanks to Mauricio Soto from the IMF's Fiscal Affairs Department for the useful feedback and providing the tool to assess pension systems.

THE PENSION SYSTEM IN LUXEMBOURG

Luxembourg's pension system is sound over the near term. With the lowest old-age dependency ratio in the EU and strong net migration flows in recent years, the pension system is currently in surplus and has accumulated appreciable reserves exceeding 30 percent of GDP. However, it faces important challenges over the long term. On the back of demographic pressure, pension expenditures are expected to roughly double to 18 percent of GDP by 2070. Under a no policy change scenario, the pension system (pension expenditures minus contributions, excluding revenues earned on reserves) is expected to be in deficit already by the mid-2020s; the level of the pension reserves is expected to decline below the legally required threshold by the end of the 2030s and be exhausted by the mid-2040s. Within one generation (40 years), the pension system would increase the fiscal deficit and public debt by 9 and 76 percent of GDP, respectively. Against this background and given the long lags of pension reforms, an early start in reforming the system would allow for a more gradual transition and more intergenerational equity. While various combinations of reform options could ensure pension system sustainability, there are important macroeconomic tradeoffs among them.

A. Introduction

1. Luxembourg's pension system is sound over the short term. Luxembourg has currently the lowest old-age dependency ratio in the EU and has benefitted from strong net migration flows in recent years. The pension system is still in surplus and has accumulated large reserves, over 30 percent of GDP.

2. However, as demographic trends are projected to become less favorable, the pension system is forecast to face significant spending pressures in the long term. The ratio of contributors to pensioners is projected to more than halve over the long term, from 2.3 contributors for each pensioner in 2016 to 1.1 by 2070, the projection period defined in the 2018 EC's Ageing Report.[2] This decline is driven by a combination of factors: (i) cross-border workers arriving at the retirement age; (ii) a slowdown in net migration flows; and (iii) an increase in life expectancy, which lengthens the pension period under unchanged policies.

3. The 2012 reform has improved the financial situation of the pension system, but additional action is needed to ensure its long-term sustainability. Luxembourg is projected to experience the largest increase and to have the highest level of pension expenditures as a share of GDP in the EU by 2070. The high level of pension expenditures by 2070 can be traced back to two features of Luxembourg's pension system: a high replacement rate and a low effective retirement age.

4. This paper studies the fiscal and macroeconomic impact of different reform options. In particular, it analyzes the impact of an increase in the contribution rate, a reduction of benefits, and an increase in the retirement age. Although all reform options can lead to the fiscal sustainability of the system, there are important macroeconomic trade-offs among them. Given the

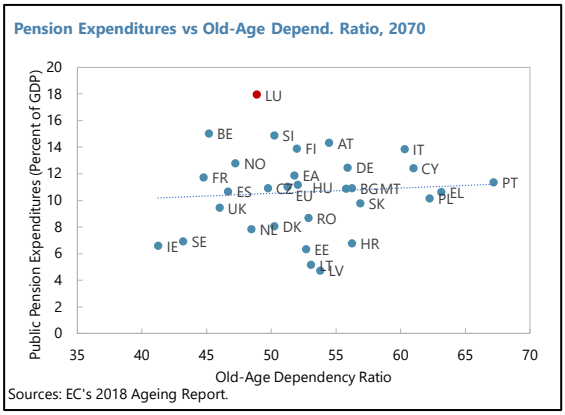
[2] The Ageing Reports are prepared by the Economic Policy Committee's Working Group on Ageing Populations and Sustainability (AWG), in which Member States actively participate, including by providing pension projections.

long lags of pension reforms, an early start would allow for a gradual transition and more intergenerational equity.

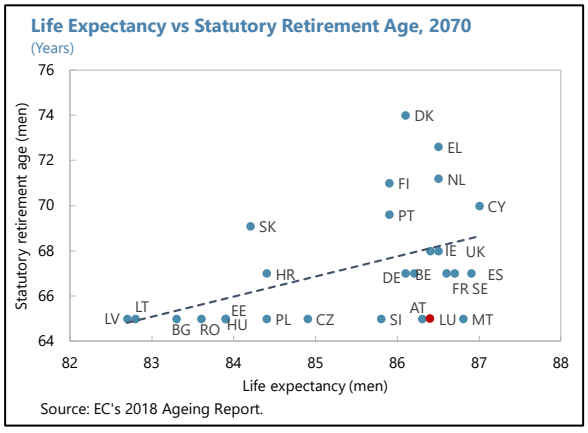
5. The paper is organized as follows. Section B provides a cross-country comparison of key pension system related variables. Section C gives an overview of Luxembourg's pension system and the 2012 reform. Section D presents the IMF's baseline projections of Luxembourg's pension system over the long run under a no-policy change scenario. Section E discusses different reform options and assesses their macroeconomic trade-offs using the IMF's Global Integrated Monetary and Fiscal (GIMF) model, and, Section F concludes.

B. Cross-Country Comparison

6. Luxembourg is expected to experience the largest increase in pension expenditures as a share of GDP in the EU by 2070 (Figure 1). Pension expenditures are forecast to increase by 9 percent of GDP against a euro area average of no increase. The increase in pension expenditures is mainly driven by a worsening of the old-age dependency ratio, reflecting weaker net migration flows and higher longevity. Currently, Luxembourg has the lowest old-age dependency ratio in the EU and notwithstanding a significant expected increase, old-age dependency ratio is projected to remain relatively low. Despite the favorable old-age dependency ratio, the level of pension expenditures is forecast to reach 18 percent of GDP (the highest in the EU) by 2070, against a euro area average of 12 percent of GDP. This high level of pension expenditures as a share of GDP can be explained by high replacement rates combined with a low effective retirement age (see below).



