



LUXEMBOURG

April 2018

2018 ARTICLE IV CONSULTATION—PRESS RELEASE; STAFF REPORT; AND STATEMENT BY THE EXECUTIVE DIRECTOR FOR LUXEMBOURG

Under Article IV of the IMF's Articles of Agreement, the IMF holds bilateral discussions with members, usually every year. In the context of the 2018 Article IV consultation with Luxembourg, the following documents have been released and are included in this package:

- A **Press Release** summarizing the views of the Executive Board as expressed during its March 30, 2018 consideration of the staff report that concluded the Article IV consultation with Luxembourg.
- The **Staff Report** prepared by a staff team of the IMF for the Executive Board's consideration on March 30, 2018, following discussions that ended on February 9, 2018, with the officials of Luxembourg on economic developments and policies. Based on information available at the time of these discussions, the staff report was completed on March 15, 2018.
- An **Informational Annex** prepared by the IMF staff.
- A **Staff Supplement** updating information on recent developments.
- A **Statement by the Executive Director** for Luxembourg.

The documents listed below have been or will be separately released.

Selected Issues

The IMF's transparency policy allows for the deletion of market-sensitive information and premature disclosure of the authorities' policy intentions in published staff reports and other documents.

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April 3, 2018

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IMF Executive Board Concludes 2018 Article IV Consultation with Luxembourg

On March 30, 2018, the Executive Board of the International Monetary Fund (IMF) concluded the Article IV consultation with Luxembourg.¹

Luxembourg is a key intermediary of global capital flows and has benefitted from strong growth supported by its competitive advantages of fiscal stability, prudent financial sector oversight, a qualified workforce, and business friendly regulations. Economic growth reached 2.3 percent in 2017, above the EU average, and was driven by net exports of financial services and private consumption. Growth is projected at 3.5 percent for 2018, with continued strong job creation, and a temporary slowdown in inflation.

In 2017, buoyant corporate tax revenues contributed to a fiscal surplus of 1.4 percent of GDP. The full impact of 2016 tax reform, and a continued need for high public investment are expected to result in a small fiscal surplus over the medium-term.

Growth prospects are favorable but downside risks arise from international corporate tax developments; uncertainties associated with post-Brexit arrangements; and financial volatility associated with unexpectedly large monetary policy tightening or a spike in global risk aversion. The implementation of the evolving international tax transparency and anti-tax avoidance agenda, could impact Luxembourg's activity and tax revenues negatively but this risk is mitigated by strong fiscal buffers and Luxembourg's other competitive advantages. Rising real estate prices due to supply constraints could lead to excessive indebtedness of some households.

¹ Under Article IV of the IMF's Articles of Agreement, the IMF holds bilateral discussions with members, usually every year. A staff team visits the country, collects economic and financial information, and discusses with officials the country's economic developments and policies. On return to headquarters, the staff prepares a report, which forms the basis for discussion by the Executive Board.

Executive Board Assessment²

The Executive Directors praised the authorities' sound policies, which have underpinned the country's continued strong macroeconomic performance. Directors considered that growth prospects remain favorable, although subject to downside risks related to changing international tax rules, Brexit, and financial volatility possibly triggered by higher global interest rates. Domestically, rising real estate prices pose affordability problems and could lead to excessive household indebtedness. Against this backdrop, Directors encouraged the authorities to continue efforts to further improve the oversight of the financial system, adapt the tax regime to the changing international environment, and implement reforms to ease tensions in the housing market and make the economy more inclusive.

Welcoming the ongoing process, Directors encouraged the authorities to continue enhancing regulation and supervision, in line with the 2017 Financial Sector Assessment Program recommendations. They stressed the importance of continuing to strengthen the oversight of investment funds and closely engage with relevant foreign regulators, as well as develop system wide methodologies for liquidity stress testing. Directors advised increasing on site bank inspections, and stressed the importance of rigorous supervision of cross border exposures of foreign oriented banks and of the authorities' ongoing commitment to reinforce the oversight of nonbank holding companies. Directors commended the authorities' continued close monitoring of risks in the real estate market, and advised adjusting policies if necessary, including by setting limits on debt service to income ratios. Directors encouraged further strengthening of macroprudential oversight, including by publishing the substance of the macro financial risk analysis of the systemic risk committee. They recommended further addressing risks related to anti money laundering and combating the financing of terrorism.

Directors commended the authorities' ongoing commitment to prudent fiscal policies. They endorsed maintaining fiscal buffers, including low public debt, for use in the event downside risks materialize. Directors welcomed the authorities' proactive engagement to implement the European and global tax transparency and anti tax avoidance initiatives. They recommended developing measures to address revenue risks as well as to take advantage of opportunities that may arise from implementation of this agenda. Directors also recommended continued reform of the pension system to ensure its long term viability.

Directors welcomed the authorities' reform efforts to increase the employment prospects for the young and low skilled. They considered that additional efforts are needed to reduce skill mismatches and make work more rewarding, and to increase the participation rate of women and seniors. Directors recommended that the authorities make a determined effort to expand the stock of housing, including by pruning red tape, better coordinating zoning decisions, and increasing the supply of social housing, while making tax incentives for house purchase more means tested.

² At the conclusion of the discussion, the Managing Director, as Chairman of the Board, summarizes the views of Executive Directors, and this summary is transmitted to the country's authorities. An explanation of any qualifiers used in summings up can be found here: <http://www.imf.org/external/np/sec/misc/qualifiers.htm>.

Luxembourg: Selected Economic Indicators, 2015–19

	2015	2016	2017	2018	2019
				Proj.	Proj.
Real economy	(Change in percent, unless otherwise indicated)				
Real GDP	2.9	3.1	2.3	3.5	3.4
Gross investment	-2.8	0.0	-1.1	2.2	2.5
Unemployment (percent of the labor force)	6.8	6.3	5.9	5.5	5.2
Resident employment (thousands)	244.7	250.2	257.1	263.3	269.0
Total employment (thousands)	406.1	418.5	432.4	443.4	453.1
CPI (harmonized), p.a.	0.1	0.0	2.1	1.5	1.9
Public finances	(Percent of GDP)				
General government revenues	42.8	43.8	43.2	42.7	42.3
General government expenditures	41.5	42.1	41.8	41.7	41.8
General government balance	1.4	1.6	1.4	1.1	0.5
General government gross debt	22.0	20.8	23.0	22.8	22.5
Balance of payments					
Current account balance	5.1	5.1	5.0	5.0	5.0
Balance of trade in goods and services	35.1	34.2	34.4	34.6	35.0
Factor income balance	-31.6	-30.0	-29.9	-30.1	-30.5
Transfer balance	1.5	0.9	0.5	0.5	0.5
Exchange rates					
U.S. dollar per euro	1.1	1.1	1.1	...	...
Nominal effective rate (2010=100)	97.0	98.9	101.5	...	...

Sources: Data provided by the authorities; IMF, WEO database; and IMF staff estimates.



LUXEMBOURG

STAFF REPORT FOR THE 2018 ARTICLE IV CONSULTATION

March 15, 2018

KEY ISSUES

Luxembourg's growth outlook remains favorable, as the ongoing global recovery boosts near-term activity. Economic, fiscal and financial sector policies are generally sound and unemployment is on a declining path. Risks arise from the possible impact on the economy and tax revenue of changing international tax rules; financial volatility, possibly triggered by increased risk perceptions and higher global interest rates; and Brexit. Closer to home, continuously rising real estate prices pose affordability problems and could lead to excessive indebtedness of some households, while the long-term sustainability of the pension system is not assured.

To contain these risks, policies should focus on continuing to adapt Luxembourg's business model to the changing global environment. A key plank in this effort is to continue implementing the EU and international tax transparency and anti-avoidance agenda. In view of related revenue risks and potential financial sector repercussions, fiscal policy should remain prudent.

The highly interconnected financial sector is a key driver of growth and must be closely monitored. To help shield Luxembourg's financial system from global financial-market shocks, and limit transmission to the rest of the world, the authorities should continue to enhance regulation and supervision, in line with the 2017 Financial Stability Assessment Program (FSAP) recommendations. Anti-money laundering challenges should continue to be addressed and risk monitoring of Fintech should be strengthened.

Domestic policies should focus on easing tensions in the housing market and making growth more inclusive. Action should be taken to expand the housing supply and the authorities should stand ready to put in place measures to contain excessive household indebtedness. Targeted policies to reduce stubborn structural unemployment and increase labor market participation are important for inclusive growth. Reform of the pension system should continue in light of population ageing.

Approved By
Ms. Detragiache (EUR),
Ms. Goodman (SPR)

Discussions took place in Luxembourg during January 29–February 9, 2018. The team comprised Messrs. E. De Vrijer (head), T. Tressel, W. Gbohoui and Ms. M. Hassine, and was assisted from headquarters by Mr. A. Musayev, Mses. T. Mohd Nor and K. Vanegas (all EUR). Mr. N. Jost (OED) joined the discussions. The mission met with Minister of Finance Gramegna, Governor Reinesch, and other officials and private sector representatives.

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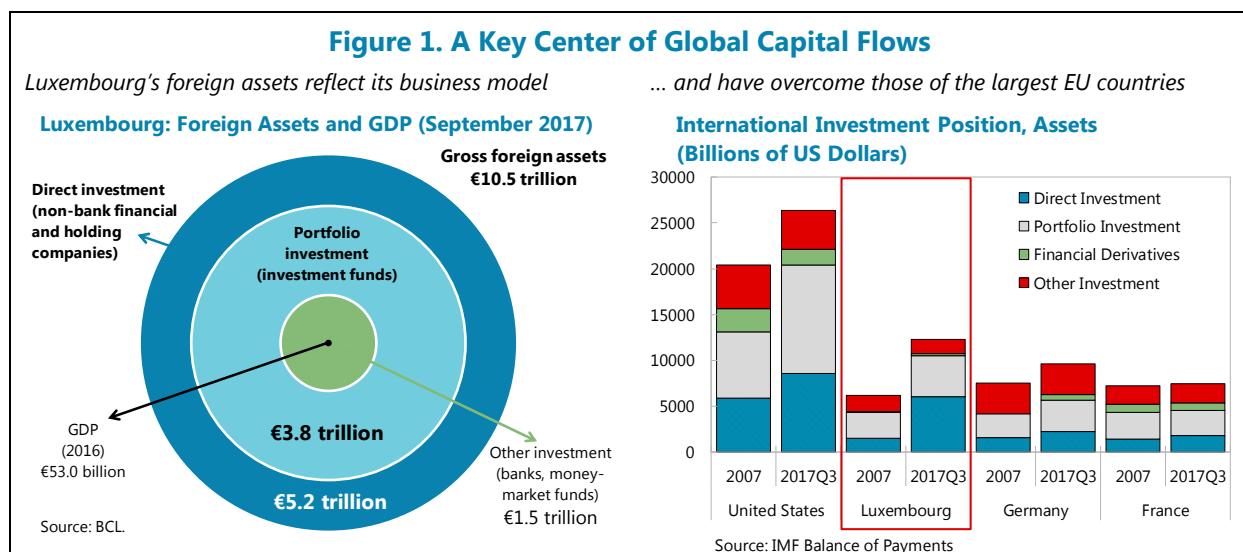
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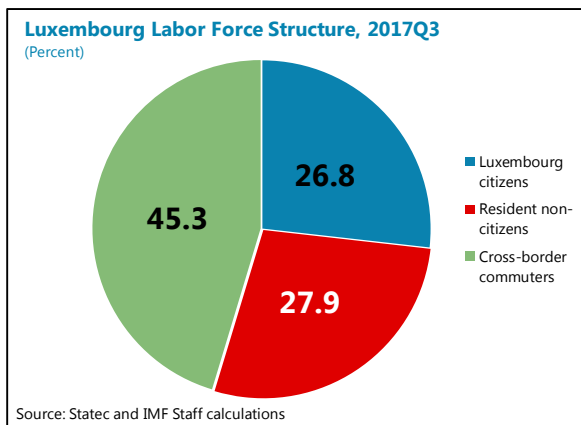
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CONTEXT

1. Luxembourg is a key intermediary of global capital flows. Deep-rooted political economic stability, a low and predictable tax regime, a welcoming investment climate, and a well-established network of financial firms, auditors and other expertise have continued to attract financial activity. Luxembourg’s investment funds, second in the world after the U.S. with €4.16 trillion of assets at end-December 2017, are offered in more than 70 countries, and the country hosts more than a hundred international banks, the Eurobond issuance market, and Clearstream, a systemic International Central Securities Depository. Being a node in multinationals’ treasury operations, it is the third-largest reporting country in the world for both inward and outward direct investment, and the third-largest destination for outward foreign direct investment (FDI) by U.S. multinationals. In the year to September 2017, gross cross-border assets of the country increased by €250 billion to €10.5 trillion (193 times GDP), highest among EU countries.



2. Luxembourg has been an employment magnet for neighboring countries and beyond, but some bottlenecks have emerged at the margin. Since the global financial crisis, almost half of new jobs went to cross-border workers who produce an increasing share of value added, resulting in a widening gap between GDP and GNI. Meanwhile, housing has become less affordable, reflecting supply constraints and a large latent demand from cross-border workers, while unemployment is stabilizing at a level suggestive of skills mismatches and unemployment traps for local workers.



3. The 2018 Article IV consultation focuses on the following topics:

- *Financial sector stability.* Financial sector oversight needs to remain commensurate with the increasing size and complexity of the sector to further contain risks from financial instability and solidify Luxembourg's reputation as a financial center.
- *International tax agenda.* Luxembourg has endorsed the international tax transparency and anti-tax avoidance initiatives. Implementation of the OECD/G20 anti-Base Erosion and Profit Shifting (BEPS) project, EU Directives to enhance corporate tax transparency and reduce tax avoidance, the findings of EC state aid probes, and the U.S. tax reform will likely have important implications for the Luxembourg economy and fiscal revenue.
- *Inclusive growth.* While the growth outlook is strong, housing affordability is declining, structural unemployment remains relatively high, and women participate in the labor market primarily through part-time work.

RECENT DEVELOPMENTS

4. Economic performance has remained strong in 2017, consistent with the global recovery. Growth in 2015–16 was revised downward to about 3 percent per year but labor market and activity indicators point at continued above-average performance in 2017–18.¹ Real GDP growth is estimated at 3½ percent in 2017, driven by net exports of financial services and consumption. Strong growth and active labor market policies reduced the unemployment rate to 5.8 percent by end-2017. Headline inflation averaged about 2 percent in 2017 while core inflation reached 1.3 percent, slightly above the euro area average, in part reflecting the wage indexation of 2.5 percent in early 2017.

5. The external position of Luxembourg has remained in surplus. The current account surplus is expected to increase slightly to 5.5 percent of GDP in 2017, due to higher net exports of goods and services, and the CPI-based real effective exchange rate has appreciated by 2.1 percent, driven by the euro appreciation. Financial account net outflows (5.1 percent of GDP in 2016) reflect large outward net direct and other investments, in part offset by net portfolio inflows.

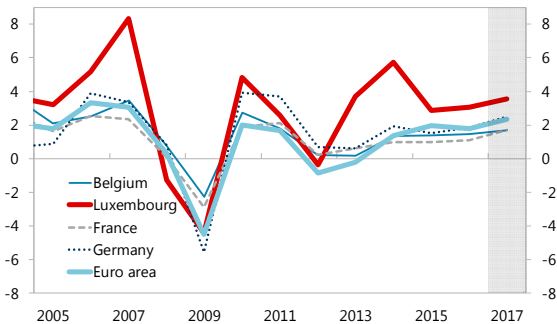
6. Financial sector performance remained strong. The performance of the financial sector, particularly the fund industry, is an important driver of real GDP growth (it accounts for ¼ of GDP). The financial sector remained profitable in 2017:

¹ The downward GDP revisions by about 1 percentage point were driven by the substantial difference between annual survey data (received with a two-year lag) and estimates of value-added for a handful of firms, and by a correction in the reported net interest margin of one large bank.

Figure 2. Real Economy and Inflation

Economic performance has been strong ...

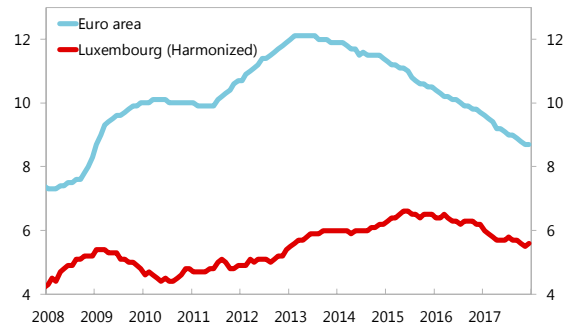
Real GDP
(Percent change y/y)



Sources: Haver Analytics and IMF staff calculations.

but unemployment remains high by historical standards

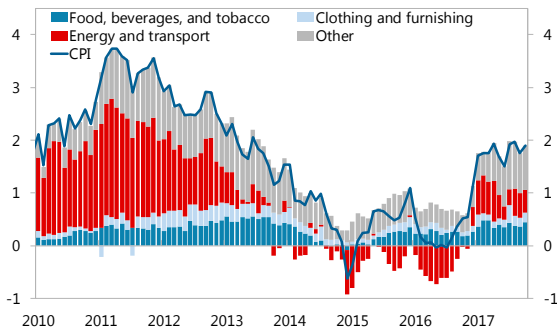
Unemployment
(Percent, seasonally adjusted)



Source: Haver Analytics.

Headline inflation rebounded in 2017

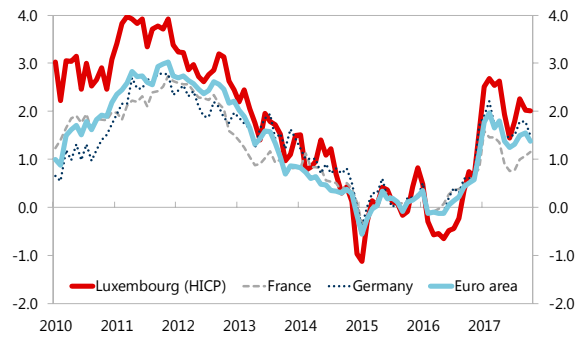
Consumer Price Index, National Definition
(Percentage point contribution to growth y/y)



Sources: Haver Analytics and IMF staff calculations.

...in line with developments in the euro area

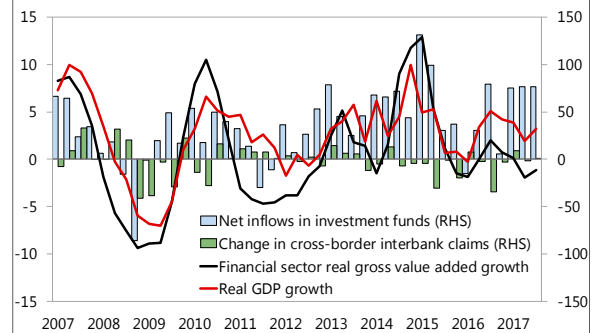
Harmonized Index of Consumer Prices
(Percent change y/y)



Sources: Haver Analytics and IMF staff calculations.

- Investment funds.* Funds' assets under management (AUM) are a driver of financial sector gross valued added and therefore of real GDP growth, and directly generate about €1 billion of tax revenues (about 2 percent of GDP). The fund industry performed well in 2017, thanks to surging global financial markets, with cumulative net inflows reaching €308 billion, and valuation effects €110 billion, compared to €100 billion and €95 billion, respectively, in 2016.

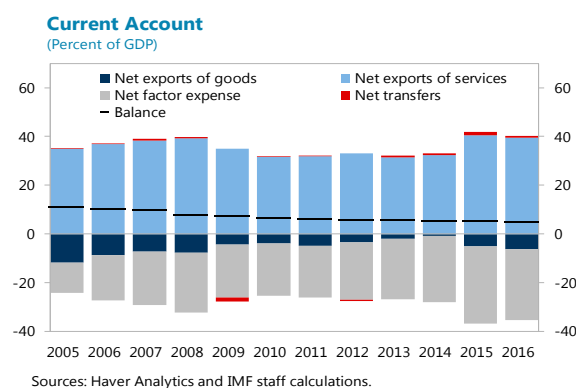
Financial Sector Flows and Value Added Growth
(Percent change y-o-y; right scale in billions of euros)



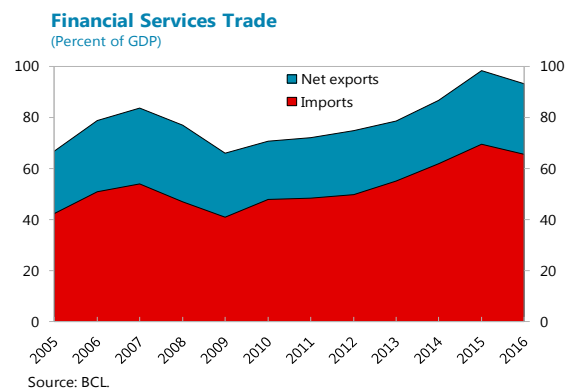
Sources: BCL, Haver Analytics, and IMF Staff calculations.