7. Luxembourg has one of the most generous pension systems and the lowest effective retirement age in the EU (Figure 2). Luxembourg has the second highest replacement rate in the EU, behind Spain. A pensioner receives on average 73 percent of his average wage (in gross terms), against a euro area average of 46 percent. At the same time, average effective retirement age in Luxembourg is 60 years, against a euro area average of 63 years and a Scandinavian average of 65 years. Reflecting this, and notwithstanding the fact that Luxembourg has the same life expectancy as the euro area, elderly labor participation (55–64 years old) is 40 percent, much lower than that of the euro area average of 57 percent. As a result, pensioners in Luxembourg have the highest expected retirement period in the EU—23 years, against a euro area average of 20 years. Many European countries have already moved in the direction of adjusting their statutory retirement age to higher life expectancy. As a matter of fact, Luxembourg is one of the three out of 28 European

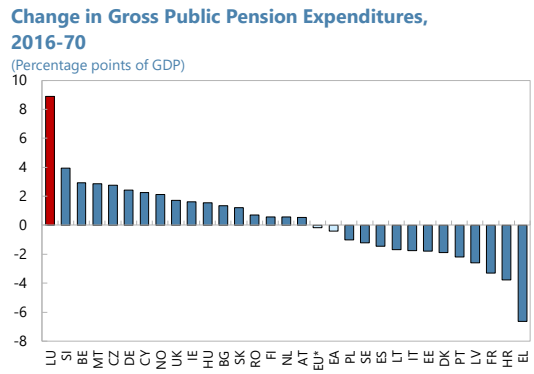


countries (Austria, Luxembourg, and Sweden) which have not legislated an increase in its statutory retirement age since 2010, although measures to increase the effective retirement age have been pursued.[3] Cyprus, Denmark, Finland, Greece, the Netherlands, and Portugal will have a similar life expectancy as Luxembourg by 2070 and have already legislated that their statutory retirement age will increase on average to over 70 years by then. Under unchanged policies, a pensioner in Luxembourg is estimated to spend 28 years in retirement by 2070, against a euro area average of 23 years.

8. Pension wealth in Luxembourg is the highest among advanced economies. The combination of high replacement rates and long retirement period leads to a gross pension wealth equivalent to 19.4 times annual gross earnings, almost double the OECD and EU averages.[4] Income of elderly people in Luxembourg, which consists mainly of pension income, corresponds to the average population income, while it is 12 percent lower in other OECD countries. In line with these findings, the elderly poverty rate in Luxembourg is low and even lower than the poverty rate for the total of the population.

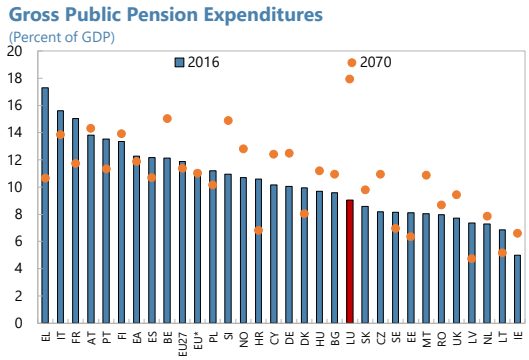
Figure 1. Cross-Country Comparison of Pension Systems

Luxembourg is expected to experience the largest increase in pension expenditures in the EU and …



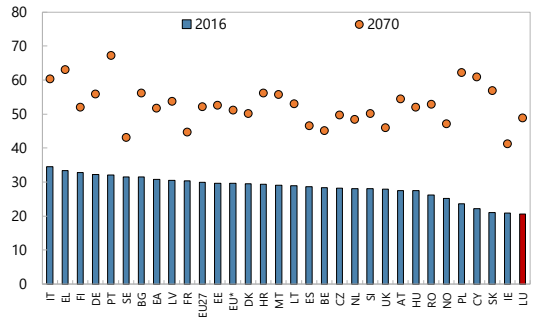
Source: EC's 2018 Ageing Report.

… have the highest level of pension expenditures by 2070.



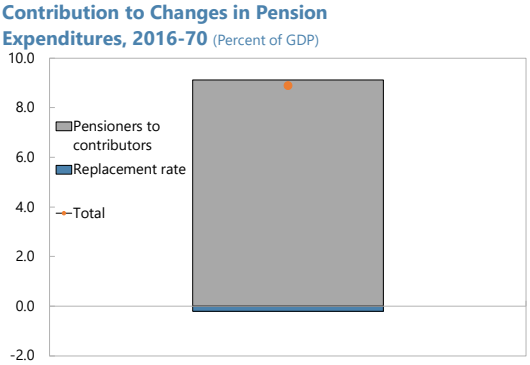
Sources: EC's 2018 Ageing Report.

Although the old-age dependency ratio will increase, it will still remain relatively favorable compared to peers.



Sources: EC's 2018 Ageing Report.

The estimated increase in pension expenditures is mainly driven by a worsening of the old-age dependency ratio.



Sources: EC's 2018 Ageing Report and IMF staff calculations.

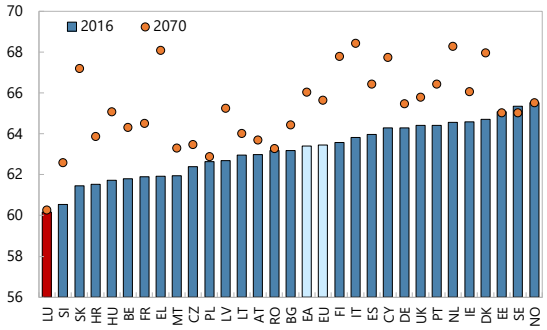
[3] See for example, Carone et al (2016). Sweden has increased its retirement age before 2010.

[4] Pension wealth is defined as the lump-sum equivalent to the net-present value of pension payments.

Figure 1. Cross-Country Comparison of Pension Systems (concluded)

Luxembourg has the lowest effective retirement age in the EU, reflected…

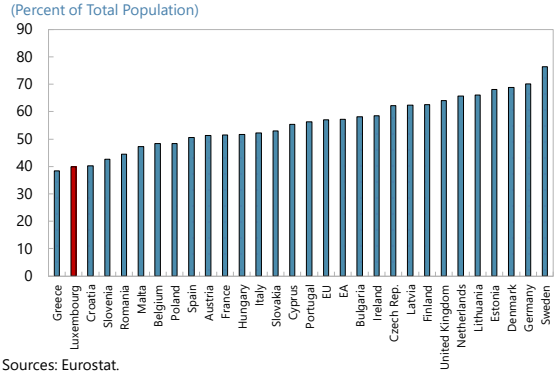
Average Effective Exit Age from Labor Market, 2017
(Years)



Source: EC's 2018 Ageing Report.

… in a low elderly labor market participation.

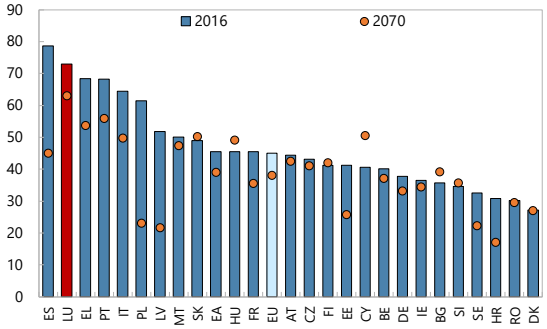
Labor Market Participation, pop 55-64, 2017
(Percent of Total Population)



Sources: Eurostat.

Combined with generous pensions, this leads to…

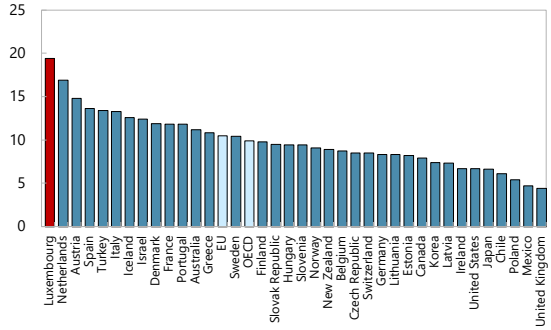
Replacement Rate, 2016
(Pension as Percent of Avg Wage)



Sources: EC's 2018 Ageing Report.

… a gross pension wealth which is almost the double of the EU average.

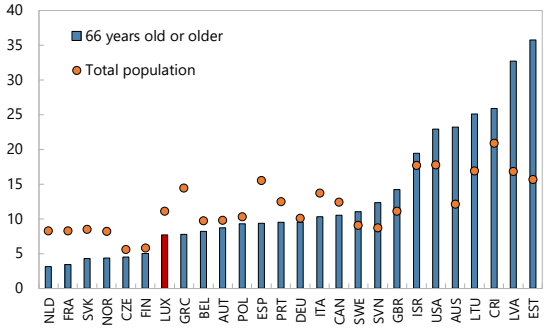
Gross Pension Wealth, 2016
(Multiples of annual gross earnings)



Source: OECD.

Elderly poverty rates are relatively low and even lower than for the total population and…

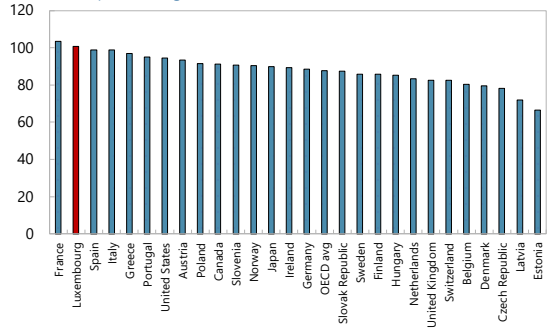
Poverty rates, 2016
(Percent)



Sources: OECD.

…elderly income is high relative to total population income.

Income of 65+ people, 2014
(Percent of Population Avg Income)



Sources: OECD.

C. Overview of Luxembourg's Pension System and the 2012 Reform

9. Luxembourg's general pension scheme for the private sector is a mandatory pay-as-you-go system, which covers about 85 percent of the overall pension system.[5] It is financed with a contribution rate of 24 percent of gross salary, paid in equal shares by employers, employees, and the state. The pension benefit consists of four parts: (i) a lump-sum part which depends on the years of contribution; (ii) an income-related part; (iii) an incremental enhancement to the income-related part; and (iv) an end-of-year allowance bonus. The lump-sum part in 2018 corresponded to 24.175 percent of the social minimum income times x/40, where x is the years of contribution (for example, someone who worked for 40 years received EUR 483 per month in 2018 from this part). The income-related part is calculated at an accrual rate of 1.813 percent of total earnings in 2018. If the sum of pension age and career years exceeds 94 years in 2018, this income-related rate is incremented by 0.013 for each additional year with a cap of 2.05 percent. Finally, an end of year allowance bonus representing roughly 2.5 percent of the social minimum income is paid as long as the system is not in deficit. In this sense, there are four parameters governing the benefit formula: (i) the lump-sum rate; (ii) the accrual rate; (iii) the sum of the years of age and contribution after which there is an enhancement of the accrual rate; and (iv) the annual enhancement of the accrual rate.