Figure 3. External Sector Developments

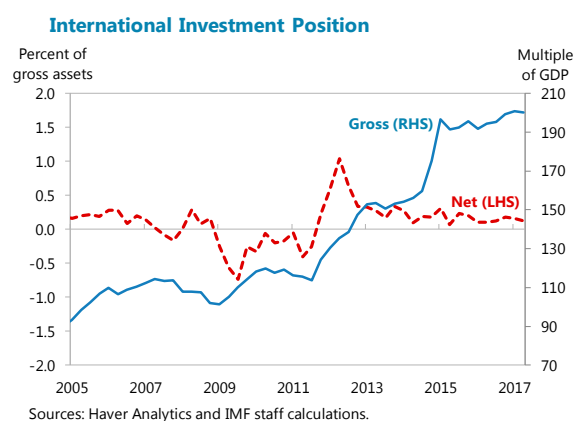
The current account has narrowed moderately as a result of rising net factor payments



... even as net exports of financial services have remained strongly positive.

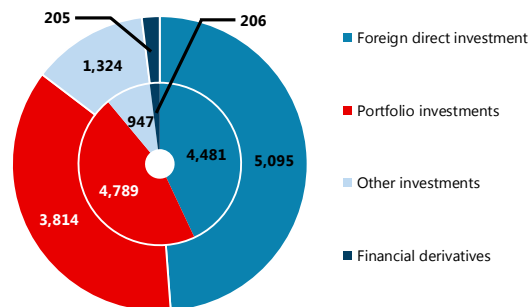


The net IIP is broadly stable relative to the gross IIP



While the huge gross IIP reflects mainly multinationals treasury operations and investment funds activity

IIP Structure: Assets (outer) and Liabilities (inner), 2017Q3
(Billions of euros)



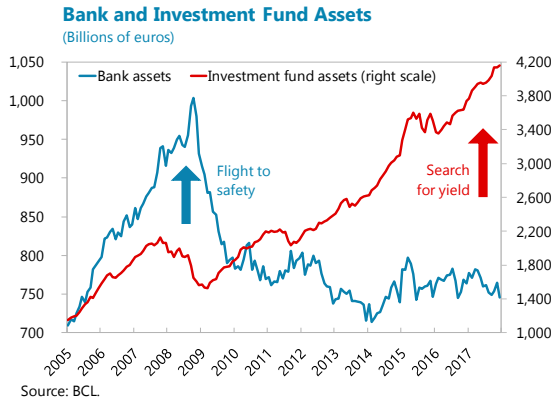
Sources: Haver Analytics and IMF staff calculations.

- **Banking system.** The banking system has strong capital and liquidity buffers. A few large banks are among the largest employers and contributors to the Corporate Income Tax (CIT). In the first half of 2017, net income before taxes and provisions declined by about 1 percent year-on-year due to rising costs and despite stronger net interest income and commissions. Following the reclassification of a large firm from a financial to a non-financial institution in 2015, credit to non-financial firms in Luxembourg, including to resident multinationals for investment abroad, grew by about 13 percent in 2017. Despite some volatility in new loan production, credit to households, mainly mortgage lending, grew by 7 percent in 2017, in line with its historical trend rate.

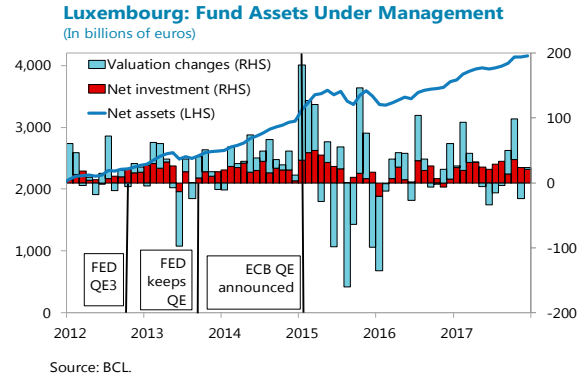
7. Luxembourg's compliancy with international anti-tax avoidance and transparency initiatives is progressing (Appendix I). The authorities are preparing to transpose the Anti-Tax Avoidance Directive (ATAD) I into law by end-2018, including the creation of Controlled Foreign Corporations (CFC) rules. They also plan to transpose the ATAD II, covering interactions with non-EU

Figure 4. Financial Sector Developments

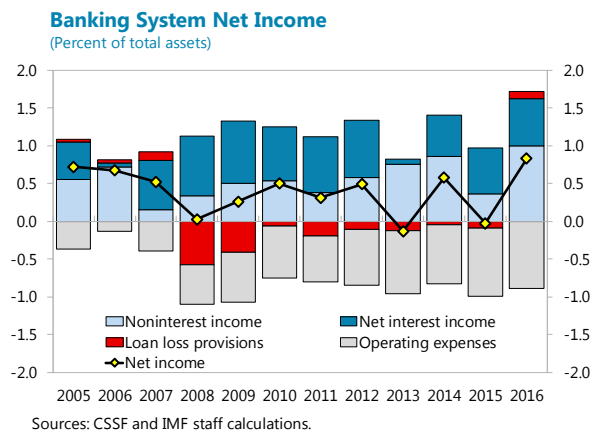
AUM of funds have strongly expanded and banking system size has stabilized



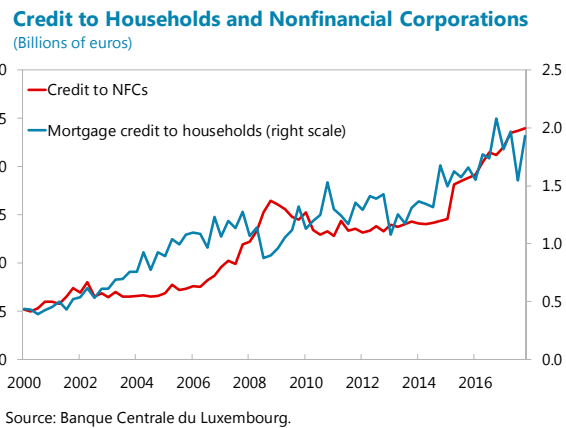
Net inflows in IF have been stable despite swings in asset values



The banking system remains profitable



Despite some volatility, domestic credit has grown at a stable trend since the early 2000s



countries, by end-2019. A recent proposal to tax revenues of internet firms in the EU to mitigate tax-avoidance practices, on the other hand, has encountered opposition from the Luxembourg authorities (among others) who consider it important to first achieve a level global playing field in taxation of the digital economy. Finally, the European Commission concluded in October 2017 that the advance tax rulings for Amazon involved illegal state aid and required Luxembourg to recover undue tax savings estimated at €250 million. The authorities have appealed the decision in court.

OUTLOOK AND RISKS

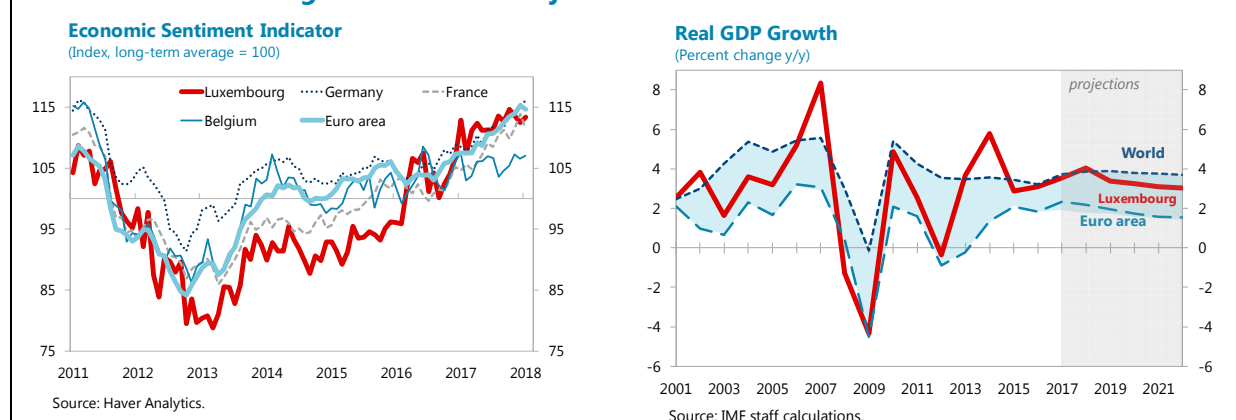
8. The medium-term growth outlook remains favorable, underpinned by robust domestic demand and net services exports. Real GDP growth is projected at 4.3 percent for 2018, above the improving euro area rate, also reflecting strong sentiment and the recent output momentum. Growth should gradually decline to its trend rate of 3 percent thereafter.² The medium-term growth projection assumes a stabilization in the expansion of the financial sector and of FDI inflows. The moderate but steady contribution of net services exports to growth over the medium term reflects Luxembourg's function as a financial hub and the ongoing recovery in the euro area. The wage indexation, personal income tax cuts, and improving sentiments would sustain domestic demand. Despite the solid growth outlook, skills mismatches and unemployment traps will likely keep the unemployment rate at about 5 percent over the medium term. Inflation is expected to slow to about 1.5 percent in 2018, mainly because of the introduction of free childcare for 20 hours per week. With the increase of inflation in the euro area and continuation of wage indexation, inflation is projected to return to its medium-term rate of 2 percent thereafter.

Luxembourg: Baseline Macroeconomic Framework, 2015–23

	2015	2016	2017	2018	2019	2020	2021	2022	2023	
			Est.		Projections					
Real GDP (percent change)	2.9	3.1	3.5	4.3	3.7	3.3	3.2	3.1	3.0	
Domestic demand (percentage pt. contribution to growth)	0.9	1.1	1.8	2.6	2.0	1.8	1.8	1.6	1.6	
Net exports (percentage pt. contribution to growth)	1.8	1.9	1.8	2.0	1.7	1.5	1.4	1.4	1.4	
CPI inflation (percent change)	0.1	0.0	2.0	1.5	1.9	2.0	2.0	2.0	2.0	
General government balance (percent of GDP)	1.4	1.6	1.4	0.7	0.2	0.5	0.4	0.3	0.3	
General government gross debt (percent of GDP)	22.0	20.8	23.0	22.9	22.8	22.4	22.1	21.8	21.7	
Unemployment rate (percent, national definition)	6.8	6.4	5.8	5.5	5.2	5.1	5.1	5.1	5.1	
Current account balance (percent of GDP)	5.1	4.8	5.5	5.4	5.3	5.2	5.2	5.1	5.1	
Nonfinancial private sector credit (eop, percent change)	15.7	8.7	7.0	5.3	5.6	5.3	5.3	5.1	5.1	

Source: Staff estimates.

Figure 5. Growth Projections and Domestic Sentiment



² Staff estimate potential output using a HP filter because Luxembourg is a small country with volatile economic macroeconomic indicators that heavily depends on its financial sector.

9. Luxembourg’s external position is projected to remain broadly in line with fundamentals. The current account surplus is expected at just above 5 percent of GDP over the medium term, mainly reflecting a large surplus in services associated with Luxembourg’s role as a financial hub and center for cash pooling for large internationally-active corporations. Net FDI and portfolio investment continue to dominate the financial account. Luxembourg’s positive net IIP is expected to strengthen further over the projection period. Staff’s External Balance Assessment (EBA-lite) indicates that Luxembourg’s external position is broadly consistent with fundamentals, and staff considers the current account surplus close to its norm, with a slightly overvalued real effective exchange rate (Appendix II).

10. Risks are mostly on the downside:

- *International tax developments.* The changing international tax environment, including in the U.S., remains a challenge for Luxembourg.³ Risks to the economic model and fiscal revenues, however, are mitigated by strong fiscal buffers and by Luxembourg’s other competitive advantages such as its business-friendly environment and fiscal stability.
- *Brexit.* The U.K. is an important trading partner, especially for financial services, and Brexit could disrupt Luxembourg’s delegation model for portfolio management of investment funds. On the other hand, Luxembourg could benefit from relocation of financial institutions. Several insurance companies and a few banks have already announced relocation of activities to Luxembourg. The Brexit process may also have implications for the location of financial activity required within the EU to enjoy passporting rights.
- *Financial volatility.* Vulnerabilities resulting from interconnections via the investment fund industry are important, and could be ignited by materializing global risks. In a baseline scenario of gradual monetary policy normalization associated with a continued recovery, major outflows from investment funds would likely not materialize. However, unexpectedly large monetary tightening (or a spike in global risk aversion) may result in large redemptions from investment funds and fire sales from asset managers, especially in more risk-prone asset classes, and some cash deposits held with some Luxembourg banks could be withdrawn, causing a liquidity shock. The volume of fund AUM invested in assets potentially subject to liquidity mismatches with redemption terms has become large relative to the balance sheet of custodian banks.⁴ Moreover, a large and sustained shock to investment fund AUM would impair bank profitability through a decline in net fee and commission income, and affect growth and fiscal revenue.

³ The U.S. is the first source country for inward FDI in Luxembourg, with a stock of FDI of about US\$800 billion in 2016.

⁴ Between January 2007 and January 2016, AUM of high yield funds, emerging market funds and corporate bond funds have increased by about €600 billion (about 11 times 2016 GDP).

Authorities' Views

11. The authorities agreed that the economic outlook for Luxembourg remains bright with downside risks stemming from increased financial volatility and a retreat from cross-border integration together with policy uncertainty at the global level. They were convinced that it is crucial for Luxembourg to maintain sound policies and to further increase the resilience of the financial sector to external shocks. The authorities noted that the implications of Brexit remain uncertain, in particular regarding U.K. access to the EU single market for financial services. They did not expect the delegation model for investment funds to be challenged. They saw limited risks stemming from sudden, large interest rate increases resulting from abrupt monetary policy normalization. They saw limited risks stemming from sudden, large interest rate increases resulting from monetary policy normalization and based on their stress test results felt that deposit outflows could be counterbalanced by liquid assets including deposits at the BCL. The authorities agreed that Luxembourg's external position is broadly in line with fundamentals.

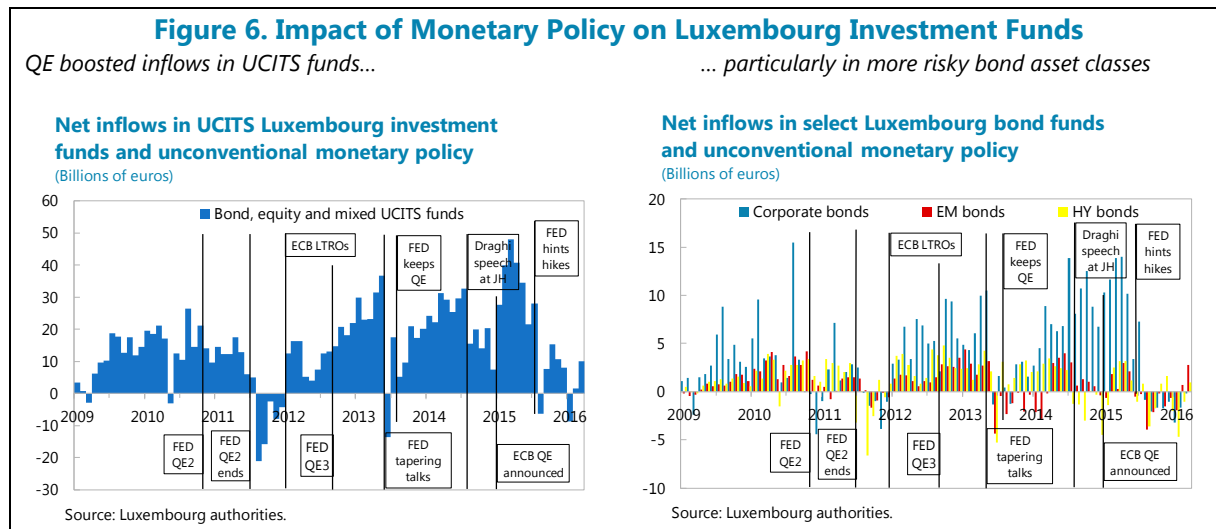
POLICIES

A. Financial Sector

12. Since the global financial crisis, accommodative monetary policy and search for yield have contributed to the rapid expansion of the Luxembourg investment fund industry and the strong performance of the financial sector. In addition to a reduction in bank intermediation since the financial crisis, QE and low interest rate policy have fueled the expansion of the fund industry through: (i) abundant liquidity and a global search for yield, creating demand for assets offering higher yields than traditional bank savings instruments; (ii) relative expansion of investment funds into more risky asset types (high yield bonds, emerging market bonds, equity), including as a result of portfolio rebalancing; and (iii) rich valuation effects. This boost to the investments fund industry has generated income for the financial sector at large and stimulated ancillary service activities.

13. Evidence suggests that monetary policy announcements impact net inflows into investment funds. Moreover, net inflows into investment funds are directly and positively influenced by short-term interest rates, after controlling for stock market performance and volatility. This association is particularly driven by a negative correlation between redemptions and interest rates. Under a scenario of gradual monetary policy normalization, net inflows would be only marginally reduced. However, under an adverse stress scenario with an abrupt rise in interest rates and adverse market developments, aggregate redemptions from investment funds could be large.⁵

⁵ Selected Issues Paper, Chapter one, "Impact of Monetary Policy on Luxembourg's financial system and economy".



14. Luxembourg banks have withstood the low interest environment well and protected their lending spreads. The four large domestically oriented banks have better profit performance than European banks on average. They have passed on lower rates to domestic borrowers while lending spreads have remained broadly constant and nonperforming loans (NPLs) low, and so their net interest margins have remained stable since the global financial crisis, slightly above EU average. Fee and commission income have benefited from various activities such as those related to the investment fund industry, while operating costs are below European average. There is limited evidence that low interest rates have contributed to balance sheet expansion by lifting the demand for mortgages, as new mortgages have continued to grow along a broadly constant trend despite declining rates, perhaps because of housing supply constraints.

15. The Luxembourg financial system has become more interconnected domestically and globally, according to sectoral financial accounts. In the three years to June 2017, liabilities of Luxembourg monetary and financial institutions (MFIs) to domestic sectors have grown by €125 billion, about 2.5 times 2016 GDP, reaching €395 billion. MFIs have become more connected among themselves, with local offices of multinational firms (“other financial institutions”) and with investment funds. During the same period, investment funds’ liabilities have increased by about €1 trillion, while total gross liabilities of the sector “other financial institutions” (which includes various entities conducting international Treasury operations) vis-à-vis all domestic sectors (including itself) and the rest of the world have increased by about €4 trillion. Linkages between local custodian banks and investment funds, both from deposits and derivative contracts, remain significant.

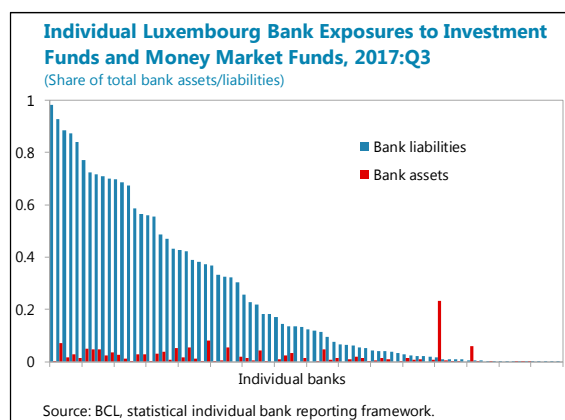
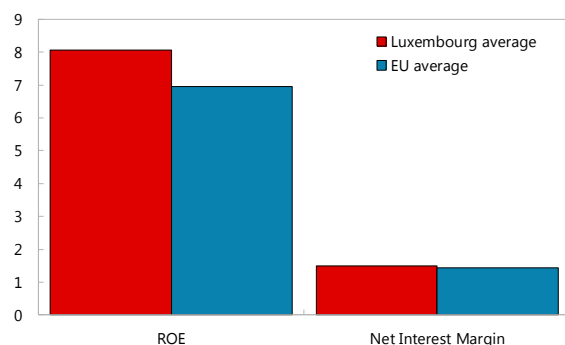


Figure 7. Bank Performance and Lending Conditions

Luxembourg banks are relatively profitable ...

Profitability Indicators - Domestically oriented banks (2016)

(Percent)

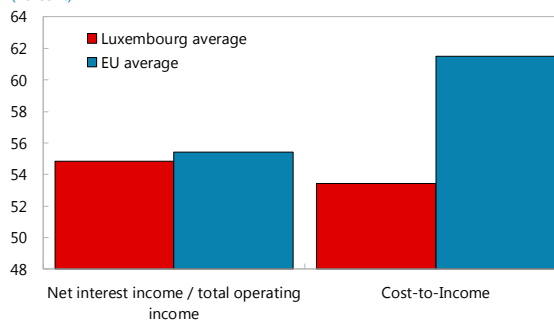


Sources: SNL, European Banking Authority, and Detragiache, Tressel and Turk (2017).

... have diversified income and are cost efficient

Profit composition and cost performance - Domestically oriented banks (2016)

(Percent)

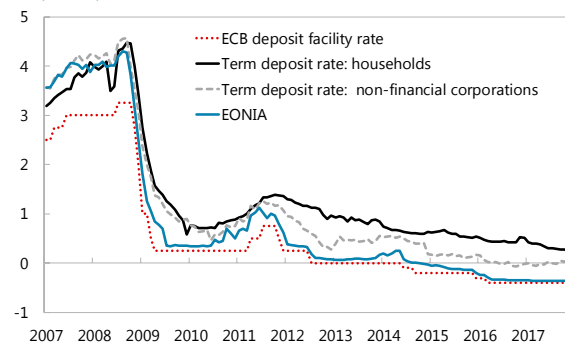


Sources: SNL, European Banking Authority, and Detragiache, Tressel and Turk (2017).

Monetary policy has resulted in lower returns on deposits

Deposit Rates

(Percent)

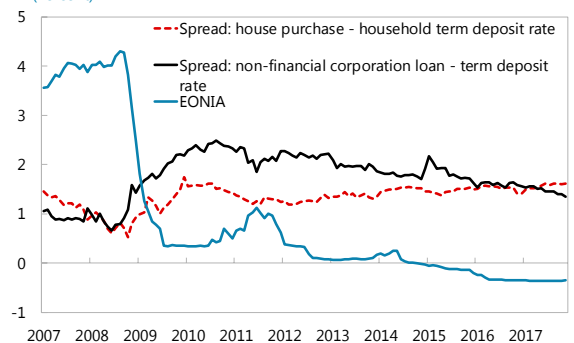


Source: Haver Analytics.

... but banks protected their lending spreads

Lending Spreads

(Percent)



Sources: Haver Analytics.

16. The authorities have been pursuing an ambitious regulatory and supervisory reform agenda and should take advantage of the current favorable environment to implement all 2017 FSAP recommendations (see Appendix III):

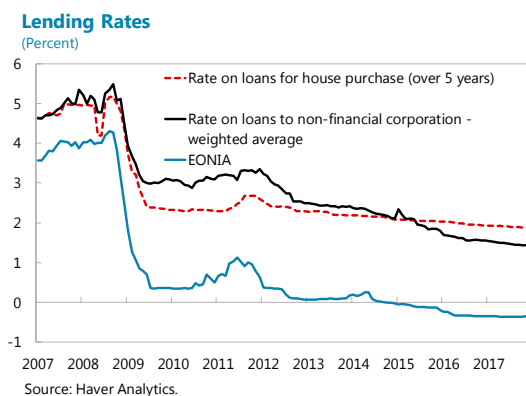
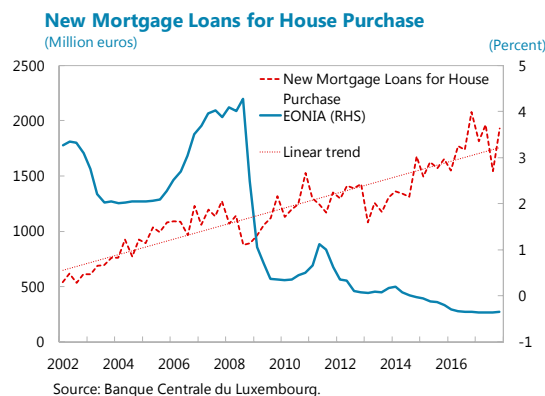
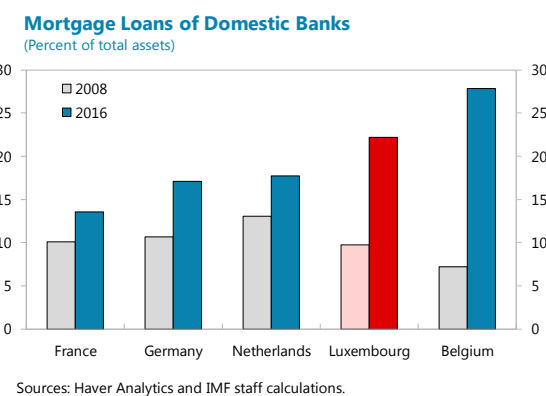
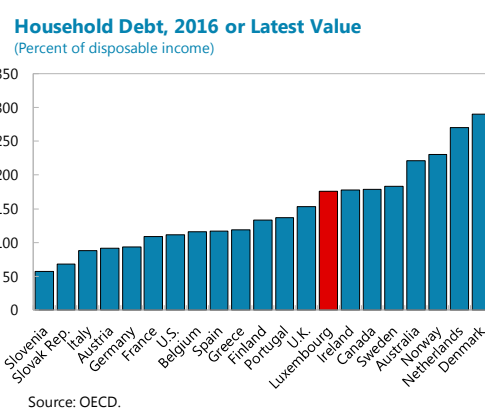
- In the banking sector, intensive supervision of banks' large cross-border exposures is essential.* Foreign bank subsidiaries in Luxembourg upstream liquidity to their parents abroad. The frequency of on-site inspections of the Luxembourg subsidiaries of significant institutions should continue to intensify, and rigorous supervision of the waivers for large exposure limits of internationally-oriented banks is important. The authorities should reinforce the oversight of non-bank holding companies of banks and continue to advocate for a European approach. Appropriate resolution plans for the most important banks established in Luxembourg should be finalized.
- In the investment fund sector, risk monitoring and the supervisory regime should be further enhanced to keep up with the strong growth and increasing complexity of the sector.* The authorities should continue to strengthen the inspection regime, develop close engagement with regulators in jurisdictions where delegated portfolio and risk management are prominent, and

develop system-wide methodologies for liquidity stress-testing, while coordinating at the EU and international levels. They should also provide guidance to the industry on liquidity stress-testing and the use of liquidity management tools. To help limit the build-up of risks, there is scope for greater harmonization of securities regulation across the EU, and for greater uniformity of application of EU rules.

- *Macprudential oversight appears to be working well but should be strengthened.* Legal steps underway to expand the toolkit to include borrower-based mortgage lending limits are welcome. The leading role of the *Banque centrale du Luxembourg* (BCL) in the *Comité du Risque Systémique* (CdRS) and BCL access to granular data should be enshrined into law, and the substance of the CdRS macro-financial risk analysis, including the risk-dashboard, should be published.
- *Governance arrangements should be upgraded.* The operational independence of the *Commission de Surveillance du Secteur Financier* (CSSF) and the *Commissariat aux Assurances* (CAA) should be enshrined into law. The code of conduct for non-executive members of the BCL Supervisory Board could be further aligned to best practices, and codes of conduct for the members of the non-executive boards of the CSSF and the CAA should be put in place. The relationship between the government and banks with state participation should be formalized on an arms-length basis.
- *The authorities should continue to address risks related to anti-money laundering and combating the financing of terrorism (AML/CFT).* The recent transposition into national law of the 4th EU AML/CFT Directive is an important step, and ought to be followed by the establishment of registries of beneficial owners for firms, trusts, and other entities. The National Risk Assessment should focus on the specific ML/FT risks related to tax evasion and activities of trust and company service providers, and its finding should guide remedial actions where needed.

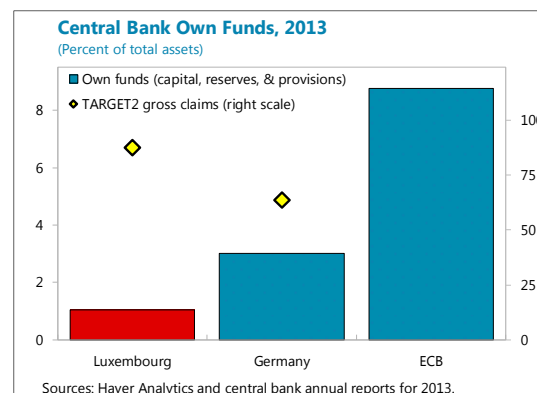
17. Risks in the real estate market should continue to be closely monitored, also in view of the risks to the economic outlook, and further action taken as needed. House prices appear consistent with underlying trends and price rises appear to largely reflect structural supply constraints in the context of strong demand, in part reflecting immigration of workers and their families.⁶ Cyclical factors such as the low interest rate environment and construction costs also contribute to the price dynamics. Recent measures have appropriately built capital buffers in the banking system while discouraging riskier lending. However, household debt is relatively high and limits to debt-service to income ratios should be set if house prices continue to outpace disposable incomes.

⁶ Selected Issues Chapter Two, "Housing Market: Assessment and Policy Recommendations".

Figure 8. Bank Credit and Household Debt Developments*Lending rates have declined**... new mortgages have grown steadily**Raising the share of mortgages in banks**But household debt remains manageable*

18. The capitalization of the BCL should be strengthened from a risk management perspective to deal with contingencies. BCL's capital-to-asset ratio is currently below that in other euro area central banks. Staff encourages the authorities to gradually raise BCL capital to bring it into line with that of peers.

19. Regulation and supervision need to be upgraded to deal with Fintech risks. Innovation in the financial industry takes many forms, and Luxembourg is actively engaged in Fintech developments.⁷ It may be a game changer for some professions in Luxembourg's banking and asset management sectors by creating new business opportunities while denting margins, reducing market shares, and imposing changes to business models. However, it may also pose new challenges to financial stability. Regulatory and supervisory arrangements will need to keep pace with Fintech developments.



⁷ Financial innovation includes blockchain technology, cryptocurrency, security and authentication, automated investment services, Big Data analytics, and mobile and e-payments.

Authorities' Views

20. The authorities are in the process of following up on most recommendations of the 2017 FSAP Update. More frequent on-site inspections for investment funds and banks are being introduced. Methodologies for liquidity and system-wide stress testing of investment funds are being developed, and studies on the effectiveness of liquidity management tools are being undertaken with the objective of providing industry guidance. In this context, the authorities have been participating in EU and international fora.⁸ They have also stepped up risk monitoring of bank-investment fund linkages, while the supervisor is exploring avenues to access security-by-security data on investment funds. Supervision of the waiver to the large exposure limit of internationally-oriented banks remains a key focus. With the upcoming EU harmonized reporting on the maturity ladder, the supervision of large intragroup exposures will be strengthened as recommended in the 2017 FSAP. In the context of the review of the CRR/CRD-IV/BRRD/SRMR, the authorities remain attached to the objective of further risk reduction in the banking sector. The national authorities considered it crucial that institutions, including local subsidiaries, maintain sufficient levels of own funds and eligible liabilities to allow for a smooth implementation of resolution strategies. On the governance of supervisory bodies, the national authorities continued to feel comfortable with their model in which the Ministry of Finance representative chairs the non-executive boards of supervisors. They underlined their commitment to tackle risks from money laundering in the financial sector. The National Risk Assessment is underway and is expected to be completed in the second half of 2018.

21. The authorities stressed that they are actively managing risks in the housing market. The national authorities agreed to consider publication of the substance of the CdRS macro-financial risk analysis to enhance transparency and communication of macroprudential policies. They continued to strengthen their monitoring of the real estate market, noting that action has been taken to build-up buffers in the banks and to make borrower-based macroprudential instruments available. The authorities acknowledged that medium-term vulnerabilities reside in the interaction between household balance sheets and real estate valuations. The national authorities agreed that real estate valuations are broadly in line with economic fundamentals but that there is a growing affordability problem because of supply-side constraints.

B. Fiscal Policy

22. The 2017 fiscal surplus is estimated at 1.4 percent of GDP but it is projected to decline to 0.8 percent of GDP in 2018, while a small surplus is envisaged over the medium-term. The 2017 outturn reflects strong corporate income tax revenues, in part temporary. Staff expects the surplus to largely disappear in the coming years because of the full impact of the recent tax reform and a continued need for high public investment in infrastructure, education, and healthcare. The public debt-to-GDP ratio would stabilize at around 22 percent of GDP, among the lowest in the EU,

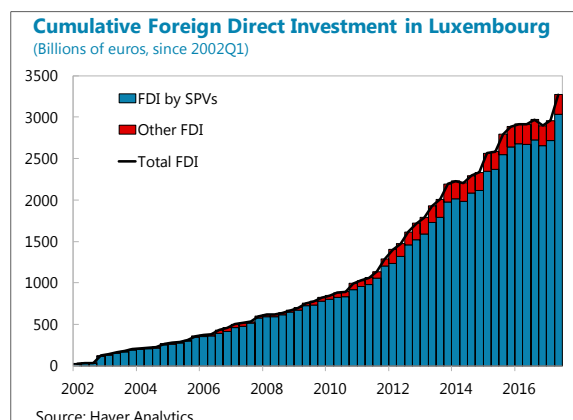
⁸ On February 14, the ESRB in which the CSSF participates, published a set of recommendations addressed to the European Commission and ESMA to tackle systemic risks related to the use of leverage and liquidity mismatches in investment funds, including additional liquidity management tools, further supervisory requirements, guidance on tighter liquidity stress testing practices, harmonized reporting requirements in the EU, and limits to leverage (<https://www.esrb.europa.eu/news/pr/date/2018/html/esrb.pr180214.en.html>).

and remain sustainable under different scenarios. In the scenario of a sizable contingent liability shock, possibly related to financial sector support operations, public debt would increase but remain below 35 percent of GDP.

23. Staff welcomes Luxembourg’s implementation of the EU and international tax transparency and anti-tax avoidance agenda but there may be some risks to tax revenue.

The authorities have taken welcome steps in this direction, including the EU-wide automatic exchange of tax rulings effective from 2017, and the submission to Parliament of a draft law to introduce a new (BEPS-compliant) IP Box regime. A key move forward will be the timely transposition of the two EC Anti-Tax Avoidance Directives, including the establishment of best-practice rules

for Controlled Foreign Corporations. Ensuring that special tax regimes and transfer pricing arrangements are aligned with evolving international and EU standards will widen the corporate tax base. This could create some room to further lower statutory corporate tax rates in a revenue neutral manner to safeguard competitiveness.⁹ The large increase in FDI by Special Purpose Vehicles in Luxembourg in recent years suggests that incentives to locate multinational assets in the country have been very strong. Greater corporate tax transparency, the U.S. tax reform, and further anti-tax avoidance measures could, however, diminish incentives to conduct business through Luxembourg and affect corporate taxes and economic activity (see Appendix I).



24. While Luxembourg has fiscal space, domestic considerations and the external risks to tax revenue do not warrant to use it at this juncture. With low public debt and a structural balance remaining above the MTO of -0.5 percent of GDP, Luxembourg has some fiscal space. At present, with a positive output gap, an external position broadly in line with fundamentals, and rising inflation, it is appropriate for Luxembourg to maintain a broadly balanced budget over the medium term and keep the public debt ratio at its current low level. This would preserve room for maneuver in the event downside risks materialize—particularly risks to tax revenues from the changing international tax environment. In the 2017 Article IV consultation, staff estimated that tax revenue of up to 1–1½ percent of GDP could be at risk from greater corporate tax transparency and tax avoidance measures.¹⁰ The government should also prepare contingency plans to address potentially sizable and permanent revenue losses. Increasing the very low real estate taxes and enhancing green taxation are possible instruments. Real estate taxes are very low in a cross-country perspective, at about 0.7 percent of GDP for 2016.

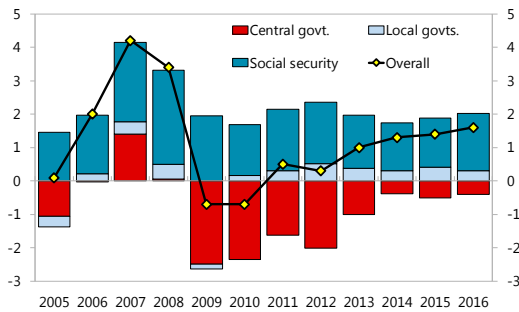
⁹ Under the 2016 tax reform, the combined corporate income tax rate was reduced from 29 percent to 26 percent.

¹⁰ See IMF Country Report No. 17/113. This estimate does not include an assessment of the possible impact of the recent U.S. tax reform.

Figure 9. Fiscal Policy Developments

The general government has experienced a surplus

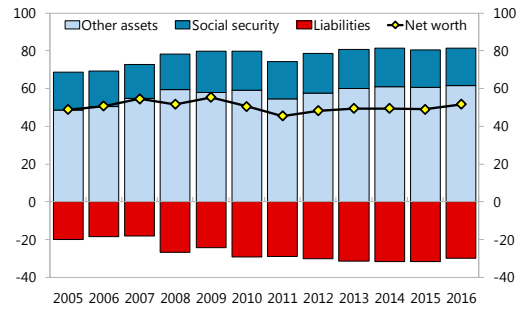
General Government Balance
(Percent of GDP)



Source: STATEC.

Allowing a stable positive net worth

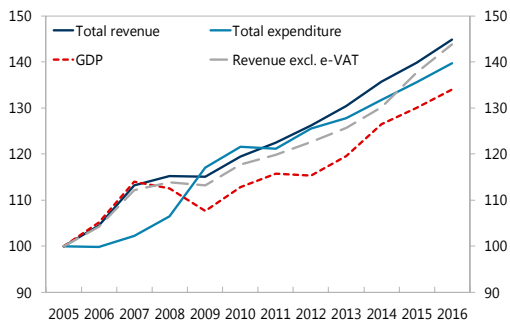
General Government Net Worth
(Percent of GDP)



Source: Haver Analytics.

Expenditures and revenues have outpaced GDP

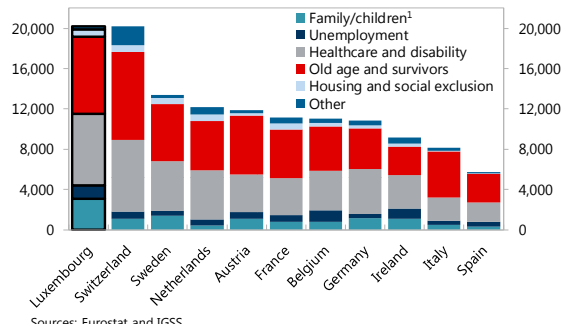
Revenues, Expenditures, and GDP
(Real index number, 2005=100)



Sources: STATEC and IMF Staff calculations.

Partly reflecting a generous social benefit system

Social Benefits Per Head, 2015
(Euros)



Sources: Eurostat and IGSS.

¹ Adjusted for family benefits provided to cross border workers.

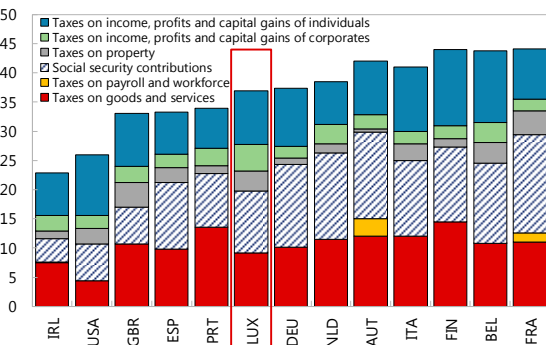
Figure 10. Composition of Tax Revenues

VAT account for a smaller share of revenues than in many countries ...

... and real estate taxes are very low

Tax revenues by Main Components, 2016

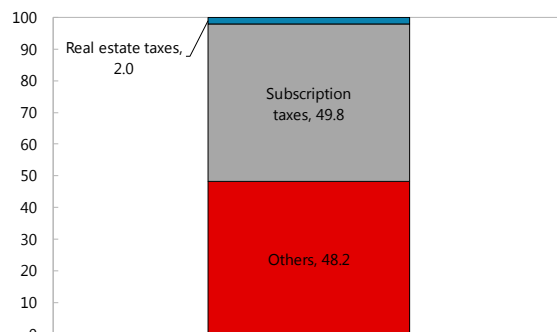
(In percent of GDP, total government)



Source: OECD.

Luxembourg - Tax on Property Components

(Percent of total tax on property)



Sources: OECD, Haver Analytics and IMF Staff Calculation.

25. Further pension reform is needed to ensure the system’s long-run viability and preserve fairness across generations. Population ageing is expected to significantly increase pension expenditures in the coming decades (by 4–9 percent of GDP by 2060, depending on the assumed population growth rate). The current surpluses in the system are projected to disappear in the medium term and reserves to progressively run out thereafter. This would deteriorate the fiscal position. Given the long lead time needed for meaningful reforms, the tripartite Working Group on Pensions should develop policy options ahead of this year’s general election. In view of the low effective retirement age of 61 years, compared to the statutory retirement age of 65 years, and rising life expectancy, priority should be given to reducing the incentives for early retirement.

Authorities’ Views

26. The government is committed to its prudent fiscal policy and continues to implement the international tax transparency and anti-tax avoidance agenda. The authorities generally agreed with staff’s fiscal projections and concurred that Luxembourg should maintain a small fiscal surplus and keep public debt low while preserving fiscal buffers for contingent exogenous shocks that may adversely impact the economy. The government highlighted that Luxembourg has started in 2017 the automatic exchange of reportable information for 2016, and that it is in the process of transposing the Anti-Tax Avoidance Directives I and II into national law, including the introduction of a controlled foreign corporations rule. It was expected that Parliament will adopt the new, BEPS-compliant IP box regime by the summer. While too early for an impact assessment, the government expected that Luxembourg would benefit from a more level international taxation playing field given its various comparative advantages, and that the revenue impact of these measures would be limited. The impact of the U.S. tax reform was considered an issue not only for Luxembourg but for the entire EU, and the reform’s alignment with existing tax treaties and WTO obligations were seen as deserving review.