10. The statutory retirement age is 65 years for men and women, but there are some early retirement options. The system allows early retirement at 57 if an individual has 40 contributory years and from 60 onwards if an individual has 40 contributory and qualifying non-contributory years with at least 10 years of contribution. Periods of study between 18 and 27 years and parental leave can count towards non-contributory years. Pensions are adjusted to real wages growth on a yearly basis and to the CPI whenever the index grows by more than 2.5 percent, relative to the previous adjustment. If the system is in deficit, the readjustment to real wage developments will be at most 50 percent.

11. Luxembourg's pension system has the advantage of institutionalized checkups and stabilizers. In addition to the readjustment mechanism which foresees a partial or zero indexation to real wages when the system is in deficit, the law requires pension reserves to be at least 1.5 times the yearly pension expenditures. Currently, Luxembourg's pension reserves are around 4.5 times the yearly pension expenditures. The sustainability of the pension system is reviewed every 10 years. The contribution rate is set at the beginning of each 10-year period with the objective of guaranteeing a balanced system[6] throughout the period. The system is assessed in the interim after 5 years, and if necessary, the contribution rate will be increased for the next 10 years. The last review happened in 2012 and covers the period 2013–22. The interim assessment was conducted already in 2016 and confirmed that the system would be balanced until end 2022 but might face long-term challenges.[7] The General Inspectorate of Social Security (IGSS) will assess the sustainability of the system again in

[5] Our analysis focuses on the general system. Other parallel systems are: (i) special pension schemes for the public sector; (ii) supplementary pension schemes for the private sector; (iii) private pension plan; and (iv) social assistance.

[6] A balanced system means that the reserve level will remain above its legal threshold of 1.5 times the annual expenditures.

[7] See IGSS (2016).

2022 for the period 2023–2032. Moreover, given the government's strong commitment in respecting European fiscal rules, the government will likely seek a reform of the pension system as soon as its deficit would put Luxembourg's compliance with its Medium-Term Objective (MTO) at risk.

12. The 2012 reform mainly changed the parameters of the pension benefit formula with the objective of incentivizing people to work longer. Its transition period comprises 40 years (2013–2052). The reform included a gradual increase of the lump-sum benefit rate from 23.5 percent of the social minimum income in 2012 to 28.0 percent in 2052, while gradually reducing the income-related accrual rate from 1.85 percent in 2012 to 1.60 percent in 2052. The sum of pension age and career years will have to be higher than 100 years in 2052 instead of 93 years in 2012 for an individual to be able to increase the 1.85 percent accrual benefit rate. The increase will be of 0.025 per additional year (instead of 0.01 in 2012) with the same threshold of 2.05 percent. The reform also introduced a readjustment factor which limits the indexation of pensions to real wages to 0–50 percent, if the system is in deficit.

13. The 2012 pension reform was a step in the right direction but still not enough to guarantee long-term sustainability. The Chamber of Commerce estimates that the 2012 reform reduced the pension of an individual who worked for 40 years by 14 percent compared to the previous rules. The authorities estimate that the reform reduced pension expenditures by 2.5 to 3.8 percentage points of GDP by 2060 in their pension interim assessment in 2016.[8] In recent years the government has also taken additional measures to increase elderly labor market participation, such as the reform of the professional reclassification scheme which could reduce the share of disability pensions ,the creation of subsidized jobs, and the abolishment of some pre-retirement schemes.

D. Baseline Projections Under a No-Policy Change Scenario

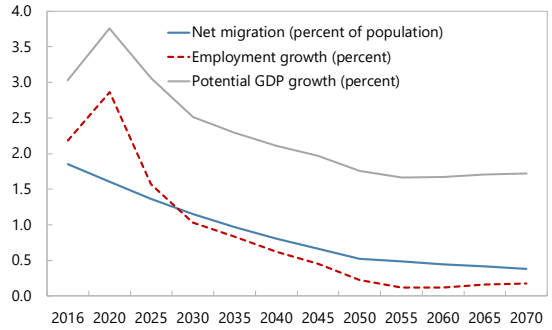
14. There is large uncertainty around long-term pension forecasts, but Luxembourg will experience a considerable increase in pension expenditures under most scenarios (Figure 3). Pension expenditures forecasts depend on different assumptions and, for Luxembourg in particular, on net migration flows and GDP growth assumptions. In this sense, the EC's 2018 Ageing Report contains diverse alternative scenarios—such as lower/higher migration, lower/higher employment rate, and lower/higher TFP. The most optimistic scenario (higher migration) yields pension expenditures of 16.5 percent of GDP by 2070, while the most pessimistic scenario (lower migration) leads to 19.9 percent of GDP, against a baseline of 18 percent of GDP. Under all these scenarios, the increase in pension expenditures in Luxembourg will be considerable. Projected long-term pension expenditures for Luxembourg have also varied over time in different EC's Ageing Reports due to different underlying assumptions, but the latest three reports (2012, 2015, and 2018) all find that Luxembourg is the country with the highest increase in pension expenditures in Europe under unchanged policies.

[8] See IGSS (2016).