C. Structural Reforms

27. Supply constraints in the housing market have resulted in affordability issues. While house price appreciation since the crisis appears in line with that in large cities in Germany or Paris, Luxembourg has experienced a rapid deterioration of housing affordability. The price-to-rent ratio has increased, and the rental market seems of limited help in absorbing younger households which on average must incur sizable mortgage debt to purchase a house.¹¹ Staff considers that the following factors have contributed to rising bottlenecks in the residential real estate market:¹²

¹¹ A study by the ECB finds that, in a sample of 14 European countries, Luxembourg is the top country in terms of the proportion of young (e.g. of age less than 34) owner-occupier households with an outstanding mortgage on the main residence: <https://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp2087.en.pdf>. Among this population, loan-to-value ratios appear elevated, but are not among the highest.

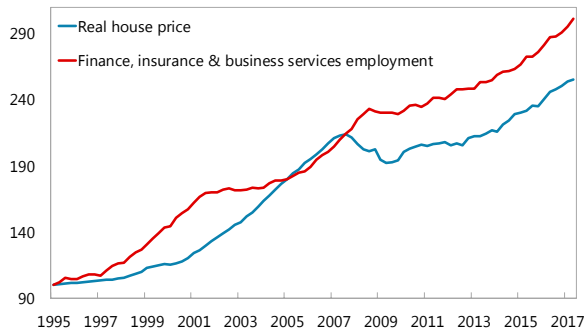
¹² Selected Issues Chapter Two, “Housing Market: Assessment and Policy Recommendations”.

Figure 11. Housing Market Bottlenecks

House prices has risen in line with employment growth ...

Real House Price and Employment

(Index 1995=100)

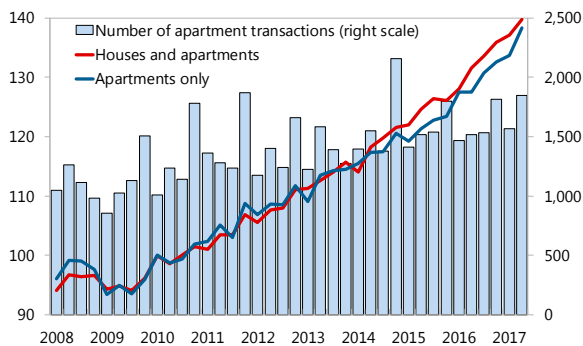


Sources: BCL and STATEC.

... housing transactions have risen

National Housing Prices and Transactions

(Index number, Q1 2010 = 100; right scale in units)

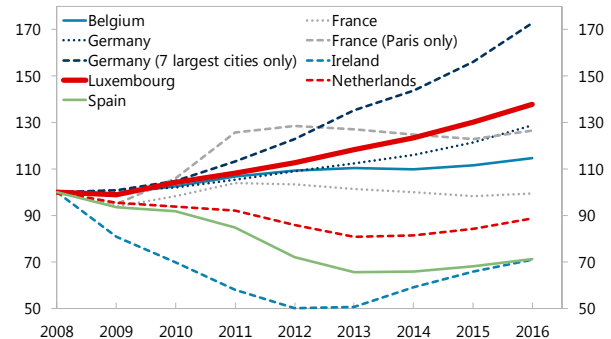


Sources: STATEC and IMF Staff calculations.

... resulting in a high price increase since the global financial crisis

Harmonized Housing Prices

(Index, 2008 = 100)

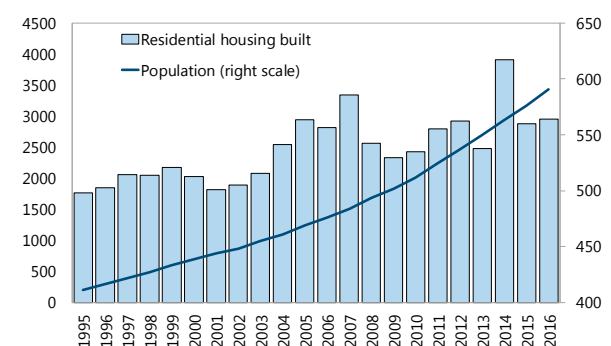


Sources: Haver Analytics and IMF staff calculations.

... but construction has not kept pace

Construction Activity and Population Pressures

(Thousands of square meters; right scale in thousands of persons)



Source: Statec.

- *Demand factors* include structural factors such as strong employment creation, rapid demographic growth, while very low real estate taxes and some tax deductibility of mortgages, including resulting from the 2016 tax reform, tend to support demand. A large contingent of daily cross-border commuters from neighboring countries create a significant latent demand. Cyclical factors include low real mortgage rates associated with accommodative monetary policy, and construction costs.
- *Limits on housing supply* are visible in residential real estate construction that has not kept up with demand, while turnover of dwellings has risen. Contributing factors include administrative constraints such as delays in obtaining building permits and zoning regulations that remain at municipality levels.

28. Containing house price pressures requires a strong effort to expand the stock of affordable housing. In addition to pruning excessive red tape, coordinating local zoning decisions with a national spatial development plan and imposing effective taxation on unused land zoned for construction would help alleviate bottlenecks. The reform of the distribution of municipal business

taxes among municipalities is a step in the right direction as it reduces incentives favoring commercial over residential real estate zoning decisions. There is also scope to increase the very low provision of social housing. Government benefits for house purchases should become more means-tested.

29. Despite strong job creation, unemployment of young and low-skilled workers is declining only gradually and activity rates of women and seniors remain low. The labor market is characterized by a robust employment growth, with salaried job creation at around 3 percent year-on-year in recent quarters. But, unemployment is edging down at a relatively low pace, and is expected to decrease only marginally in 2018. In addition, the share of long-term unemployed has increased over the last ten years, but has come down recently. Compared to the pre-crisis level, unemployment did not change substantially for natives and workers who hold tertiary education degree. But, it has significantly increased for youth, low and medium skilled workers, and non-native resident workers, suggesting that these vulnerable groups are facing greater difficulty to succeed in the labor market. Moreover, unemployment is highly persistent for older workers, with an employment rate at around 40 percent, far below EU peers. Labor market attachment is weak for women who work mostly part-time; women represent more than 80 percent of all part-time workers.

30. Skills mismatches and the financial disincentives to work embedded in the tax and benefit system makes further unemployment reduction challenging. While skills mismatches are a predominant factor in explaining structural unemployment, work disincentives inherent to the tax-benefits system are also important. High unemployment rates among the young and low-skilled reflect significant unemployment traps. The relatively low participation rate of women and the high gender-gap in part-time work mirror the high marginal effective tax rates for second-earners, especially at lower wages. Low participation of seniors is driven by the generosity of the pension system and pre-retirement schemes.

31. Increasing the employment prospects for these groups requires further efforts to reduce skills mismatches and make work more rewarding. Education reform and further coordination between the national employment agency (ADEM), schools, and employers on vocational training and apprenticeship programs would better align education outcomes with skills demanded in the labor market. Further strengthening the Integration Program to facilitate the activity rate of refugees could improve their employment prospects. Refocusing unemployment and welfare benefits to promote active job search and vacancy acceptance, and a greater use of in-work tax credits would ensure that the unemployed are better off taking up a job than remaining unemployed, and hence reduce unemployment traps, especially for the low-skilled. The introduction of the *Revenu d'Inclusion Sociale* (RevIS) is a step in this direction. The 2016 tax reform has introduced optional individual income taxation for married or co-habiting workers. Taking one further step to moving to fully individual income taxation would make the tax system more gender neutral by reducing the marginal tax rate applied to the earnings of second earners, often women. Further expanding the availability of daycare and after-school programs could also improve women labor market participation. Raising the participation rate of seniors requires phasing out benefits for early retirement.

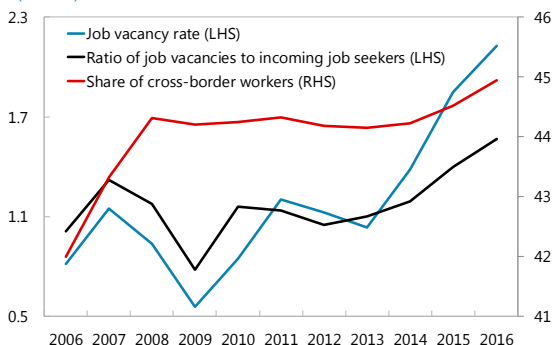
Figure 12. Unemployment and Inactivity Traps

Many new jobs go to cross-border workers, ...

... partially due to high disincentives to work.

Competition in the Labor Market

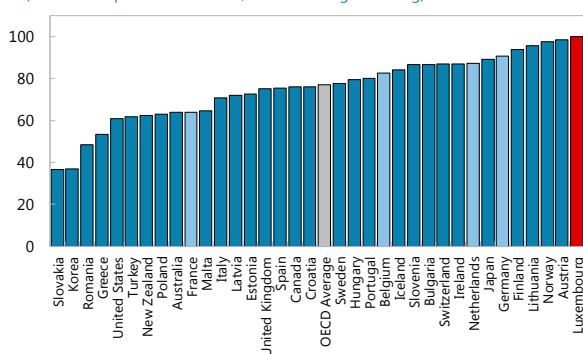
(Percent)



Sources: ADEM and Statoc.

Participation Tax Rate from Unemployment Benefits

(Married couple with 2 children, 67% of Average Working)



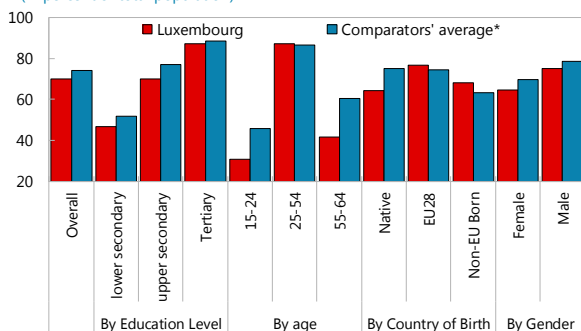
Source: OECD.

Activity rate is among the lowest, young, ...

... and most women work part-time.

Participation rate, 2016

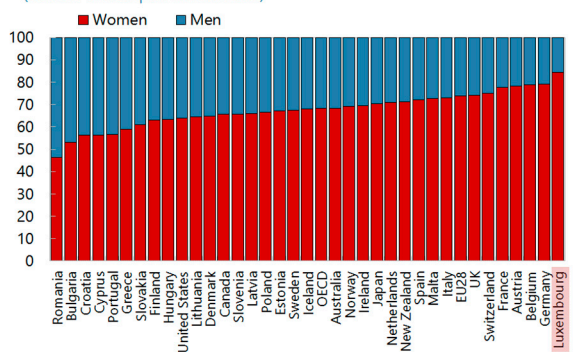
(In percent of total population)



*Comparators include Belgium, France, Germany, and The Netherlands
Source: Eurostat.

Gender Share of Part-time Workers, 2016

(Percent of total part time workers)



Source: OECD.

Authorities' Views

32. The authorities agreed that action to boost housing supply should be taken. They agreed that the rising affordability problem reflects supply constraints in the context of strong demand and that high debt could be an issue for some households, especially when interest rates rise. However, they noted that constraints resulting from rigid zoning decisions and administrative rules, and land hoarding are mostly under municipal authority, which is politically difficult to overcome. A draft law to introduce borrower-based macroprudential instruments is with Parliament and was expected to pass.

33. The authorities concurred with staff that including vulnerable groups in the labor market remains a challenge, and stressed that measures are being taken to reduce structural unemployment. The *Revenu d'Inclusion Sociale* (RevIS) soon to be passed into law aims at incentivizing return to work of the long-term unemployed. The beneficiaries of the RevIS would have to be registered at ADEM and could earn income when they accept a job without a full reduction in their welfare benefits. A potential increase of the second-earner tax deduction or gradually switching to individual income taxation could be analyzed but the authorities expected that the optional

individual taxation introduced by the 2016 tax reform will increase labor market participation of second earners. They also considered that the recently established free multilingual childcare for 20 hours per week would raise the labor participation of women. The authorities believed that the digital skills bridge program expected to be launched in spring 2018 would help to mitigate the effects of robotization on affected workers. They also considered that that steps to provide language courses and other training to newcomers under the new Accelerated Integration Program should facilitate integration of refugees.

STAFF APPRAISAL

34. Luxembourg's growth and employment outlook remain good but risks are mostly on the downside. The favorable prospects reflect positive synergies between generally sound economic and financial sector policies with the ongoing global recovery. The external position is broadly in line with fundamentals and desirable policy settings. Risks are related to the impact on the economy and tax revenue of changing international tax regimes; heightened financial volatility, possibly unleashed by re-assessment of risks and rising global interest rates, diminished cross-border integration and policy collaboration, or geopolitical events; and the fallout of Brexit. Domestically, continuously rising real estate prices have reduced affordability and could lead to excessive indebtedness of some households, especially when interest rates rise, while the long-term sustainability of the pension system is not assured.

35. The main policy challenge is to continue adapting Luxembourg's business model to the changing global environment, notably the evolving international tax regimes and the expected monetary policy normalization in the years to come.

36. To contribute to international efforts to improve the taxation of cross-border activities, the government should steadfastly continue to implement the EU and international tax transparency and anti-avoidance agenda. The authorities have already taken several welcome steps in this direction. A key move forward will be the timely transposition into national law of both EU Anti-Tax Avoidance Directives. The widening of the corporate tax base would allow to further lower statutory corporate tax rates in a revenue-neutral manner to safeguard Luxembourg's welcoming investment climate. Nevertheless, the changing international corporate tax rules and the possible impact of the U.S. tax reform could diminish incentives to conduct business through Luxembourg.

37. Fiscal policy should remain prudent and maintain buffers for use in the event downside risks materialize, in particular with respect to tax revenues. Strong economic activity has created some fiscal space. In view of the positive output gap, external equilibrium, and rising inflation, the fiscal space should not be used at this juncture. The government should target a small fiscal surplus over the medium term and stabilize the public debt ratio at about its low level, in line with the current policy stance. To address potentially sizable and permanent revenue losses, contingency measures should be readied, including to increase the very low real estate valuation tax bases and enhancing green taxation.

38. Further pension reform is needed to ensure the system's long-run viability and preserve fairness across generations. The current pension system surpluses are projected to disappear in the medium term and the built-up reserves would progressively run out thereafter. To avoid undue deterioration of the fiscal position, pension reforms are needed. In view of the rising life expectancy, priority should be given to increasing the low effective retirement age.

39. To help shield Luxembourg's highly interconnected financial system from global financial-market shocks and limit transmission to the rest of the world, the authorities should continue enhancing regulation and supervision in line with the 2017 FSAP recommendations. In the banking sector, on-site inspections should be further stepped up and rigorous supervision of banks' large cross-border exposures is essential. Appropriate resolution plans for the most important banks established in Luxembourg should be finalized and the oversight of non-bank holding companies of banks should be reinforced. Risk monitoring of investment funds should be further enhanced and close engagement with regulators in jurisdictions where delegated activities are prominent should be cultivated. Developing methodologies for system-wide liquidity stress-testing and providing guidance to the industry on stress-testing and the use of liquidity management tools are also needed. Adequate regulatory and supervisory arrangements covering Fintech should be put in place.

40. Macroprudential oversight appears to be working well but could be further strengthened. The draft law to enable setting borrower-based mortgage lending limits should be adopted. The leading role of the central bank in the systemic risk committee and its access to granular data should be enshrined into law, and the substance of the macro-financial risk analysis, including the risk-dashboard, should be published.

41. Further action should be taken to strengthen governance arrangements of the central bank and financial supervision authorities. The operational independence of the CSSF and the CAA should be enshrined into law. The code of conduct for non-executive members of the central bank supervisory board could be further aligned to best practice, and codes of conduct for the members of the non-executive boards of the CSSF and the CAA should be adopted. The relationship between the government and banks with state participation should be formalized on an arms-length basis.

42. The authorities should continue their AML/CFT efforts. Having recently transposed the Fourth EU AML/CFT Directive, they should now establish the registries of beneficial owners for firms, trusts, and other entities. The National Risk Assessment to be completed in 2018 should focus on the ML/FT risks related to tax evasion and activities of trust and company service providers, and the authorities should develop on the basis of its findings remedial actions where needed.

43. Containing the strong rise in house prices requires a determined effort to expand the stock of housing. Pruning excessive red tape, better coordinating local zoning decisions with a national spatial development plan, and imposing effective taxation on unused land zoned for construction would help lift bottlenecks. There is ample scope to increase the very low supply of social housing and government benefits for home owners should become more means-tested. In view of the rising household indebtedness, limits to debt-service-to-income ratios should be set if house prices continue to outpace disposable incomes.

44. Increasing the employment prospects for the young and low-skilled, and lifting the activity rates of women and senior requires further efforts to reduce skills mismatches and make work more rewarding. Skills mismatches are predominant causes of structural unemployment but work disincentives inherent to the tax-benefit system are also important. Education reform and more coordination between the national employment agency (ADEM), schools, and employers on vocational training and apprenticeship programs would help to better align education outcomes with skills demanded by employers. Further removing work disincentives resulting from the interaction of the social benefit and tax systems, including a greater use of in-work tax credits, would reduce unemployment traps, especially for the low-skilled. The introduction of the *Revenu d'Inclusion Sociale* is a step in the right direction. Moving to fully individual income taxation would make the tax system more gender neutral and help increase the activity rate of women. Raising the participation rate of seniors requires phasing out the generous benefits for early retirement.

45. Staff recommends that the next Article IV consultation with Luxembourg be held on the standard 12-month cycle.

Table 1. Luxembourg: Selected Economic Indicators, 2014–23

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
				Est.			Projections			
Real Economy (percent change)										
Gross domestic product	5.8	2.9	3.1	3.5	4.3	3.7	3.3	3.2	3.1	3.0
Total domestic demand	3.3	1.4	1.6	2.7	4.0	3.1	2.8	2.8	2.5	2.5
Private consumption	2.3	3.3	2.4	3.8	5.9	4.3	2.9	3.1	2.6	2.6
Public consumption	2.0	2.6	2.0	1.3	2.2	2.0	2.2	2.1	2.2	2.0
Gross investment	6.0	-2.8	0.0	2.0	2.2	2.0	3.0	2.8	2.8	2.8
Foreign balance 1/	3.3	1.8	1.9	1.8	2.0	1.7	1.5	1.4	1.4	1.4
Exports of goods and nonfactor services	14.0	6.9	2.7	3.9	4.4	4.2	4.1	4.2	4.1	4.0
Imports of goods and nonfactor services	14.6	7.1	2.1	3.7	4.1	4.1	4.1	4.2	4.1	4.1
Labor Market (thousands, unless indicated)										
Resident labor force	258.0	262.5	267.3	272.2	277.4	282.6	288.0	293.5	299.3	305.2
Unemployed	18.3	17.9	17.0	15.9	15.4	14.8	14.8	14.9	15.2	15.5
(Percent of total labor force)	7.1	6.8	6.4	5.8	5.5	5.2	5.1	5.1	5.1	5.1
Resident employment	239.6	244.7	250.2	256.3	262.0	267.8	273.3	278.5	284.1	289.7
(Percent change)	2.3	2.1	2.3	2.4	2.2	2.2	2.0	1.9	2.0	2.0
Cross-border workers (net)	156.3	161.5	168.2	172.9	177.8	181.7	185.3	188.8	192.0	195.3
Total employment	395.9	406.1	418.5	429.2	439.8	449.5	458.5	467.4	476.1	484.9
(Percent change)	2.6	2.6	3.0	2.6	2.5	2.2	2.0	1.9	1.9	1.9
Prices and costs (percent change)										
GDP deflator	1.6	1.3	-1.3	0.7	1.5	1.9	2.0	2.0	2.0	2.0
CPI (harmonized), p.a.	0.7	0.1	0.0	2.0	1.5	1.9	2.0	2.0	2.0	2.0
CPI core (harmonized), p.a.	1.3	1.7	1.0	1.3	1.3	1.8	1.9	2.0	2.0	2.0
CPI (national definition), p.a.	0.6	0.5	0.3	1.7	1.5	1.9	2.0	2.0	2.0	2.0
Wage growth 2/	2.3	3.0	0.7	2.5	2.2	2.5	2.5	2.5	2.5	2.5
Nominal unit labor costs 2/	-0.9	2.7	0.7	1.5	0.4	1.0	1.2	1.2	1.3	1.3
Public finances (percent of GDP)										
General government revenues	43.1	42.8	43.8	43.2	42.4	41.9	41.8	41.6	41.5	41.4
General government expenditures	41.8	41.5	42.1	41.8	41.6	41.8	41.3	41.2	41.1	41.1
General government balance	1.3	1.4	1.6	1.4	0.7	0.2	0.5	0.4	0.3	0.3
General government structural balance	0.9	1.2	1.6	1.5	0.6	0.3	0.3	0.3	0.3	0.3
General government gross debt	22.7	22.0	20.8	23.0	22.9	22.8	22.4	22.1	21.8	21.7
Balance of Payments (percent of GDP)										
Current account	5.2	5.1	4.8	5.5	5.4	5.3	5.2	5.2	5.1	5.1
Balance on goods	-0.8	-5.0	-6.4	-6.2	-6.0	-5.4	-5.3	-5.3	-5.2	-4.9
Balance on services	32.3	40.4	40.4	40.8	40.0	39.7	39.7	40.0	40.3	40.5
Net factor income	-27.1	-31.8	-29.8	-30.2	-29.6	-30.0	-30.2	-30.4	-31.0	-31.4
Balance on current transfers	0.8	1.5	0.6	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Exchange rates, period averages										
U.S. dollar per euro	1.33	1.11	1.11	1.13	...	...	...	...	...	...
(Percent change)	0.1	-16.5	-0.3	2.0	...	...	...	...	...	...
Nominal effective rate (2010=100)	100.5	97.0	98.9	101.5	...	...	...	...	...	...
(Percent change)	0.3	-3.5	2.0	2.6	...	...	...	...	...	...
Real effective rate (CPI based; 2010=100)	100.5	96.9	98.3	100.4	...	...	...	...	...	...
(Percent change)	-0.3	-3.6	1.5	2.1	...	...	...	...	...	...
Credit growth and interest rates										
Nonfinancial private sector credit (eop, percent change) ^{3/}	4.9	15.7	8.7	7.0	5.3	5.6	5.3	5.3	5.1	5.1
Government bond yield, annual average (percent)	1.3	0.4	0.2	0.2	...	...	...	...	...	...
Memorandum items: Land area = 2,586 sq. km; population in 2016 = 576,000; GDP per head = €94,100										
GDP (billions of euro)	50.0	52.1	53.0	55.3	58.5	61.8	65.1	68.6	72.1	75.7
Output gap (percent deviation from potential)	1.2	0.5	-0.1	-0.3	0.3	0.5	0.3	0.3	0.2	0.0
Potential output growth	3.3	3.6	3.7	3.8	3.7	3.5	3.5	3.3	3.1	3.1

Sources: Luxembourg authorities; IMF staff estimates and projections.

1/ Contribution to GDP growth.

2/ Overall economy.

3/ Including a reclassification of investment companies from financial to non-financial institutions in 2015.

Table 2. Luxembourg: Balance of Payments, 2014–23^{1/}
(Percent of GDP)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
	Projections									
Current account	5.2	5.1	4.8	5.5	5.4	5.3	5.2	5.2	5.1	5.1
Balance on goods and services	31.5	35.4	34.0	34.7	33.9	34.3	34.4	34.6	35.1	35.5
Trade balance 1/	-0.8	-5.0	-6.4	-6.2	-6.0	-5.4	-5.3	-5.3	-5.2	-4.9
Goods exports	37.3	30.8	28.4	28.8	26.9	26.6	26.3	25.8	25.4	25.0
Goods imports	38.1	35.8	34.8	34.9	33.0	32.1	31.5	31.1	30.5	29.9
Balance on services	32.3	40.4	40.4	40.8	40.0	39.7	39.7	40.0	40.3	40.5
Services exports	152.7	167.6	163.6	169.7	170.3	170.6	171.8	173.8	176.0	178.1
Services imports	120.3	127.2	123.2	128.9	130.3	130.9	132.2	133.8	135.8	137.7
Net factor income	-27.1	-31.8	-29.8	-30.2	-29.6	-30.0	-30.2	-30.4	-31.0	-31.4
Compensation of employees, net	-16.2	-16.5	-16.7	-16.7	-16.5	-16.3	-16.1	-16.0	-15.8	-15.7
Compensation of employees, credit	2.8	2.7	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
Compensation of employees, debit	19.0	19.2	19.6	19.6	19.4	19.2	19.0	18.9	18.7	18.6
Investment income, net	-10.9	-15.4	-13.0	-13.4	-13.0	-13.7	-14.1	-14.4	-15.2	-15.8
Investment income, credit	367.1	421.7	373.8	368.6	358.0	346.1	335.1	324.4	313.9	303.8
Investment income, debit	378.0	437.0	386.9	382.1	371.1	359.8	349.2	338.9	329.0	319.5
Balance on current transfers	0.8	1.5	0.6	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Capital and financial account	-5.7	-5.9	-6.1	-5.5	-5.4	-5.3	-5.2	-5.2	-5.1	-5.1
Capital account	-1.4	-0.5	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4
Financial account	4.3	5.4	5.7	5.1	5.0	4.9	4.8	4.8	4.7	4.7
Direct investment, net	63.2	297.9	172.8	155.5	140.0	126.0	113.4	102.0	91.8	82.7
Abroad	336.3	1361.3	196.0	176.1	158.6	142.7	128.5	115.7	104.1	93.7
In reporting economy	273.1	1063.5	23.2	20.6	18.6	16.8	15.1	13.6	12.3	11.1
Portfolio investment, net	-182.1	-337.2	-348.0	-348.0	-348.0	-348.0	-348.0	-348.0	-348.0	-348.0
Portfolio investment, assets	483.5	468.0	138.6	92.4	59.0	38.5	25.3	16.8	11.2	7.4
Portfolio investment, liabilities	665.6	805.3	486.6	440.4	407.0	386.4	373.3	364.8	359.1	355.4
Financial derivatives, net	-8.5	-7.8	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7
Other investment, net	131.9	52.6	170.9	187.7	203.2	217.2	229.7	241.1	251.2	260.4
Other investment, assets	250.0	56.4	270.4	270.4	270.4	270.4	270.4	270.4	270.4	270.4
Other investment, liabilities	118.1	3.8	99.5	82.7	67.2	53.2	40.6	29.3	19.2	10.0
Reserve assets	-0.2	-0.1	0.4	0.2	0.1	0.0	0.0	0.0	0.0	0.0
Errors and omissions	0.5	0.8	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Sources: STATEC and IMF Staff calculations.

1/ Includes merchanting trade operations.

Table 3. Luxembourg: General Government Operations, 2014–23
(Percent of GDP)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
	Projections									
Revenue	43.1	42.8	43.8	43.2	42.4	41.9	41.8	41.6	41.5	41.4
Taxes	26.7	26.2	27.1	26.8	26.1	25.8	25.7	25.6	25.6	25.5
Social contributions	12.0	12.0	12.2	12.3	12.2	12.1	12.0	11.9	11.8	11.7
Other revenue	4.5	4.5	4.5	4.0	4.1	4.1	4.1	4.1	4.1	4.1
Expenditure	41.8	41.5	42.1	41.8	41.6	41.8	41.3	41.2	41.1	41.1
Expense	40.4	40.1	40.4	40.1	39.9	39.7	39.6	39.5	39.4	39.4
Compensation of employees	8.7	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
Use of goods and services	3.5	3.7	3.8	3.7	3.7	3.6	3.5	3.4	3.4	3.4
Interest	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2
Social benefits	20.2	19.8	19.8	19.7	19.5	19.5	19.4	19.4	19.4	19.4
Other expense	7.4	7.5	7.7	7.7	7.7	7.7	7.7	7.7	7.6	7.6
Net acquisition of nonfinancial assets	1.4	1.4	1.7	1.7	1.7	2.0	1.7	1.7	1.7	1.7
Gross operating balance	5.0	5.0	5.7	5.4	4.8	4.5	4.5	4.4	4.4	4.3
Net operating balance	2.8	2.8	3.3	3.1	2.4	2.2	2.2	2.1	2.1	2.0
Net lending / borrowing	1.3	1.4	1.6	1.4	0.7	0.2	0.5	0.4	0.3	0.3
Net acquisition of financial assets	2.3	1.9	0.7	...	...	...	...	...	...	...
Monetary gold and SDRs	0.0	0.0	0.0	...	...	...	...	...	...	...
Currency and deposits	0.5	0.6	-1.1	...	...	...	...	...	...	...
Securities other than shares	0.2	1.4	0.7	...	...	...	...	...	...	...
Loans	0.7	-0.1	-0.5	...	...	...	...	...	...	...
Shares and other equity	0.5	-0.5	1.6	...	...	...	...	...	...	...
Insurance technical reserves	0.0	0.0	0.0	...	...	...	...	...	...	...
Financial derivatives	0.2	0.5	0.1	...	...	...	...	...	...	...
Other accounts receivable	0.5	0.5	0.0	...	...	...	...	...	...	...
Net incurrence of liabilities	1.0	1.0	-0.9	...	...	...	...	...	...	...
Special Drawing Rights (SDRs)	...	...	...	...	...	...	...	...	...	...
Currency and deposits	0.0	0.0	0.0	...	...	...	...	...	...	...
Securities other than shares	0.4	0.0	0.0	...	...	...	...	...	...	...
Loans	0.2	0.2	-0.8	...	...	...	...	...	...	...
Shares and other equity	0.0	0.0	0.0	...	...	...	...	...	...	...
Insurance technical reserves	0.0	0.0	0.0	...	...	...	...	...	...	...
Financial derivatives	0.0	0.0	0.0	...	...	...	...	...	...	...
Other accounts payable	0.4	0.7	-0.1	...	...	...	...	...	...	...
Memorandum items:										
Structural balance	0.9	1.2	1.6	1.5	0.6	0.3	0.3	0.3	0.3	0.3
Output gap	1.2	0.5	-0.1	-0.3	0.3	0.5	0.3	0.3	0.2	0.0
Public gross debt (Maastricht definition)	22.7	22.0	20.8	23.0	22.9	22.8	22.4	22.1	21.8	21.7

Sources: Luxembourg authorities; and IMF staff estimates.

Table 4. Luxembourg: General Government Financial Balance Sheet, 2013–16
(Millions of euros unless noted otherwise)

	2013			2014			2015			2016		
	Trans- actions	Other economic flows	Closing balance	Trans- actions	Other economic flows	Closing balance	Trans- actions	Other economic flows	Closing balance	Trans- actions	Other economic flows	Closing balance
Net financial worth	452	1,390	22,787	668	981	24,512	723	41	25,315	865	775	26,987
Financial assets	1,674	1,133	36,243	1,264	1,681	39,188	1,267	42	40,497	419	856	41,772
Currency and deposits	451	0	6,552	258	0	6,810	310	0	7,120	-578	-1	6,541
Debt securities	675	-314	7,285	89	578	7,952	706	48	8,706	346	137	9,189
Loans	125	0	1,626	348	-1	1,973	-45	0	1,928	-252	0	1,676
Equity and inv. fund shares	440	1,270	16,717	227	1,285	18,229	-255	203	18,177	857	781	19,815
Financial derivatives	-198	178	47	90	-181	-44	268	-208	16	38	-61	-7
Other financial assets	181	-1	4,016	252	0	4,268	283	-1	4,550	8	0	4,558
Liabilities	1,219	-257	13,456	520	700	14,676	505	1	15,182	-478	81	14,785
Currency and deposits	12	0	249	13	-2	260	11	1	272	10	-1	281
Debt securities	1,050	-259	6,247	200	702	7,149	0	0	7,149	0	82	7,231
Loans	253	-1	4,715	105	0	4,820	105	0	4,925	-431	0	4,494
Other liabilities	-96	3	2,245	202	0	2,447	389	0	2,836	-57	0	2,779
Statistical discrepancy	3			76			39			32		
Memorandum items:												
Net financial worth (percent of GDP)			49.0			49.0			48.6			50.9
Financial assets (percent of GDP)			77.9			78.4			77.7			78.8
Liabilities (percent of GDP)			28.9			29.4			29.1			27.9
GDP			46,499			49,993			52,102			53,005

Sources: IFS; and IMF staff estimates.

Table 5. Luxembourg: International Investment Position, 2012–17^{1/}

	2012	2013	2014	2015	2016	2017Q3
Billions of Euros						
International investment position	21.8	24.0	16.0	19.6	18.4	14.6
Assets	6,492.4	7,118.2	8,750.5	10,196.5	10,563.9	10,437.9
Liabilities	6,470.5	7,094.3	8,734.5	10,176.9	10,545.5	10,423.2
Direct investment	393.7	389.7	520.7	655.9	744.8	614.4
Assets	3,040.7	3,405.7	4,428.9	5,428.0	5,482.6	5,094.9
Liabilities	2,647.0	3,016.0	3,908.2	4,772.1	4,737.8	4,480.6
Portfolio investment	-623.0	-641.9	-779.9	-908.5	-1,043.2	-975.3
Assets	2,328.3	2,543.4	2,994.3	3,359.7	3,563.5	3,814.0
Liabilities	2,951.3	3,185.3	3,774.2	4,268.2	4,606.6	4,789.3
Financial derivatives	4.5	-0.1	12.4	6.9	-1.3	-1.3
Assets	167.2	165.6	127.1	185.8	210.3	204.6
Liabilities	162.8	165.7	114.7	178.9	211.6	206.0
Other investment	246.0	275.5	262.0	264.7	317.2	376.1
Assets	955.4	1,002.7	1,199.5	1,222.4	1,306.6	1,323.5
Liabilities	709.5	727.2	937.4	957.6	989.5	947.4
Reserve assets	0.8	0.7	0.7	0.7	0.9	0.8
Percent of GDP						
International investment position	49.5	51.5	31.9	37.7	34.7	26.5
Assets	14,717.9	15,308.2	17,503.5	19,570.3	19,930.2	18,889.7
Liabilities	14,668.4	15,256.6	17,471.5	19,532.6	19,895.5	18,863.2
Direct investment	892.4	838.1	1,041.5	1,258.8	1,405.2	1,111.8
Assets	6,893.1	7,324.3	8,859.1	10,418.0	10,343.6	9,220.5
Liabilities	6,000.7	6,486.1	7,817.6	9,159.2	8,938.5	8,108.6
Portfolio investment	-1,412.3	-1,380.4	-1,559.9	-1,743.8	-1,968.0	-1,765.0
Assets	5,278.1	5,469.8	5,989.5	6,448.3	6,722.9	6,902.3
Liabilities	6,690.5	6,850.2	7,549.4	8,192.1	8,691.0	8,667.3
Financial derivatives	10.1	-0.1	24.9	13.2	-2.5	-2.4
Assets	379.0	356.2	254.2	356.6	396.8	370.3
Liabilities	368.9	356.3	229.4	343.4	399.3	372.7
Other investment	557.6	592.5	524.1	508.1	598.4	680.6
Assets	2,165.9	2,156.4	2,399.3	2,346.1	2,465.1	2,395.2
Liabilities	1,608.3	1,564.0	1,875.2	1,838.0	1,866.8	1,714.6
Reserve assets	1.7	1.5	1.4	1.4	1.7	1.4

Sources: STATEC and IMF Staff estimates.

1/ Balance of Payments Manual 6 (BPM6) presentation.

Table 6. Luxembourg: Financial Soundness Indicators, 2013–17
(Percent)

	2013	2014	2015	2016	2017Q3
All Banks					
Capital adequacy					
Regulatory capital to risk weighted assets	21.0	20.0	22.0	25.0	25.0
Regulatory tier 1 capital to risk weighted assets	18.0	19.0	21.0	24.0	24.0
Capital to assets	6.0	6.0	7.0	7.0	8.0
Profitability and efficiency					
Return on assets	0.6	0.7	0.8	0.8	0.7
Return on equity	10.0	11.0	11.0	11.0	9.0
Interest margin to gross income	29.0	27.0	27.0	25.0	28.0
Trading income to total income	3.0	1.0	2.0	3.0	1.0
Noninterest expenses to gross income	65.0	67.0	67.0	69.0	72.0
Personnel expenses to noninterest expenses	33.0	31.0	29.0	25.0	26.0
Asset quality and structure					
Residential real estate loans to total loans	4.0	4.0	4.0	5.0	5.0
Household debt to GDP	54.0	55.0	57.0	60.0	63.0
Nonperforming loans to total gross loans	0.2	...	...	0.9 ^{1/}	0.8 ^{1/}
Sectoral distribution of loans (in percent of total loans)					
Residents	21.0	21.0	27.0	33.0	33.0
Nonresidents	79.0	79.0	73.0	67.0	67.0
Liquidity					
Liquid assets to total assets	60.0	60.0	58.0	...	...
Liquid assets to short-term liabilities	70.0	70.0	67.0	...	...
Customer deposits to total (non interbank) loans	147.0	154.0	129.0	106.0 ^{1/}	105.0 ^{1/}
Domestically Oriented Banks					
Capital adequacy					
Regulatory capital to risk weighted assets	26.3	23.1	22.6	23.0	23.1
Regulatory tier 1 capital to risk weighted assets	23.3	22.5	22.2	23.0	22.2
Capital to assets	8.9	8.5	8.4	9.0	8.2
Profitability and efficiency					
Return on assets	1.0	1.0	1.0	1.0	0.8
Return on equity	10.9	11.3	11.0	11.0	10.1
Interest margin to gross income	56.2	64.0	64.0	63.0	61.8
Asset quality and structure					
Residential real estate loans to total loans	24.0	27.0	28.0	28.0	26.1
Household debt to GDP					
Nonperforming loans to total gross loans	0.3	...	...	2.4 ^{1/}	2.0 ^{1/}
Sectoral distribution of loans (in percent of total loans)					
Residents	55.0	59.0	67.0	71.0	72.2
Nonresidents	45.0	41.0	33.0	29.0	27.8
Liquidity					
Liquid assets to total assets	43.2	42.9	44.0	...	...
Liquid assets to short-term liabilities	53.2	50.6	51.0	...	...
Customer deposits to total (non interbank) loans	151.1	143.6	137.6	172.1 ^{1/}	177.6 ^{1/}

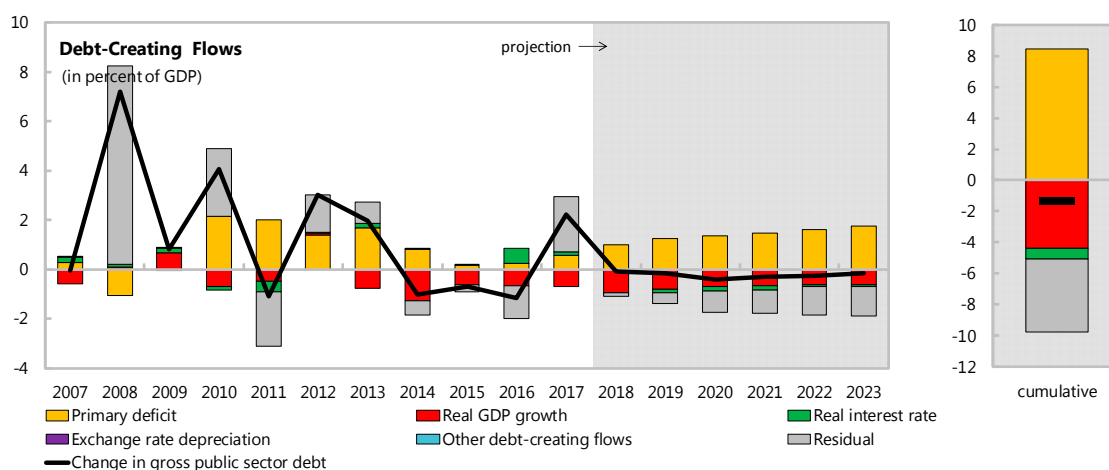
Sources: BCL, and CSSF.

^{1/} Change in underlying data source and calculation methodology.

Table 7. Luxembourg: Public Sector Debt Sustainability Analysis (DSA)—Baseline Scenario
(In percent of GDP unless otherwise indicated)

	Debt, Economic and Market Indicators ^{1/}									As of February 05, 2018			
	Actual		Estimates	Projections					Sovereign Spreads				
	2007-2015 ^{2/}	2016	2017	2018	2019	2020	2021	2022	2023	Bond Spread (bp) ^{3/}	35	5Y CDS (bp)	n.a.
Nominal gross public debt	18.5	20.8	23.0	22.9	22.8	22.4	22.1	21.8	21.7	Ratings			
Public gross financing needs	0.9	0.3	0.7	1.4	0.8	2.0	5.1	5.0	6.3	Moody's	Aaa	Foreign	Aaa
Real GDP growth (in percent)	2.5	3.1	3.5	4.3	3.7	3.3	3.2	3.1	3.0	S&Ps	AAA	Local	AAA
Inflation (GDP deflator, in percent)	2.5	-1.3	0.7	1.5	1.9	2.0	2.0	2.0	2.0	Fitch	AAA	AAA	AAA
Nominal GDP growth (in percent)	5.0	1.7	4.2	5.9	5.7	5.3	5.3	5.1	5.1				
Effective interest rate (in percent) ^{4/}	2.9	1.5	1.5	1.5	1.3	1.2	1.2	1.7	1.7				

	Contribution to Changes in Public Debt									cumulative	debt-stabilizing primary balance ^{9/}
	Actual		Estimates	Projections							
	2007-2015	2016	2017	2018	2019	2020	2021	2022	2023		
Change in gross public sector debt	1.6	-1.2	2.2	-0.1	-0.1	-0.4	-0.3	-0.3	-0.1	-1.3	
Identified debt-creating flows	0.4	0.2	0.0	0.1	0.3	0.5	0.6	0.9	1.0	3.4	
Primary deficit	0.8	0.2	0.6	1.0	1.2	1.3	1.5	1.6	1.8	8.4	
Primary (noninterest) revenue and gr: 27.9	29.0	29.5	28.9	28.5	28.3	28.2	28.0	27.9	169.8		
Primary (noninterest) expenditure	28.7	29.2	29.9	29.8	29.7	29.6	29.6	29.6	178.2		
Automatic debt dynamics ^{5/}	-0.4	-0.1	-0.6	-0.9	-0.9	-0.9	-0.9	-0.7	-0.7	-5.1	
Interest rate/growth differential ^{6/}	-0.4	-0.1	-0.6	-0.9	-0.9	-0.9	-0.9	-0.7	-0.7	-5.1	
Of which: real interest rate	0.0	0.6	0.2	0.0	-0.1	-0.2	-0.2	-0.1	-0.1	-0.7	
Of which: real GDP growth	-0.4	-0.7	-0.7	-0.9	-0.8	-0.7	-0.7	-0.6	-0.6	-4.4	
Exchange rate depreciation ^{7/}	0.0	0.0	0.0	...	...	...	...	...	...	...
Other identified debt-creating flows	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Please specify (1) (e.g., privatization)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Contingent liabilities	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Please specify (2) (e.g., other debt flo)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Residual, including asset changes ^{8/}	1.1	-1.3	2.2	-0.2	-0.4	-0.9	-0.9	-1.1	-1.2	-4.7	



Source: IMF staff.