Figure 2. Uncertainty Around Baseline Estimations

Assumptions underlying projections are important …,

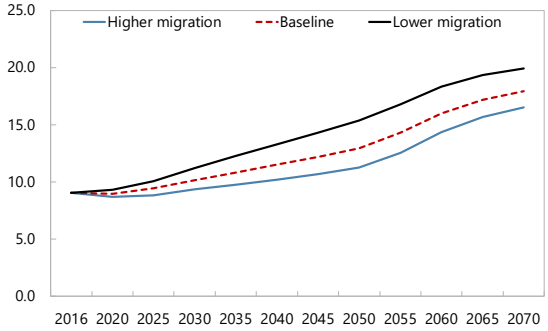
Baseline Assumptions
(Units as Indicated)



Sources: EC's 2018 Ageing Report.

…but the increase in pension expenditures is expected to be large under all scenarios.

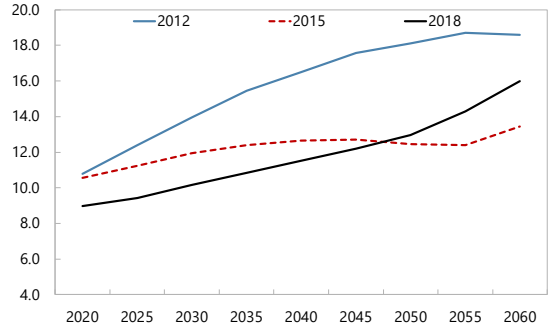
Public Pension Expenditures under Different Migration Scenarios (Percent of GDP)



Sources: EC's 2018 Ageing Report.

Long-term pension projections have varied over the years, …

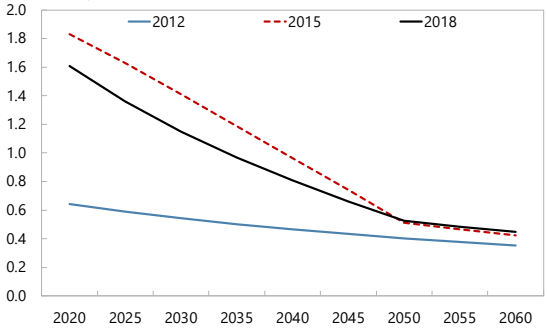
Pension Expenditures in Different Ageing Reports
(Percent of GDP)



Sources: 2012, 2015, and 2018 EC's Ageing Report.

… largely due to different net migration…

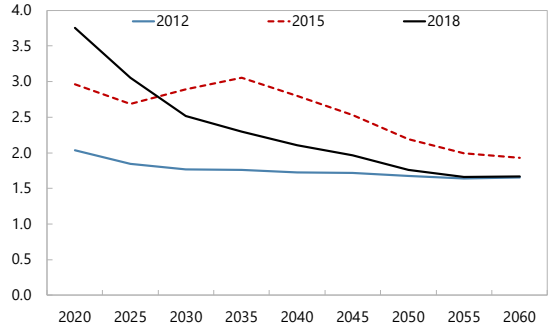
Net Migration in Different Ageing Reports
(Percent of Population)



Sources: 2012, 2015, and 2018 EC's Ageing Reports.

… as well as GDP growth assumptions.

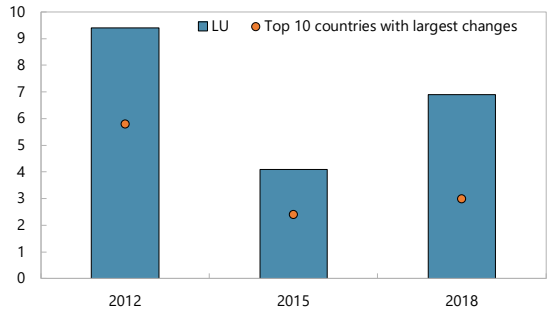
Growth Rates in Different Ageing Reports
(Percent)



Sources: 2012, 2015, and 2018 EC's Ageing Reports.

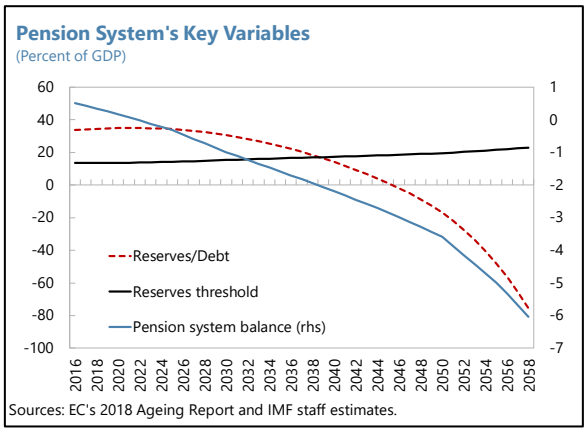
However, in all different Ageing Reports Luxembourg experiences the highest increase in pension expenditures.

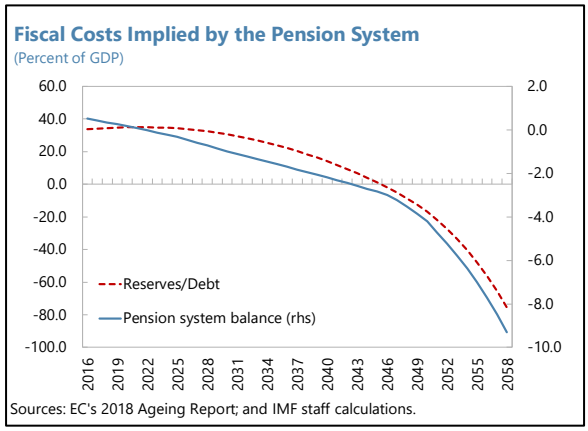
Changes in Pension Expenditures until 2060
(Percentage Points of GDP)



Sources: 2012, 2015, and 2018 EC's Ageing Reports.