1/ Public sector is defined as general government.

2/ Based on available data.

3/ Long-term bond spread over German bonds (bp).

4/ Defined as interest payments divided by debt stock (excluding guarantees) at the end of previous year.

5/ Derived as $[r - \pi(1+g) - g + ae(1+r)] / (1+g+\pi+gr)$ times previous period debt ratio, with r = effective nominal interest rate; π = growth rate of GDP deflator;

g = real GDP growth rate; a = share of foreign-currency denominated debt; and e = nominal exchange rate depreciation (measured by increase in local currency value of U.S. dollar).

6/ The real interest rate contribution is derived from the numerator in footnote 5 as $r - \pi(1+g)$ and the real growth contribution as $-g$.

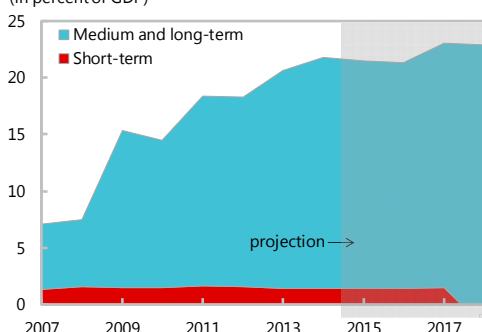
7/ The exchange rate contribution is derived from the numerator in footnote 5 as $ae(1+r)$.

8/ Includes asset changes and interest revenues (if any). For projections, includes exchange rate changes during the projection period.

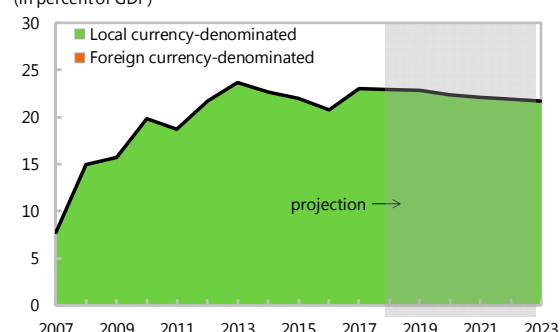
9/ Assumes that key variables (real GDP growth, real interest rate, and other identified debt-creating flows) remain at the level of the last projection year.

Table 8. Luxembourg: Public DSA—Composition of Public Debt and Alternative Scenarios**Composition of Public Debt****By Maturity**

(in percent of GDP)

**By Currency**

(in percent of GDP)

**Alternative Scenarios**

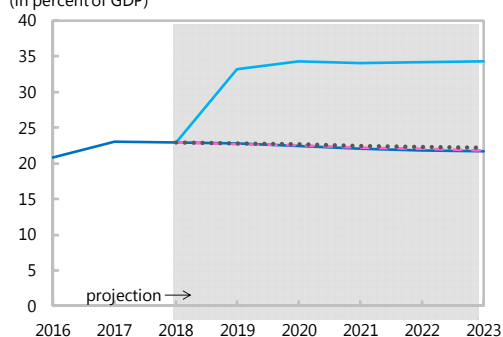
— Baseline
— Contingent Liability Shock

..... Historical

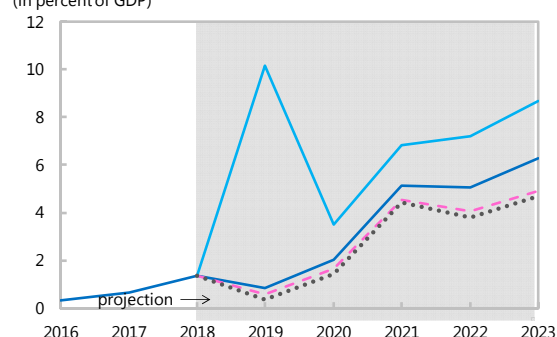
— Constant Primary Balance

Gross Nominal Public Debt ^{1/}

(in percent of GDP)

**Public Gross Financing Needs**

(in percent of GDP)

**Underlying Assumptions**

(in percent)

	2018	2019	2020	2021	2022	2023
Baseline Scenario						
Real GDP growth	4.3	3.7	3.3	3.2	3.1	3.0
Inflation	1.5	1.9	2.0	2.0	2.0	2.0
Primary Balance	-1.0	-1.2	-1.3	-1.5	-1.6	-1.8
Effective interest rate	1.5	1.3	1.2	1.2	1.7	1.7
Constant Primary Balance Scenario						
Real GDP growth	4.3	3.7	3.3	3.2	3.1	3.0
Inflation	1.5	1.9	2.0	2.0	2.0	2.0
Primary Balance	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Effective interest rate	1.5	1.3	1.2	1.2	1.7	1.7
Historical Scenario						
Real GDP growth	4.3	2.0	2.0	2.0	2.0	2.0
Inflation	1.5	1.9	2.0	2.0	2.0	2.0
Primary Balance	-1.0	-0.8	-0.8	-0.8	-0.8	-0.8
Effective interest rate	1.5	1.3	1.3	1.3	2.0	2.0
Contingent Liability Shock						
Real GDP growth	4.3	0.6	0.2	3.2	3.1	3.0
Inflation	1.5	1.1	1.2	2.0	2.0	2.0
Primary Balance	-1.0	-10.5	-1.3	-1.5	-1.6	-1.8
Effective interest rate	1.5	1.6	1.7	1.6	1.9	1.8

^{1/} The financial sector contingent liability shock assumes a one-time non-interest expenditure increase of 10 percent of domestically-oriented banks' assets and a growth reduction by one standard deviation for two consecutive years.

Source: IMF staff.

Table 9. Luxembourg: Risk Assessment Matrix¹

Source of risks	Relative likelihood and transmission channels	Impact if realized	Policy response
Business model risk: Changes in EU and international taxation rules and transparency standards for cross-border activities	Medium A large share of fiscal revenues and some economic activity depends on cross border operations.	High Tax base erosion, and reduction of budget revenues and activity.	Diversify fiscal revenue base and develop contingency plans.
Global risk: Structurally weak growth in key advanced and emerging economies.	High Luxembourg is particularly vulnerable to adverse shocks in the EA given its strong trade and financial linkages.	Medium Adverse impact on export and GDP growth.	Diversify financial services exports toward non-euro area markets, advance structural reforms and infrastructure investments to boost competitiveness
Global risk: Retreat from cross-border integration.	Medium Protectionism and economic isolationism would impact trade and FDI. Luxembourg's exports of goods and services account for about 195 percent of GDP, and imports for about 160 percent. Moreover, foreign direct investment liabilities account for more than 150 times GDP. The financial sector, which account for ¼ of GDP would also be affected if financial markets become volatile.	High Significant impact on domestic economy through exports of goods or financial services, and the possible retreat of multinational companies that generate a sizable share of fiscal revenues. Impact could be limited if protectionism does not impact Luxembourg export sectors and fiscal revenues, and financial markets benefit from upside risks to US growth.	Liberalize product markets to support diversification of the economy and ensure robust contingency plans stand ready to provide liquidity support to banks.
Global risk: Policy uncertainty, two-sided risks to U.S. growth with uncertainties about the positive short-term impact of the tax bill on growth and the extent of potential medium-term adjustment to offset its fiscal cost, and global spillovers. In Europe, uncertainty associated with negotiating post-Brexit arrangements; and evolving political process, including elections in several large economies, weigh on global growth.	Medium Luxembourg is particularly exposed to shocks in the EU which could disrupt financial sector flows, including investment funds. The new Brexit arrangements could lessen London's appeal as a financial center, as UK-based banks and investment funds could lose their "passporting" rights to the rest of the EU. Some financial institutions would relocate to other EU countries, including to Luxembourg. Luxembourg's investment funds have large exposures to U.S. capital markets.	High An extended period of heightened uncertainty during the Brexit negotiations is expected to weigh on confidence and postpone consumption and investment, reducing the growth outlook, particularly in the UK and the rest of Europe. The magnitude of these effects is uncertain and could be substantially larger than projected in the baseline, especially if the process is volatile and/or has significant political repercussions.	Ensure robust contingency planning for operational risks that may arise in the event of heightened market volatility, and stand ready to provide liquidity support to banks Re-double efforts to secure the benefits of economic integration and cooperation across Europe.

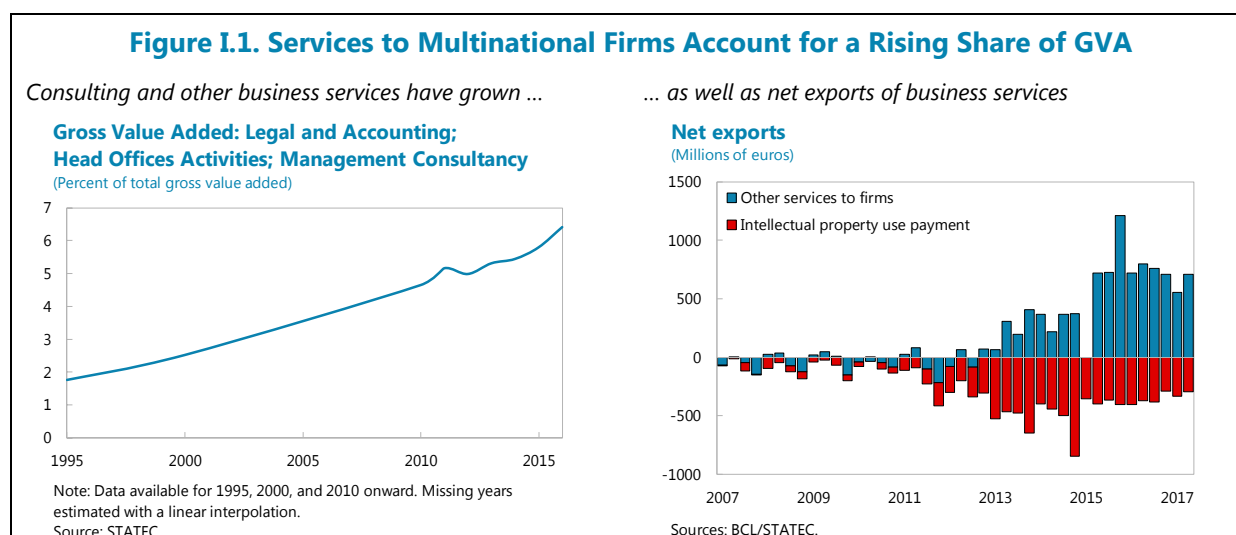
Table 9. Luxembourg: Risk Assessment Matrix (concluded)

Source of risks	Relative likelihood and transmission channels	Impact if realized	Policy response
<p>Global risk: Against the backdrop of continued monetary policy normalization and increasingly stretched valuations across asset classes, an abrupt change in global risk appetite (e.g., due to higher-than-expected inflation in the U.S) could lead to sudden, sharp increases in interest rates and associated tightening of financial conditions. Higher debt service and refinancing risks could stress leveraged firms.</p>	<p>High Given the size of its investment fund industry and its linkages to banks, Luxembourg is vulnerable to global shocks to asset markets. Cross-border operations of multinational firms could also be impacted.</p>	<p>High The investment fund industry could suffer from aggregate redemptions, which together with valuation effects would weaken economic activity in Luxembourg, reduce revenues from the subscription tax, and impact the fees and commission of the banking system. Services to multinational firms could also be impacted.</p>	<p>Monitor risks in the investment fund industry, design macroprudential measures. Ensure robust contingency planning for operational risks that may arise from market volatility. Diversify tax revenue base.</p>
<p>¹ The Risk Assessment Matrix (RAM) shows events that could materially alter the baseline path (the scenario most likely to materialize in the view of IMF staff). The relative likelihood is the staff's subjective assessment of the risks surrounding the baseline ("low" is meant to indicate a probability below 10 percent, "medium" a probability between 10 and 30 percent, and "high" a probability between 30 and 50 percent). The RAM reflects staff views on the source of risks and overall level of concern as of the time of discussions with the authorities. Non-mutually exclusive risks may interact and materialize jointly. "Short term" and "medium term" are meant to indicate that the risk could materialize within 1 year and 3 years, respectively.</p>			

Appendix I. International Tax Transparency and Anti-Tax Avoidance Initiatives and EC Decisions on Advanced Tax Rulings

Foreign Direct Investment (FDI) potentially subject to international tax transparency and anti-tax avoidance issues is very large. Luxembourg is among the top 3 countries in the world for inward and outward FDI. Most of it is accounted for by multinationals' treasury activities, with limited substantial presence in the country. However, these treasury activities generate some economic activity in Luxembourg, and contribute to tax revenues. The IMF Coordinated Direct Investment Survey shows that Luxembourg ranked third in the world after the U.S. and the Netherlands in 2016 for both inward and outward direct investment, with US\$3.6 trillion inward direct investment, excluding financial corporations' intragroup debt—with the top five source countries being the U.S., the U.K., the Netherlands, Ireland and Bermuda. Cumulative FDI in Luxembourg by SPV reached €1 trillion between 2014:Q1 and 2017:Q2. The U.S. tax reform, notably the anti-tax avoidance measures (on intangible foreign assets, and an alternative minimum tax) could impact Luxembourg given the US\$800 billion of inward FDI from the U.S.

FDI contributes to economic activity in various ways. While total corporate income tax reached 4½ percent of GDP in 2016, various tax revenues from *Sociétés de Participations Financières* (SoParFis) contributed some 1–1½ percent of GDP. The presence of foreign holding companies generates banking activities: according to sectoral financial accounts of June 2017, they held about €70 billion assets in domestic monetary financial institutions (MFIs; equal to the amount of bank deposits by resident households) and borrowed about €30 billion, more than domestic non-financial firms. In addition, foreign holding companies require a web of expert consulting services. In 2016, the sector "Legal and accounting activities; activities of head offices; management consultancy activities" generated a gross value-added (GVA) of €3.1 billion, or 6.4 percent of total GVA, up from 2.5 percent in 2000. Such services are also exported, as suggested by the large exports of other business services which, in gross terms, reached €15.7 billion (or 29.6 percent of GDP) and, in net terms, 6 percent of GDP in 2016.



Luxembourg is complying with international anti-tax avoidance and transparency initiatives but the agenda remains ambitious (Box I.1). The EU-wide automatic exchange of tax rulings became effective in January 2017, following OECD/anti-Base Erosion and Profit Shifting (BEPS) commitments to greater tax transparency, including with respect to tax-related financial information of multinationals. In June 2017, Luxembourg signed the OECD Multilateral Convention to Implement Tax Treaty Related Measures to Prevent Base Erosion and Profit Shifting (MLI), albeit with reservations, and a draft law to introduce a new (BEPS-compliant) IP Box regime was submitted to Parliament in August 2017. EU automatic exchange of information on advanced tax rulings has been in place in Luxembourg since January 2017, and EU Member States have also agreed to extend their automatic exchange of information to tax-related financial information of multinationals. Luxembourg is planning to transpose the Anti-Tax Avoidance Directives I and II into national law by end-2018 and end-2019, respectively. In June 2017, the European Commission (EC) tabled new transparency rules for intermediaries, notably tax advisors, who design and promote tax planning schemes for their clients.

Following the leak of papers from the law firm of Mossack Fonseca in Panama, the supervisor completed a targeted review of high-risk banks in December 2017. The CSSF review mainly covered the four following aspects: (i) due diligence procedural measures applied by the banks to offshore structures; (ii) risk-based approach established by the auditors for sampling purposes; (iii) Know Your Customer (KYC) documentation and information testing on a sample of offshore structures; (iv) Know Your Transactions (KYT) information and documentation testing on a sample of offshore structures. As a result of this review, nine entities including four banks were fined.¹

The European Commission has concluded that Luxembourg granted undue tax benefits to U.S. internet commerce company Amazon of around €250 million. On October 4, 2017, the EC decided that the Amazon advance tax ruling granted illegal tax benefits to the company, and that a large share of its profits in Europe were not taxed.² According to the EC, the tax ruling issued by Luxembourg in 2003, and prolonged in 2011, validated a transfer pricing mechanism between two Luxembourg entities of the Amazon group that was not in line with the arms-length principle. The EC considered that the ruling enabled Amazon to avoid taxation on three quarters of the profits it made from all Amazon sales in the EU, and required that national tax authorities recover the improper tax savings estimated at €250 million. The authorities noted that the tax ruling that was investigated is no longer in force and have appealed the decision in court.

The EC decision is part of a broader effort to reduce what are considered unfair competitive advantages obtained through lower taxes. In October 2015, the EC decided that Luxembourg had granted selective tax advantages to Italian automobile company Fiat amounting to €20–30 million; the national authorities disagreed with the decision and have appealed it in court. The EC has begun two additional ongoing investigations into advance tax rulings regarding McDonald's and Engie (former GDF Suez) that may give rise to state aid issues in Luxembourg.

¹ The Press release can be found at: <http://www.cssf.lu/en/documentation/publications/press-releases/news-cat/548/>

² Press release: http://europa.eu/rapid/press-release_IP-17-3701_en.htm. In 2014, Amazon changed the way it operates in Europe, and the new structure is outside the scope of the state aid investigation.

Box I.1. Implementation of BEPS Actions in Luxembourg

- **Action 1: addressing the tax challenges of the digital economy and identifying the main difficulties that it poses for the application of existing international tax rules;**

While action I has not led to final recommendations by the OECD, an interim report is being finalized at OECD level. The EC has announced that it intends to present by end-March 2018 its own plan for overhauling tax rules for businesses operating in the digital economy. Luxembourg actively participates in related working groups.

- **Action 2: designing domestic rules to neutralize the effects of hybrid instruments and entities (e.g. double non-taxation, double deduction, long-term deferral);**

Luxembourg has regulations in place that aim to neutralize hybrid mismatches based on the EU Directive 2014/86/EU amending the Parent-Subsidiary Directive (2011/96/EU). Luxembourg has introduced these provisions by the Law of 18 December 2015 that has amended articles 147 and 166 of the Luxembourg Income Tax Law (LITL). In addition, article 9 of the EU Anti-Tax Avoidance Directive II (ATAD) (to be introduced into Luxembourg law before by January 2020) foresees further regulations concerning hybrid mismatches.

- **Action 3: strengthening the rules for the taxation of controlled foreign corporations (CFC);**

Article 7 of the ATAD I will introduce CFC rules in Luxembourg law by end-2018.

- **Action 4: preventing base erosion through the use of interest expense (such as the use of related-party and third-party debt to achieve excessive interest deductions or to finance the production of exempt or deferred income);**

Article 4 the ATAD I will introduce specific interest limitation rules in Luxembourg law by end-2018.

- **Action 5: countering harmful tax practices with a focus on improving transparency, including compulsory spontaneous exchange on rulings related to preferential regimes, and on requiring substantial activity for preferential regimes, such as IP regimes;**

Luxembourg has submitted on August 4, 2017 a bill that introduces a new IP regime which includes the nexus approach advocated in Action 5. Spontaneous exchange of certain information is also applicable in Luxembourg based on tax treaties and the Convention on Mutual Administrative Assistance in Tax Matters (MAC). The directive 2015/2376, the so-called DAC 3, transposed by the law of July 23, 2016, extends the automatic exchange of information in the field of taxation to decisions and agreements on advance cross-border tax rulings (to be considered as counterpart of Action 5 of the BEPS action plan).

- **Action 6: developing treaty provisions and recommendations regarding the design of domestic rules to prevent treaty abuse;**

Most of the measures highlighted in Action 6 will be implemented by Luxembourg via the Multilateral Convention to Implement Tax Treaty Related Measures to Prevent Base Erosion and Profit Shifting ("Multilateral Instrument" or "MLI").

- **Action 7: preventing the artificial avoidance of permanent establishment status (test of substantial presence);**

The new definition of permanent establishment is part of the MLI.

Box I.1. Implementation of BEPS Actions in Luxembourg (concluded)

- **Actions 8–10: aligning transfer pricing with value creation in relation to intangibles, including hard-to-value ones, to risks and capital, and to other high-risk transactions;**

The Budget Law of December 23, 2016 introduced into the LITL a new article 56bis which incorporates the arm's length principle, based on the OECD principles as revised by Actions 8–10. End of 2016, the authorities also issued an administrative circular in reference to the aforementioned article 56bis LITL on the transfer pricing framework for companies carrying out intra-group financing activities in Luxembourg.

- **Action 11: measuring and monitoring BEPS;**

Luxembourg is participating in the corresponding working party at the OECD.

- **Action 12: designing mandatory disclosure rules for aggressive tax planning schemes;**

On June 21, 2017, the EC issued a proposal for a directive amending Council Directive amending Directive 2011/16/EU as regards mandatory automatic exchange of information in the field of taxation in relation to reportable cross-border arrangements. Although Action 12 is not an OECD minimum standard, the European Commission aims to ensure a harmonized EU approach to implementing the recommended mandatory disclosure. The proposal is currently being discussed at the level of the Council of the EU.

- **Action 13: designing guidance on transfer pricing documentation, including the template for country-by-country reporting (CbCR), to enhance transparency while taking into consideration compliance costs;**

On December 23, 2016, the Luxembourg Parliament passed the law on CbCR thereby transposing into domestic law the EU Directive 2016/881 of May 25, 2016 amending Directive 2011/16/EU as regards mandatory automatic exchange of information in the field of taxation (to be considered as counterpart of Action 13 (minimum standard) of the BEPS Action plan).

- **Action 14: making dispute resolution mechanisms more effective;**

On October 10, 2017, the Council of the EU adopted the Council Directive (EU) 2017/1852 on tax dispute resolution mechanisms in the EU. Luxembourg is currently working on the transposition of the Directive into national law. Several provisions of Action 14 will be implemented into Luxembourg's tax treaties via the MLI.

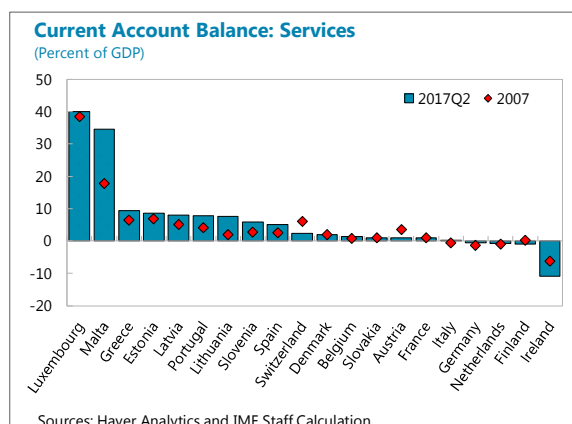
- **Action 15: developing a multilateral instrument to modify bilateral tax treaties.**

Action 15 develops a multilateral instrument to automatically update tax treaties to BEPS minimum standards applicable to tax treaties. Luxembourg is currently working on the ratification of the MLI into national law.

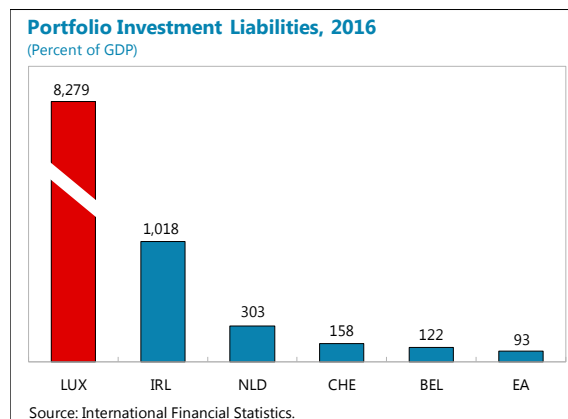
Appendix II. External Sector Assessment

The external position of Luxembourg is broadly in line with its medium-term fundamentals and desirable policies. This assessment is based on empirical analyses, a review of developments in the balance of payments and net foreign asset position, as well as consideration of Luxembourg's roles as a financial hub and center for intra-corporation cash pooling.

The current account surplus strengthened to 5.5 percent of GDP in 2017. The persistent surplus is driven by strong net services exports only partly offset by a deficit in net factor income, reflecting Luxembourg's status as a global financial center. The cyclically-adjusted current account (which considers the commodity terms of trade) is at 5.6 percent of GDP. The surplus in services (40 percent of GDP) is mainly related to private banking, the investment fund industry, and corporate cash management entities. Most of these financial institutions are part of large international financial groups and multinational corporations which mainly operate cross-border. Net factor income outflows are equally shared between investment income and compensation of employees.

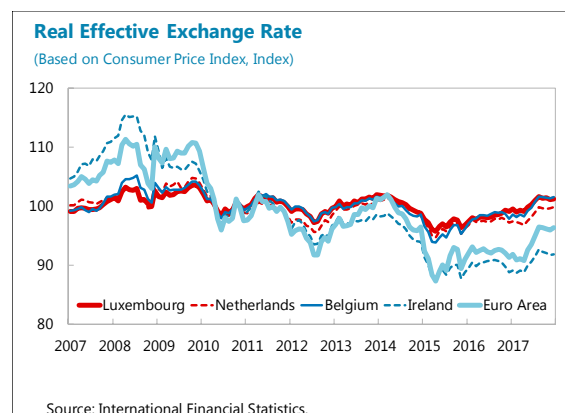


The financial sector continues to dominate the international investment position (IIP). The net IIP reached 26.5 percent of GDP at end-September 2017, 3.9 percentage points of GDP stronger than its level a year earlier, mainly due to lower net portfolio liabilities. Reflecting its role in hosting financial activities of multinationals, Luxembourg ranks worldwide third for inward and outward direct investment.¹ Luxembourg's investment fund industry, second in the world after that of the U.S., explains its large gross position in portfolio investment assets and liabilities. Strong increases in stock market indexes and inflow of ample international liquidity, explain the growth in gross asset and liability positions for portfolio investment since 2007 by 31.1 and 49.8 percent, respectively.



¹ Coordinated Direct Investment Survey (CDIS), 2016.

Compared to its 2016 average, Luxembourg’s real effective exchange rate (REER) appreciated by 2.2 percent by end-December 2017, mostly driven by an increase in unit labor costs. Over the same period, the CPI-deflated REER increased by 2.9 percent compared to its 2016 average. Compared to its average level since 2005, the real appreciation has been moderate, 3.5 percent for the ULC-based REER and 1.4 percent for the CPI-based REER, suggesting a limited decline in competitiveness.



Staff assesses Luxembourg’s external position to be broadly in line with fundamentals and desirable policy settings.

This assessment is based on the External Balance Assessment (EBA-lite) supplemented with staff judgement. Given Luxembourg’s status as a global financial center with large gross external assets and liabilities, and volatile net foreign assets, the External Sustainability approach is deemed less appropriate. Both the REER index model and the Current Account Approach, however, can only partially capture Luxembourg’s specific circumstances as a financial center with a large investment fund industry, and as a very small economy with a large share of non-resident workers. Exports and imports of financial and ancillary services are less sensitive to relative price changes, and the large number of non-resident workers affect net factor income and population-based variables in the models. Staff has adjusted the EBA-lite methodology by re-computing labor productivity: both resident and non-resident workers are included in the computation of output per worker. This adjustment to the EBA-lite methodology reduces the current account norm for 2017 by 3.4 percent of GDP.

Services exports as a share of GDP, driven by the banking and investment fund sectors, have been steadily increasing since the financial crisis while goods exports have remained broadly constant as a share of GDP. The real effective exchange rate has remained broadly stable over the last ten years. These facts suggest that competitiveness has been preserved.

- *The EBA standard current account (CA) model* suggests that the current account gap is moderate. The CA gap contracted to -1.4 percent of GDP in 2017 from -1.9 percent of GDP in 2016, corresponding to a smaller REER overvaluation (now at 2.4 percent, compared to 3.1 percent for 2016).² The policy gap of 2.2 percent mostly reflects the positive domestic policy gap between the current fiscal surplus relative to a medium-term balanced budget, and the negative world average fiscal policy gap. The model’s CA norm is highly sensitive to demographics, and Luxembourg’s population growth was the highest in EU28.

² The results of CA model for 2016 are based on revised current account series, updating the estimates that had been used for the EBA exercise in the 2017 Staff Report.

- The Real Effective Exchange Rate (REER) index model suggests an overvaluation by 11.8 percent, and no policy gap. The measure of trade openness used for Luxembourg excludes exports and imports of financial services.
- In addition to both models, the *External Sustainability Approach (ES)* shows that the current account norm sufficient to stabilize the IIP-to-output ratio at its current level over the medium term is a surplus of 2.8 percent of GDP.

This implies an undervaluation of 3.8 percent. Given that the current account surplus is projected at about 5 percent of GDP in the medium term, the ES model suggests that the net IIP is likely to continue growing in the years ahead.

External Balance Assessment (Lite)	
Real Exchange Rate Gap	
External sustainability approach	-3.8
Current account approach	2.3
REER approach	11.8
Current Account	
Actual current account	5.5
Current account norm	6.9
current account gap	-1.4
Elasticity of current account	-0.61

Appendix III. Implementation Status FSAP Update 2017 Recommendations

The authorities have been pursuing an ambitious supervisory and regulatory reform agenda, and the authorities should continue implementing all 2017 FSAP recommendations (Table III.1.):

- *Investment fund sector:* While more frequent on-site inspections of investment funds are being introduced, the supervisor should further develop internal capacity and methodologies for system-wide stress testing of investment funds, and provide guidance to the industry on the design of liquidity stress tests and on the use of liquidity management tools in coordination with EU international bodies. The supervisor should continue to engage in the EU and international agenda on these topics.¹ It is important that the authorities also actively engage with jurisdictions where fund delegated activities are prominent, including the joint supervision of funds' activities and the monitoring of any attendant risks. The supervisor should also assess whether safeguards to ensure depository banks independence are adequate.
- *Banking sector:* Supervision of the waiver to the large exposure limit of internationally-oriented banks should continue to intensify, and the authorities should advocate for stronger oversight at the European level of nonbank holding companies that include banks. Resolution plans for the most important Luxembourg banks should be finalized by developing policies on intragroup exposures and the transfer of custodian functions in recovery and resolution.
- *Macroprudential oversight:* The authorities continue to monitor risks associated with the real estate market and bank-investment fund linkages. They have prepared a draft law to allow borrower-based limits for mortgage lending. Further steps to strengthen the willingness to act should include publishing the risk assessment and risk dash board prepared by the central bank for the Systemic Risk Committee, and removing the unanimity voting requirement.
- *Governance:* The authorities should enshrine in legislation the operational independence of the CSSF and CAA, and introduce codes of conduct for the members of their non-executive boards. They should introduce a formal framework to govern the relationship between the government and banks with state involvement on an arms-length basis.
- *AML/CFT:* The ongoing National Risk Assessment should focus on the specific risks related to tax evasion and activities of trust and company services providers. The authorities should also ensure adequate guidance to all private-sector reporting entities to support the effective implementation of suspicious transactions reporting requirements with respect to the new tax offenses that came into force on January 1, 2017. Following the leak of papers from the law firm of Mossack Fonseca in Panama, the supervisor has issued instructions to all supervised entities.

¹ The supervisor and the central bank have recently participated in the FSB Shadow Banking Experts Group, the ESRB Expert Group on investment funds, and the IOSCO Committee 5 work on liquidity risk management which have both recently published related reports: (see: <https://www.esrb.europa.eu/news/pr/date/2018/html/esrb.pr180214.en.html> and <http://www.iosco.org/news/pdf/IOSCONEWS486.pdf>).

Table III.1. Luxembourg: FSAP Update 2017: Key Recommendations

Recommendations	Timeframe	Status
General/Cross-Cutting		
1. Continue resource allocation toward risk-based supervision at BCL, CSSF and CAA	NT	The CSSF assesses the correspondence between resources and needs from a risk-based perspective on an ongoing basis. It hired 38 new employees in 2017 for banking and investment fund supervision and plans an additional hiring of 90 employees in the near term. The CAA hired 10 new staff in 2017 (a 25 percent increase), all involved in risk based supervision. The BCL also plans additional hiring in risk analysis.
2. Increase engagement with supervision and resolution authorities in countries where Luxembourg's LSIs and investment funds conduct significant activities	NT	With respect to banking supervision, the CSSF has contacts within SSM and EBA and BCBS networks, as well as in colleges. Bilateral contacts are being developed with the Chinese and Brazilian supervisors. With respect to resolution, the CSSF has bilateral contacts and also participates in group level resolution colleges. With respect to investment funds, the CSSF has started engaging with supervisory authorities in third country jurisdictions (Hong Kong and Switzerland). Within the EU, the legislation contains provisions on supervisory cooperation.
3. Enshrine in legislation the operational independence of the CSSF and CAA, and introduce (CSSF, CAA) or update (BCL) board member codes of conduct	NT	The code of conduct for non-executive members of the BCL Supervisory Board has been revised but could be further aligned to best practices. The introduction of a code of conduct for board members will be discussed in the non-executive Board meetings of the CSSF and the CAA in March 2018.
Risk Analysis		
4. Examine merits of a regulatory LCR requirement in FX at the group level and step up monitoring of related FX liquidity risk	MT	This recommendation is being considered at the ECB and the EC.
5. Provide industry guidance on liquidity stress test modalities and liquidity management tools for investment funds, and develop internal liquidity stress testing capacity	NT	The CSSF has actively contributed to IOSCO and EU level initiatives, including the ESRB Expert Group on Investment Funds. Recommendations published on February 14 th are being addressed to the European Commission, to take legislative action on liquidity management tools, and to ESMA to cover guidance on liquidity stress testing modalities by asset managers and liquidity management tools. In the context of the ESMA, the CSSF plans to raise the issue of an EU industry-wide study on the effectiveness of liquidity management tools for investment funds. The CSSF is participating in an ESRB occasional paper on macroprudential stress testing to be published in 2018 and participates in the development of stress testing guidelines for MMFs together with ESMA The CSSF has started an internal project on internal liquidity stress testing.
Macroprudential Policy		
6. Strengthen the institutional framework in order to increase the willingness to act	MT	The authorities consider the current institutional framework to be adequate. They will consider publication of the substance of the macro-financial risk analysis.
7. Expand the macroprudential policy toolkit to include borrower based lending limits	I	A draft bill currently in parliament will expand the toolkit to include borrower-based mortgage lending limits.

Table III.1. Luxembourg: FSAP Update 2017: Key Recommendations (continued)

8. Continue to strengthen risk-based monitoring of the residential real estate market and bank-investment fund interlinkages, and close remaining related data gaps	I	<p>The CSSF has developed a biannual liquidity stress test of fund deposits (i.e. outflow rates) to assess the impact on all Luxembourg depositary banks. It also performs an annual assessment of the degree of maturity transformation between liabilities and intragroup assets within depositary banks.</p> <p>The BCL performs network analysis of interconnections among banks and investment funds. A working group of the CdRS is currently conducting analytical work on bank-investment fund linkages.</p> <p>The CSSF conducts annually a stress test of banks' exposures to residential real estate and the BCL has continued to strengthen its analysis of related macro-financial risks. Both the CSSF and the BCL participate in SSM and ECB working groups on residential real estate. Data collection efforts have proceeded, but some gaps remain.</p>
Banking Regulation and Supervision		
9. Increase the intensity of supervision over intra-group exposures, with banks required to demonstrate continued eligibility in their use of large exposure limit waivers	NT	<p>The ongoing monitoring by the CSSF has been strengthened, including quarterly review of intragroup exposures, and an escalation process to reevaluate eligibility for the waiver in case of ad hoc information in the context of annual SREP.</p> <p>From mid-2018, the analysis will be complemented by enhancing the current monitoring on the basis of the new EU monthly reporting on maturity mismatches (starting with data as of 31 March 2018).</p>
10. Continue monitoring ability of banks to absorb a real estate market price decline	C	<p>The CSSF continues to conduct an annual stress test analysis based on bank individual LTV distributions. The analysis takes into account extreme price declines and high default rates in the Luxembourg residential real estate market leading to capital losses and risk-weighted assets increases at the same time. Results are incorporated within the annual CSSF-Solvency Stress Test.</p> <p>Results are shared and discussed with the supervisors in charge and are considered in ongoing supervision, and in the SREP.</p>
11. Increase frequency of on-site inspections of subsidiaries of SIs	C	The SSM is implementing this recommendation.
12. Harmonize data reporting standards for loan-to-value and debt-to-income ratios	I	<p>The CSSF chairs a working group with actors from the industry in order to address the issue of data gaps in real estate.</p> <p>In 2017, the CSSF conducted a new survey regarding borrower based ratios in residential real estate. In light of sub-optimal data quality, CSSF teams have visited the most active banks to get a better understanding of data issues.</p> <p>In the context of the eurosystem Anacredit project, there have been new developments, including a possible acceleration of the addition of data on residential real estate, which will help the harmonization of data.</p>
Investment Fund Regulation and Supervision		
13. Strengthen guidance on substance in the context of delegated activities and actively engage with regulators in jurisdictions where such activities are prominent	NT	<p>The CSSF is currently not working on any specific guidance, given the on-going discussions at ESMA.</p> <p>The CSSF has started engaging with a few supervisory authorities in third-country jurisdictions in which some of the UCITS delegates are established.</p>
14. Issue guidance on the holdings of directorships of funds and their managers	NT	The CSSF is assessing the situation on directorships and will next decide on related guidance.

Table III.1. Luxembourg: FSAP Update 2017: Key Recommendations (concluded)

15.	Assess whether safeguards to ensure depositary independence are adequate	NT	The CSSF is planning to revisit this issue internally in 2018, within the UCI Depositary Committee.
Insurance Regulation and Supervision			
16.	Implement revised early warning system under Solvency II regime	NT	The CAA has designed a risk-based early warning system based on a risk appetite level chosen by insurance and reinsurance undertakings. Data collection is ongoing.
Financial Market Infrastructure Oversight			
17.	Reduce CBL's exposure to commercial banks vis-à-vis CSDs and central banks	NT	Clearstream has provided comments and planned actions as a follow-up to the recommendations. These are now under review by the CSSF and the BcL, and will require further coordination with Clearstream.
18.	Require establishment of third data center and conduct a full failover test	NT	Clearstream has provided comments and planned actions as a follow-up to the recommendations. These are now under review by the CSSF and the BcL, and will require further coordination with Clearstream.
AML/CFT			
19.	Ensure the 2016/2017 national risk assessment focus adequately on TCSP risks	I	The national risk assessment is ongoing and will consider TCSP risks.
Contingency Planning and Financial Safety Nets			
20.	Develop policies on intragroup exposures and the transfer of custodian functions in recovery and resolution	I	While no formal policies are in place to address the transfer of custodian functions, the CSSF has determined that the custody service is in general substitutable (due to the presence of numerous depositary banks in Luxembourg). The transfer may be time consuming due to legal and contractual constraints, and the volume of assets to be transferred. The SRB is currently undertaking further work in collaboration with the CSSF and concerned banks to identify and address more clearly the relevant issues. EU regulations do currently not explicitly exclude intra-group exposures from a bail-in and the likelihood of bail-in remains an important decision factor with respect to large-exposure intra-group exemptions. However, in the context of the negotiation at EU Council level of the BRRD2 package, there is a broad consensus for excluding intragroup exposures from bail-in regardless of their maturities.
21.	Agree on the roles and responsibilities in dealing with a system-wide crisis	NT	This recommendation is being considered by the Ministry of Finance
22.	Finalize the operational modalities of emergency liquidity assistance provision	MT	Operational modalities are in the process of being finalized.
Agencies: BCL = Banque centrale du Luxembourg; CAA = Commissariat aux Assurances; CBL = Clearstream Banking Luxembourg S.A.; CdRS = Comité du Risque Systémique; CSSF = Commission de Surveillance du Secteur Financier; ECB = European Central Bank; MoF = Ministry of Finance; MoJ = Ministry of Justice; SRB = Single Resolution Board; SREP = Supervisory Review and Evaluation Process. Time Frame: C = continuous; I (immediate) = within one year; NT (near term) = 1–3 years; MT (medium term) = 3–5 years.			



LUXEMBOURG

March 15, 2018

STAFF REPORT FOR THE 2018 ARTICLE IV CONSULTATION—INFORMATIONAL ANNEX

Prepared By

European Department

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FUND RELATIONS

(As of January 31, 2018)

Membership Status: Joined December 27, 1945; Article VIII.