15. Under the baseline (a no policy change scenario), the pension system is projected to run into deficit already in the medium term. The baseline scenario is estimated with FAD's actuarial model and calibrated using data from the EC's 2018 Ageing Report. The baseline scenario is calibrated so that the pension system will enter in deficit[9] in mid-2020s, reserves will fall below the legal threshold of 1.5 times annual expenditures by end-2030s and be exhausted by mid-2040s. These trigger dates are in line with the latest authorities' official estimates.[10] More recent data from the authorities indicate that the pension system will run into deficit after mid-2020s. Under our baseline scenario—which will serve as a starting point for our reform simulations, the pension system will add 9 percent of GDP to the fiscal deficit by 2058 and lead to an accumulated debt of 76 percent of GDP.





E. Reform Options and Macroeconomic Trade-Offs

16. Different potential reforms could ensure the long-term sustainability of the pension system. In line with the reforms proposed by Luxembourg's Pension Working Group, our proposals aim to guarantee the long-term sustainability of the pension system by increasing the contribution rates, reducing benefits, increasing the retirement age, and implementing different combination of these reforms.[11] We analyze whether the reforms are sufficient to guarantee that the contribution of the pension system to the fiscal deficit is less than 3 percent of GDP by 2070, the deficit limit imposed by the Stability and Growth Pact. More specifically, we study the following three reform scenarios:

i) An increase in the contribution rate to 30.0 percent (a one-time increase in 2023);

ii) A 15 percent reduction in the replacement rate equivalent to reducing the accrual rate to 1.1 instead of 1.6 percent by 2052 (linearly implemented between 2023 and 2052); and

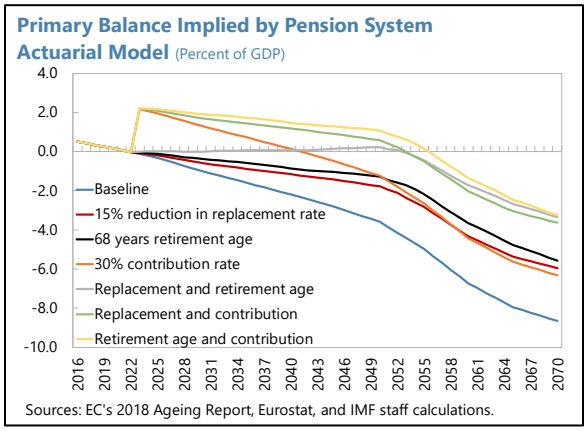
[9] Pension expenditures minus contributions, excluding revenues earned on reserves.

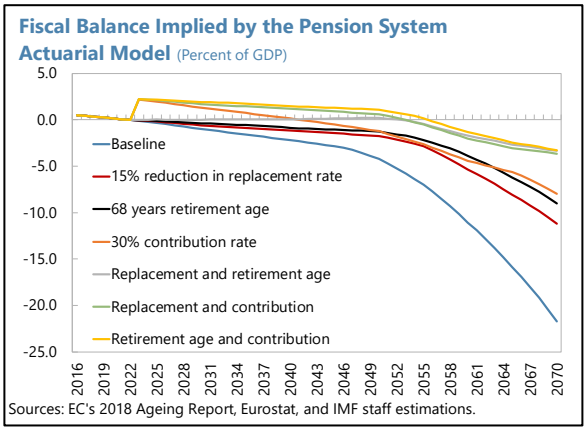
[10] The Pension Working Group (2018) estimates that the pension system will enter in deficit in 2024, reserves will fall below the legal threshold of 1.5 times annual expenditures in 2035 and be exhausted by 2041.

[11] Pension Working Group (2018).

iii) An increase in the statutory retirement age from 65 to 68 years (linearly implemented between 2023 and 2052). This reform is similar to an increase in the effective retirement age from 60 to 63 years.

17. A combination of the above reforms would ensure that the contribution of the pension system to the fiscal deficit is around 3 percent of GDP by 2070. Under our calibrated baseline (actuarial model), the contribution of the pension system to the fiscal deficit would be 22 percent by 2070. This comprises an operational system deficit of 9 percent of GDP and interest payments paid on accumulated debt after reserves are exhausted of 13 percent of GDP.[12] The potential reforms, namely an increase in contribution rates, reduction of benefits, and increase in retirement age, would reduce the contribution to the fiscal deficit to 8, 11, and 9 percent of GDP, respectively. Any combination of two of these measures would bring the deficit to 3 percent of GDP. It is important to keep two additional points in mind. First, the effect of the increase in the retirement age is comparable to the effect of increasing the effective retirement age by the same amount which may be politically easier to implement. Second, the baseline projections assume a 50 percent indexation of pensions to real wages growth when the pension system enters in deficit. Assuming no indexation of pensions to real wages when the system enters into deficit significantly enhances the effect of the reforms and may be easier to implement as it is already foreseen in the law. Under a zero-readjustment scenario, implementing each reform alone would yield on average a deficit of 5 percent of GDP by 2070, instead of 9 percent of GDP under the 50 percent readjustment.