General Resources Account:

	SDR million	Percent of quota
Quota	1,321.80	100.00
Fund holding of currency	1,192.71	90.23
Reserve Tranche Position	129.11	9.77
Lending to the Fund		
New Arrangements to Borrow	53.20	

SDR Department:

	SDR million	Percent of allocation
Net cumulative allocation	246.62	100.00
Holdings	245.62	99.59

Outstanding Purchases and Loans: None

Latest Financial Arrangements: None

Projected Payments to Fund (SDR Million); based on existing use of resources and present holdings of SDRs):

	2018	2019	<u>Forthcoming</u> 2020	2021	2022
Principal	0.00	0.00	0.00	0.00	0.00
Charges/Interest	0.01	0.01	0.01	0.01	0.01

Implementation of HIPC Initiative: Not applicable

Safeguards Assessments: Not applicable

Exchange Rate Assessment: Luxembourg's currency is the euro, which floats freely and independently against other currencies. Luxembourg has accepted the obligations of Article VIII, Sections 2, 3, and 4, and maintains an exchange system free of restrictions on payments and transfers for current international transactions, other than restrictions notified to the Fund under Decision No. 144 (52/51).

Last Article IV Consultation: The last Article IV consultation was concluded on May 05, 2017. The associated Executive Board assessment is available at <http://www.imf.org/en/news/articles/2017/05/10/pr17158-imf-executive-board-concludes-2017-article-iv-consultation-with-luxembourg> and the staff report (IMF Country Report No. 17/113) at <http://www.imf.org/en/Publications/CR/Issues/2017/05/10/Luxembourg-2017-Article-IV-Consultation-Press-Release-Staff-Report-and-Statement-by-the-44894>. Luxembourg is on the standard 12 month consultation cycle.

Financial Sector Assessment Program (FSAP) Participation and ROSC: The Financial System Stability Assessment (FSSA) for the last mandatory FSA was discussed by the Board on May 05, 2017. The FSSA and accompanying Reports on the Observation of Standards and Codes (ROSCs) are available at <http://www.imf.org/en/Publications/CR/Issues/2017/05/15/Luxembourg-Financial-System-Stability-Assessment-44907>

Anti-Money Laundering/Combating the Financing of Terrorism (AML/CFT): In February 2014, the Financial Action Task Force (FATF) recognized that Luxembourg had made significant progress in addressing deficiencies identified in the February 2010 mutual evaluation report and decided to remove the country from the regular follow-up process. The FATF report is available at <http://www.fatf-gafi.org/countries/j-m/luxembourg/documents/fur-luxembourg-2014.html>.

STATISTICAL ISSUES

A. Assessment of Data Adequacy for Surveillance

General: Data provision is adequate for surveillance, although macroeconomic data are sometimes released with a lag, and subject to substantial revisions. The Central Service for Statistics and Economic Studies (Statec) regularly publishes a full range of economic and financial data and provides an advance release calendar for main statistical releases at <http://www.statistiques.public.lu/fr/agenda/calendrier-diffusion/index.html>.

Online access to Statec's databases is available to all users simultaneously at the time of release through the [Statistics Portal of Luxembourg](#). Key publicly accessible websites for macroeconomic data and analysis are:

Statistics Portal of Luxembourg	http://www.statistiques.public.lu/fr/
Statec	http://www.statec.public.lu/fr/index.html
Central Bank of Luxembourg	http://www.bcl.lu/en/index.php
Ministry of Finance	http://www.mf.public.lu/

Monetary and Financial Statistics (MFS): Luxembourg reports monetary data to STA through the European Central Bank using standardized report forms (SRFs). The data cover only the depository corporations sub-sector i.e. central bank and the other depository corporations.

Financial soundness indicators (FSIs): The Central Bank of Luxembourg compiles FSIs in line with the *FSI Guide* methodology and reports to STA on a quarterly basis. The data cover mainly the deposit takers sector with few indicators for households and real estate markets. FSI data for other sectors are not compiled.

B. Data Standards and Quality

Luxembourg has been a subscriber to the Special Data Dissemination Standard (SDDS) since May 12, 2006. Luxembourg uses SDDS flexibility options on the timeliness of the analytical accounts of the central bank.

No data ROSC is available.

Table of Common Indicators Required for Surveillance

(As of February 22, 2018)	Date of Latest Observation	Date Received	Frequency of Data ⁷	Frequency of Reporting ⁷	Frequency of Publication ⁷
Exchange Rates	02/21/18	02/22/17	D	D	D
International Reserve Assets and Reserve Liabilities of the Monetary Authorities ¹	01/31/18	02/07/18	M	M	M
Reserve/Base Money	12/31/17	01/30/18	M	M	M
Broad Money	12/31/17	01/30/18	M	M	M
Central Bank Balance Sheet	12/31/17	01/30/18	M	M	M
Consolidated Balance Sheet of the Banking System	12/31/17	01/30/18	M	M	M
Interest Rates ²	02/21/18	02/22/18	D	D	D
Consumer Price Index	01/31/18	02/16/18	M	M	M
Revenue, Expenditure, Balance and Composition of Financing ³ —General Government ⁴	2016	04/10/17	A	A	A
Revenue, Expenditure, Balance and Composition of Financing ³ —Central Government	2017:Q4	01/31/18	Q	Q	Q
Stocks of Central Government and Central Government-Guaranteed Debt ⁵	2016	04/10/17	Q	Q	Q
External Current Account Balance	2017:Q3	01/04/18	Q	Q	Q
Exports and Imports of Goods	11/30/17	01/25/18	M	M	M
GDP/GNP	2017:Q3	01/04/18	Q	Q	Q
Gross External Debt	2017:Q3	01/04/18	Q	Q	Q
International Investment Position ⁶	2017:Q3	01/04/18	Q	Q	Q

¹ Including reserve assets that are pledged or otherwise encumbered.

² Both market-based and officially-determined, including discount rates, money market rates, and rates on treasury bills, notes, and bonds.

³ Foreign, domestic bank, and domestic nonbank financing.

⁴ The general government consists of the central government (budgetary funds, extra budgetary funds, and social security funds) and the state and local governments.

⁵ Including currency and maturity composition.

⁶ Includes external gross financial asset and liability positions vis-à-vis nonresidents.

⁷ Daily (D); weekly (W); monthly (M); quarterly (Q); annually (A); irregular (I); and not available (NA).



LUXEMBOURG

STAFF REPORT FOR THE 2018 ARTICLE IV CONSULTATION—SUPPLEMENTARY INFORMATION

March 28, 2018

Prepared By

European Department

This supplement provides information that has become available since the cut-off date of the staff report's projections. The thrust of the staff appraisal is unchanged.

Following publication of the preliminary 2017 national accounts and balance of payments data on March 23, 2018, staff has revised its macroeconomic projections. The preliminary national accounts revised real GDP growth to 2.3 percent in 2017, lower than the 3.5 percent that was previously projected. The downward revision reflects both lower domestic demand and net exports. With an upward revision in the GDP-deflator, nominal GDP remained nearly unchanged in 2017. On this basis, staff has lowered its growth projection for 2018 from 4.3 percent to 3.5 percent, and continues to envisage a gradual convergence to the long-term trend of 3 percent over the medium term. The external current account surplus is now estimated at 5 percent of GDP in 2017 (compared to 5.5 percent previously projected), largely due to lower net exports of goods. Staff projects the current account surplus to slightly decline over the medium term, in line with the staff report. The revised fiscal surplus projections are slightly higher than those in the staff report, reflecting the base effect of higher employment growth in 2017, while the revised public debt path is slightly below that in the staff report.

On March 22, 2018, the Parliament passed the law establishing a new IP Box regime. As indicated in the staff report (paragraph 23), the new IP Box regime is BEPS compliant.

Luxembourg: Selected Economic Indicators, 2014–23

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
	Projections									
Real Economy (percent change)										
Gross domestic product	5.8	2.9	3.1	2.3	3.5	3.4	3.3	3.2	3.1	3.0
Total domestic demand	3.3	1.4	1.6	1.4	3.3	2.8	2.8	2.6	2.6	2.5
Private consumption	2.3	3.3	2.4	2.6	4.6	3.3	3.1	2.7	2.6	2.6
Public consumption	2.0	2.6	2.0	1.8	1.9	2.0	2.2	2.1	2.2	2.0
Gross investment	6.0	-2.8	0.0	-1.1	2.2	2.5	2.7	2.8	2.8	2.8
Foreign balance 1/	3.3	1.8	1.9	1.3	1.8	1.6	1.5	1.5	1.4	1.4
Exports of goods and nonfactor services	14.0	6.9	2.7	3.9	4.3	4.2	4.1	4.2	4.1	4.0
Imports of goods and nonfactor services	14.6	7.1	2.1	3.9	4.0	4.1	4.1	4.1	4.1	4.1
Labor Market (thousands, unless indicated)										
Resident labor force	257.9	262.4	267.2	273.3	278.5	283.8	289.2	294.7	300.5	306.4
Unemployed	18.2	17.8	16.9	16.2	15.2	14.8	15.0	15.0	15.2	15.4
(Percent of total labor force)	7.1	6.8	6.3	5.8	5.5	5.2	5.2	5.1	5.0	5.0
Resident employment	239.6	244.7	250.2	257.1	263.3	269.0	274.2	279.7	285.3	291.0
(Percent change)	2.3	2.1	2.3	2.7	2.4	2.2	2.0	2.0	2.0	2.0
Cross-border workers (net)	156.3	161.5	168.2	175.2	180.1	184.1	187.8	191.4	194.6	197.9
Total employment	396.0	406.1	418.5	432.4	443.4	453.1	462.0	471.0	479.9	488.9
(Percent change)	2.6	2.6	3.0	3.3	2.6	2.2	2.0	2.0	1.9	1.9
Prices and costs (percent change)										
GDP deflator	1.6	1.3	-1.3	2.1	1.5	1.9	2.0	2.0	2.0	2.0
CPI (harmonized), p.a.	0.7	0.1	0.0	2.1	1.5	1.9	2.0	2.0	2.0	2.0
CPI core (harmonized), p.a.	1.3	1.7	1.0	1.4	1.4	1.8	1.9	2.0	2.0	2.0
CPI (national definition), p.a.	0.6	0.5	0.3	1.7	1.5	1.9	2.0	2.0	2.0	2.0
Wage growth 2/	2.3	3.0	0.7	2.8	2.2	2.5	2.5	2.5	2.5	2.5
Nominal unit labor costs 2/	-0.8	2.7	0.7	3.9	1.2	1.3	1.2	1.3	1.3	1.3
Public finances (percent of GDP)										
General government revenues	43.1	42.8	43.8	43.2	42.7	42.3	42.2	42.0	41.9	41.8
General government expenditures	41.8	41.5	42.1	41.8	41.7	41.8	41.4	41.3	41.3	41.2
General government balance	1.3	1.4	1.6	1.4	1.1	0.5	0.8	0.7	0.6	0.5
General government structural balance	0.8	1.1	1.3	1.6	1.1	0.8	0.7	0.6	0.5	0.5
General government gross debt	22.7	22.0	20.8	23.0	22.8	22.5	21.9	21.4	21.0	20.6
Balance of Payments (percent of GDP)										
Current account	5.2	5.1	5.1	5.0	5.0	5.0	4.9	4.9	4.8	4.8
Balance on goods	-0.8	-5.7	-7.4	-7.5	-7.8	-7.3	-7.2	-7.2	-7.0	-6.8
Balance on services	32.4	40.8	41.5	41.9	42.5	42.3	42.3	42.8	43.1	43.4
Net factor income	-27.2	-31.6	-30.0	-29.9	-30.1	-30.5	-30.8	-31.2	-31.8	-32.3
Balance on current transfers	0.8	1.5	0.9	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Exchange rates, period averages										
U.S. dollar per euro	1.33	1.11	1.11	1.13	...	...	...	...	...	...
(Percent change)	0.1	-16.5	-0.3	2.0	...	...	...	...	...	...
Nominal effective rate (2010=100)	100.5	97.0	98.9	101.5	...	...	...	...	...	...
(Percent change)	0.3	-3.5	2.0	2.6	...	...	...	...	...	...
Real effective rate (CPI based; 2010=100)	100.5	96.9	98.3	100.4	...	...	...	...	...	...
(Percent change)	-0.3	-3.6	1.5	2.1	...	...	...	...	...	...
Credit growth and interest rates										
Nonfinancial private sector credit (eop, percent change) ^{3/}	4.9	15.7	8.7	9.5	6.4	5.8	5.3	5.3	5.1	5.1
Government bond yield, annual average (percent)	1.3	0.4	0.2	0.2	...	...	...	...	...	...
Memorandum items: Land area = 2,586 sq. km; population in 2016 = 576,000; GDP per head = €94,100										
GDP (billions of euro)	50.0	52.1	53.0	55.4	58.2	61.3	64.6	68.0	71.4	75.1
Output gap (percent deviation from potential)	1.3	0.8	0.6	-0.4	-0.1	0.2	0.2	0.3	0.2	0.0
Potential output growth	3.2	3.3	3.3	3.3	3.2	3.2	3.2	3.1	3.1	3.2

Sources: Luxembourg authorities; IMF staff estimates and projections.

1/ Contribution to GDP growth.

2/ Overall economy.

3/ Including a reclassification of investment companies from financial to non-financial institutions in 2015.

**Statement by Mr. De Lannoy, Executive Director for Luxembourg
and Mr. Jost, Senior Advisor to the Executive Director
March 30, 2018**

The authorities thank Mr. de Vrijer and his team for the constructive cooperation during the Article IV consultation and the thorough assessment presented in their report. The authorities broadly agree with staff's appraisal and will carefully consider the policy recommendations.

Luxembourg's economy remains strong with sound employment and economic growth prospects. Debt levels are relatively low compared to peers and on a slightly declining trend. Investment levels remain high. A stable political and social environment, a skilled labor force, a track record of fiscal prudence and a robust legal and regulatory framework, including in the financial sector, are key factors supporting growth. A continuous AAA credit rating confirms the market's confidence in the country.

The authorities agree with staff that price developments in the housing market are in line with fundamentals, partly driven by strong employment and population growth, and recognize the challenges that lie ahead. The authorities acknowledge other – mostly external – downside risks, including the retreat from cross-border integration and policy uncertainty at the European and global level. In line with the existing track record, the authorities remain committed to sound policies increasing the country's resilience to potential shocks.

Macroeconomic outlook

Economic growth is expected to remain strong. While the economy grew at 3.1 percent in 2016 and 2.3 percent in 2017, on the basis of provisional estimates, the national statistical agency (STATEC) expects growth rates to accelerate to 4.6 percent in 2018 and 2019, against a backdrop of favorable economic and financial developments in the euro area. Similarly, employment growth is also projected to remain strong, at 3.5 percent in 2018, reaching 3.6 percent in 2017, with business services and ICT being the most dynamic sectors for job creation. Unemployment is expected to trend down from 6.4 percent in 2016 to 5.9 percent in 2017 and 5.6 percent in 2018.

The declining trend in unemployment is due to both favorable growth dynamics, as well as the Government's targeted active labor market policies, such as the employment agency's (ADEM) personalized programs tailored to the needs of – often long-term – unemployed, in a high-skilled and rapidly evolving labor market. The Government is committed to adapt the measures to the challenges posed by digitalization. The upcoming reform of the *Revenu d'Inclusion Sociale (ReVIS)* aims at combating inactivity traps, in line with the Fund's recommendations.

Public finances

Luxembourg's fiscal position remains structurally sound. The general Government nominal budget balance stood at +1.4 percent of GDP in 2017 and is expected to remain at a similar level for 2018 according to latest estimates. As the output gap is closing, the structural budget

balance is expected to decline from +1.7 percent of GDP in 2017 to +0.6 percent in 2018, thereby continuing to exceed the medium-term objective (MTO) of the Stability and Growth Pact. Debt levels remain low at 23.5 percent of GDP in 2017, and are projected to decline to 22.7 percent in 2018.

Low and declining debt levels, a budget in surplus, the continued full respect of EU fiscal rules as well as its self-set debt limit of 30 percent of GDP, demonstrate the Government's long-standing commitment to sound fiscal policies. The prudent fiscal policy is also in line with previous IMF recommendations to set debt on a decreasing trajectory. Maintaining fiscal room for maneuver acts as a countercyclical fiscal buffer and adds to the economy's resilience to potential shocks.

While the short- and medium-term fiscal position remains favorable, the authorities agree that population ageing could pose challenges in the long-run. A tripartite working group has been tasked by the Government to analyze possible avenues for reform. Despite the long-term challenges, a dedicated pension reserve fund provides a significant buffer, with assets amounting to some 35 percent of GDP at the end of 2016 and allowing to sustain pension expenditures until at least the mid-2040s.

Economic policy

The Government remains committed to high levels of public investment, in both tangibles and non-tangibles. In order to address the challenges posed by digitalization, the Government is investing substantially in research, education and lifelong learning. Major infrastructure projects are ongoing and are further planned in the short- and medium-term in housing and transport. In line with the *Rifkin* action plan, which focuses on making the existing economic model more sustainable and diversified, other prioritized areas include the promotion of energy efficiency or e-government. The 2018 budget foresees public investment expenditures worth 4.1 percent of GDP.

The tax reform that took effect in 2017 increased the competitiveness of companies, reinforced households' purchasing power, and improved equity-related aspect of the tax framework. Additional adaptations entered into force in 2018. The tax reform pertains to many economic and social domains, including provisions fostering housing supply, enabling individual taxation, and incentives for cleaner modes of transport.

Luxembourg has fully embraced the international tax transparency agenda. Over the last four years the Government has taken, and continues to take, decisive actions to align its tax framework to international standards, including those set by the OECD such as the BEPS action plan. Recently, Luxembourg signed the OECD Multilateral Convention to Implement Tax Treaty Related Measures to Prevent Base Erosion and Profit Shifting (MLI) and has started the automatic exchange of information in the field of taxation. Parliament has recently adopted provisions aimed at transposing the Fourth Anti-Money Laundering Directive (AMLD4) and putting into place a BEPS-compliant IP box regime. The authorities are in the process of transposing the Anti-Tax Avoidance Directives (ATAD) I and II. This is in addition to earlier steps, such as the introduction of regulations aimed at neutralizing hybrid mismatches, the

conclusion of a significant number of non-double taxation treaties or the introduction of the arm's length principle into national law. The Government remains committed to staying actively engaged in relevant fora and to aligning the tax framework to international developments.

The authorities are aware of the challenges stemming from a rapidly changing international tax environment. They are monitoring the developments closely and stand ready to adapt where necessary, as the recent tax reform has proven. At the same time, opportunities arise from a global level playing field in the context of taxation, considering Luxembourg's various other comparative advantages such as its political and social stability, prudent fiscal policies and effective governance framework.

Financial sector

The authorities agree that the financial sector remains sound. Banks are profitable and maintain high levels of capital, liquidity and asset quality. NPLs are low, both in absolute levels and compared to peers. Similarly, the fund industry, investing in a diversified range of assets and distributing to a diverse pool of investors, remains an important component of the financial industry in Luxembourg.

The authorities welcome the work done under the 2017 FSAP exercise, and are in the process of following up on recommendations. As staff points out, noticeable progress has been achieved since last year. Notably, the frequency of on-site inspections for investment funds and banks continued to increase, engagement with supervision and resolution authorities of other jurisdictions has been enhanced, and a revised early warning system under the Solvency II regime has been designed. Also, methodologies for liquidity and system-wide stress testing of investment funds are being further developed. Regarding AML/CFT, a National Risk Assessment (NRA) is currently carried out and expected to be concluded later this year.

The authorities believe that these efforts will further strengthen the robust and effective supervisory framework. In the same vein, the authorities are tracking evolving international regulatory standards and developments and will remain actively engaged in discussions in relevant fora such as the FSB, IOSCO and ESRB.

The authorities remain attached to the objective of further risk reduction in the banking sector at the EU level, including in the context of the review of CRR/CRD-IV/BRRD/SRMR. While the authorities agree that the completion of the banking union is important, they believe that due care needs to be given to practical aspects of its implementation. In particular, they consider it crucial that institutions, including local subsidiaries, maintain sufficient levels of own funds and eligible liabilities in order to allow for a smooth operationalization of resolution strategies. The authorities invite staff to consider related matters in the Euro Area FSAP.

Housing market

Sustained employment and population growth contribute to a continued mismatch between supply and demand, leading to price increases. In that sense, the authorities agree with staff

that house price developments are in line with fundamentals. The authorities continue to actively monitor and manage risks, including within the Systemic Risk Committee (CdRS). Recent measures have built up capital buffers in the banking system and discouraged riskier lending. A draft bill extending the macroprudential toolkit by including tools allowing for borrower-based mortgage lending limits has been introduced to Parliament.

Diversification efforts

Despite the encouraging economic outlook, the Government continues the diversification of both the financial sector itself and the economy as a whole. Recent efforts to support innovation in the fields of financial technology or climate finance, including in the form of public-private partnerships, underscore the Government's commitment to creating a well-regulated and diversified financial ecosystem. In order to increase the economy's resilience to shocks and facilitate employment of the lesser skilled, the Government continues to support and invest into specific sectors such as logistics, ICT or bio- and ecotechnologies. Recently, Luxembourg has implemented a legal and regulatory environment aimed at enabling private investors and companies to explore and use space resources. More generally, the Government continues to pay careful attention to developing a climate conducive to business, investment and innovation.