18. The macroeconomic impact of the above reform options is simulated using the IMF's GIMF model. GIMF is a dynamic stochastic general equilibrium model widely used inside the Fund as a framework for analyzing the short- and long-run effects of planned pension reforms. GIMF's overlapping generations and finite horizon structure is key in analyzing the positive aspects of achieving fiscal sustainability in face of aging as well as the normative aspects of adjusting public policies to changes in demographics. The model produces meaningful medium- and long-run crowding-out effects of government debt and captures important life cycle income patterns, including age-dependent labor productivity. Moreover, labor and capital markets are endogenous—the first allowing labor income taxes to have distortionary effects and the latter providing an

[12] In line with similar studies, we assume a nominal interest rate on debt of 5 percent.

important channel through which government debt crowds out economic activity. As such, a realistic supply side enables us to consider the impact of public pension reforms on investment decisions.

19. GIMF has been recently enhanced to include the impact of demographics to capture features of economies with an aging and declining population (see Carton et al, 2018). Earlier vintages of GIMF assumed constant population growth, such that each generation faced a constant probability of death (which together with population growth determined the birth rate), and the time endowment for working declined with age. In this updated version of GIMF, population growth, the probability of surviving each period and the work time endowment can be time varying to match characteristics of an aging and shrinking population. Demographics then affect the model through household consumption and leisure decisions, as well as through the stochastic discount factor in the model which affects investment.

20. There are three groups of agents and sectors in the model: households, firms, and the government. In the households' sector, three parameters determine the degree of non-Ricardian behavior of agents: Ψ, Θ, and χ. The share of liquidity-constrained households (*LIQ*) in the economy, which are without access to financial markets and limited to consuming their after-tax income in every period is Ψ. The remainder of the households are overlapping generations (*OLG*) households, who are fully optimizing agents. Each of these agents faces a constant probability of death $(1-\Theta)$ in each period, which implies an average planning horizon of $1/(1-\Theta)$. In addition to the probability of death, households also experience labor productivity (and hence labor income) that declines at a constant rate χ over their lifetimes. Life cycle income adds another powerful channel through which fiscal policies have non-Ricardian effects, as this along with Θ (probability of survival) produce a high degree of myopia. Households of both types are subject to labor income, consumption and lump-sum taxes and the presence of these taxes along with transfers and government spending allows to relate the pension-related tax and expenditure reforms to specific model's parameters and variables.

21. GIMF is calibrated to the Luxembourg economy. The simulations use a four-region version of GIMF, representing the United States, the euro area, Luxembourg, and the rest of the world. The calibration of household utility functions is assumed to be the same across countries. In addition, elasticities and markups are also assumed to be the same across countries. The share of liquidity-constrained agents in the population is 25 percent in all regions except for the rest of the world block, which is set at 40 percent. Country-specific data are used to calibrate key variables as a share of nominal GDP. Key variables are private investment, government consumption, government investment, fiscal variables including tax revenue, net pension expenditure, government debt (which includes pension assets in the case of Luxembourg), GDP share of different taxes (consumption tax, labor tax, and corporate tax), labor shares, and share of working age population. In addition, bilateral trade flows between regions and each region's share of world population are essential in calibrating the spillover effects. The

Luxembourg: Key Calibration Parameters
(In percent of GDP unless otherwise indicated)

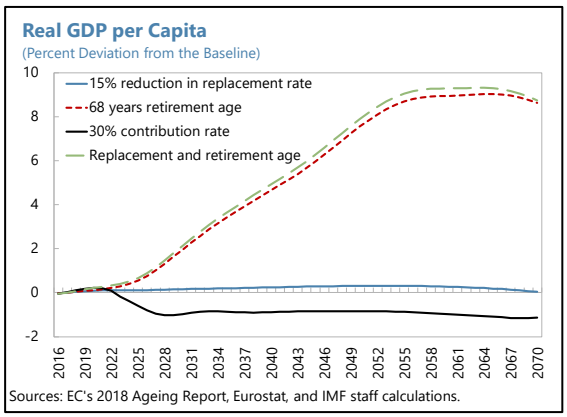
Inflation (Percent)	2.0
Share of working age population (Percent)	67.5
Government consumption	16.4
Government investment	4.0
Tax revenue	39.8
Labor tax revenue	19.7
Consumption tax revenue	11.9
Corporate tax revenue	5.2
Pension expenditure (net)	7.7
Government debt	-45.0
Private investment	15.9

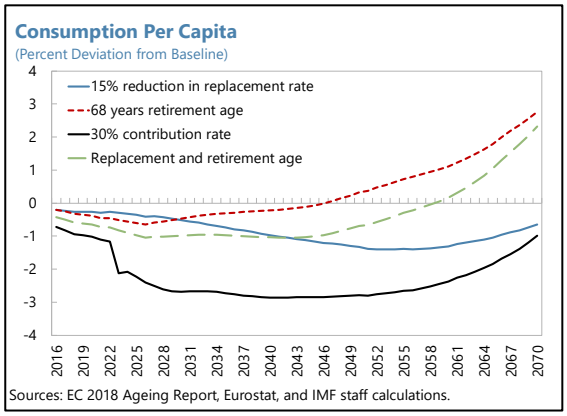
Sources: 2018 Ageing Report, Eurostat, GFS, WEO, and IMF staff calculations.

monetary policy parameters are calibrated based on estimation results of reaction functions using an annual model. For Luxembourg, the currency is fixed to euro.

22. The reform scenarios are modelled as follows. The baseline scenario analyzes the impact of an increase in pension expenditures consistent with the EC's 2018 Ageing Report, holding all other public spending (government consumption, investment, and transfers) constant in per capita terms. An increase in the contribution rate is introduced via an increase in labor taxes. A reduction in replacement rates is modelled via lower transfers to pensions. Finally, an increase in the retirement age is modelled via an increase in the share of the working population relative to the baseline.

23. Although all of the proposed reform combinations would ensure the fiscal sustainability of the pension system, there are important macroeconomic trade-offs. We use the IMF's GIMF model to estimate the macroeconomic impact of different measures.[13] An increase in the contribution rate has a large fiscal impact and also has the advantage that it can be implemented immediately. However, an increase in the contribution rate has the least desirable macroeconomic effects. It introduces distortions in the labor market that will reduce labor supply and ultimately real GDP per capita as well as Luxembourg's competitiveness. An increase in the contribution rate would also decrease households' disposable income and thus consumption and would affect relatively more low-income households. In turn, a reduction in the replacement rate does not introduce distortions in the economy and thus has no negative effect on GDP. It does, however, reduce consumption as households' disposable income falls. If implemented via a reduction in accrual rates, it reduces pensions of high-income households by more than pensions of low-income households, protecting income of the most vulnerable.[14] Finally, an increase in retirement age (or an increase in the effective retirement age) would have the most beneficial macroeconomic impact. As a result, the increase in labor supply together with stronger exports, boosted by the improved competitiveness, would lead to a higher per capita GDP. Per capita consumption, which is initially somewhat lower than the baseline, picks up as higher investment boosts productivity and real incomes.

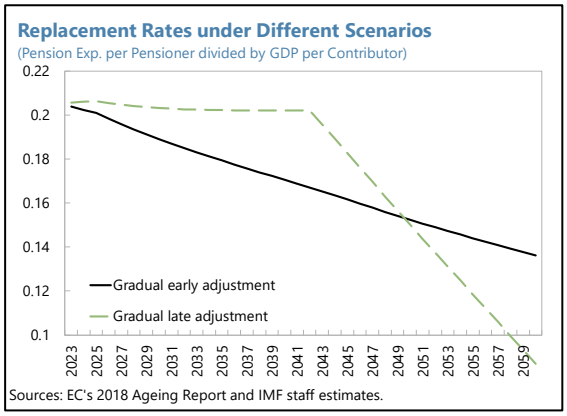


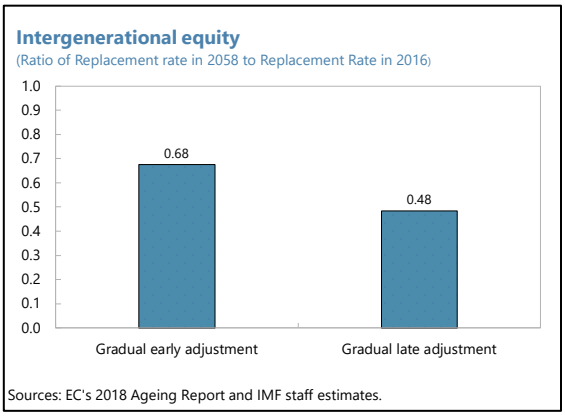


[13] The macroeconomic trade-offs that we identify are similar to the ones identified in Bouchet, Marchiori, and Pierrard (2014).

[14] See also Fondation Idea (2017, 2018).

24. An early start with pension reform would allow for more intergenerational equity. The pension system has accumulated sufficient reserves to allow for a gradual implementation of a pension reform. At the same time, the earlier a pension reform is implemented, the more the current generation will share the burden of the adjustment with future generations. As an illustrative example, we consider two different types of reforms—an early and a late one—which lead to the same outcome: reserves at the legal thresholds of 1.5 times the annual expenditures by 2060. Both reforms foresee a gradual reduction in benefits until 2060; however, the early reform starts in 2023, while the late reform starts only in 2043. In the early reform scenario, an individual retiring in 2058 would receive 32 percent less pension income than an individual retiring in 2016. In the late reform scenario, an individual retiring in 2058 would receive less than half of the pension income of a retiree in 2016.





F. Conclusions

25. Although the Luxembourg's pension system is sound over the near term, further reforms are needed to ensure its long-term sustainability. Under a no policy change scenario, pension expenditures in Luxembourg will double as a share of GDP until 2070. Within one generation (40 years), this would lead to an increase in the fiscal deficit of 9 percent of GDP and an accumulated public debt of 76 percent of GDP after reserves are exhausted.

26. Given important tradeoffs of different pension reforms, an early engagement of key stakeholders is needed to allow for a gradual transition and more intergenerational equity. This paper has explored the fiscal and macroeconomic impact of several reform options: an increase in the contribution rate, a reduction of benefits, and an increase in the retirement age. While all these reforms would help ensuring fiscal long-term sustainability, there are important macroeconomic trade-offs. Even though an increase in contribution rates can be implemented immediately, it introduces distortions in the labor market which lead to a decline in GDP in addition to a decline in consumption. A reduction of benefits would also lead to a reduction in consumption as disposable income falls, but it does not introduce distortions that affect negatively GDP. Furthermore, if a reduction in benefits is implemented via a reduction of accrual rates, it reduces the pension income of high-earners by more, protecting the income of the most vulnerable. On the other hand, an increase in the retirement age (or increase in the effective retirement age) increases labor supply and consequently GDP, in addition to increasing consumption due to higher lifetime income. Finally, the paper makes the case that it is important to start early with the pension reform to allow for a gradual implementation and more intergenerational equity.

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