Rating Object	Rating Information	
GRAND DUCHY OF LUXEMBOURG	Assigned Ratings/Outlook: **AAA /stable**	Type: Monitoring, unsolicited with participation
Long-term sovereign rating Foreign currency senior unsecured long-term debt Local currency senior unsecured long-term debt	Initial Rating Publication Date: Rating Renewal: Rating Methodologies:	29-07-2016 29-05-2020 "Sovereign Ratings" "Rating Criteria and Definitions"

Rating Action

Neuss, 29 May 2020

Creditreform Rating has affirmed the unsolicited long-term sovereign rating of "AAA" for the Grand Duchy of Luxembourg. Creditreform Rating has also affirmed Luxembourg's unsolicited ratings for foreign and local currency senior unsecured long-term debt of "AAA". The outlook is stable.

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Key Rating Drivers

1. Exceptionally high level of wealth, complemented by sustained economic growth and high productivity levels, as well as long-running favorable labor market developments
2. Having to combat Covid-19 should significantly dampen economic developments in the short term, while strong focus on high value-added financial services and extremely high level of trade openness continue to render the economy vulnerable to external shocks; high private indebtedness and some competitiveness issues may weigh on medium- to long-term growth going forward
3. Exceptionally strong institutional set-up amidst high degree of political stability; significant advantages from European Union/euro area membership
4. Sound public finances characterized by low public debt level, prudent fiscal policies, repeated budget surpluses and high debt affordability; corona crisis will push headline balance temporarily into a large deficit and cause the debt ratio to rise significantly; ample fiscal leeway and prudent debt management limit fiscal risks stemming from the very large financial sector, dynamic real estate markets, and evolving international taxation standards
5. Persistent current account surpluses underpin the sovereign's position as large net international creditor; economy remains highly sensitive to adverse shocks stemming from international financial markets in view of pronounced financial interlinkages

Reasons for the Rating Decision

Creditreform Rating has affirmed the Grand Duchy of Luxembourg's AAA ratings, reflecting a strong macroeconomic performance coupled with an exceptionally high quality of its institutional set-up, further supported by very sound fiscal metrics as well as sizable external buffers.

Macroeconomic Performance

We consider Luxembourg's macroeconomic performance as generally strong, being characterized by high productivity levels combined with robust economic growth as well as a long-running favorable labor market development, adding to an already outstandingly high level of wealth and prosperity. The corona pandemic and the related economic fallout will likely cause a very pronounced, albeit temporary, decline in economic output as well as deteriorating labor market metrics. A limited degree of diversification in light of Luxembourg's high dependence on financial services, as well as high private debt levels, are weighing somewhat on the medium-term growth outlook.

In 2019, the country's economy grew by 2.3%, moderating from a 3.1% increase in the preceding year. According to Eurostat data (2015 price level), the slowdown was mainly driven by a significantly lower growth contribution from foreign trade in a demanding international environment. Imports saw some rebound to 0.9% (2018: -0.3%), driven by imports of goods, amid recovering gross fixed capital formation (3.9%, 2018: -5.9%) and higher government consumption (4.8%, 2018: 4.1%). Exports rose by 0.8% (2018: 0.5%), hence along with imports continuing a comparatively weak streak since 2017. The significant rise in investment was primarily attributable to the machinery and equipment category (12.5%, 2018: -22.2%), in particular transport equipment (19.3%, 2018: -28.4%), which swung back after strong declines in 2018, once more underscoring the heightened volatility of these components. Construction other than dwelling proved supportive as well. Private consumption moderated to 2.8% (2018: 3.3%), but together with government consumption remained the main growth pillar last year, also thanks to a robust labor market development and wage increases, as well as moderate inflation.

Annual unemployment was stable at 5.6% in 2019 (LFS adjusted), having fallen from an intermediate peak of 6.7% in 2015, thus well below the euro area rate (7.5%), although lagging behind the jobless rate of its AAA-peers (Denmark: 5.0%, the Netherlands: 3.4%, Germany: 3.2%). Employment, on the other hand, still rose on a broad base by 3.6% in 2019, thus significantly exceeding job creation in the euro area as a whole (1.2%). More than half of the increase in 2019 was taken up by non-residents, who continue to play a key role in Luxembourg, standing for 46% of total employment (2019, Statec data). Among the main drivers in terms of industries were public administration and business services. Moreover, Luxembourg continued to increase employment pertaining to financial and insurance activities (3.7%, EA-19: -0.3%), which in the Grand Duchy make up 10.8% of total employment (EA: 2.4%). Despite trending upwards, labor participation still displays a gap towards the EA-19 (2019: 72.0% vs. 73.7%) as well as toward peers such as Germany or the Netherlands.

Looking ahead, Luxembourg's short-term economic prospects have been significantly clouded by the Covid-19 pandemic and the measures taken to combat it. Confinement measures entered into force from 16 March, including restrictions to public life, school and shop closures, as well as suspension of cultural activities. A national emergency was declared on 18 March. In order to mitigate the economic fallout from the pandemic and the adverse effects entailed by the confinement measures, the government launched a large support package with a volume of roughly 17.5% of GDP (see below). Among other things, the package included support measures for the labor market through the short-time working scheme and special leave for family reasons, liquidity provision and subsidies for companies, as well as guarantees to facilitate access to bank loans.

As a result of the successful containment of the spread of the virus, authorities announced a multi-phased exit strategy on 15 April, which in its first phase (from 20 April) partially lifted the restrictions and enabled construction sites and hardware stores to re-open. From mid-May, educational facilities were starting to re-open under a gradual approach. In order to support the gradual unwinding of restrictions and the domestic economy, authorities envisaged further measures to incentivize employment, support businesses in the most affected sectors, and stimulate business investment with a view to sustainability on 20 May. The package included, amongst other things, a recovery and solidarity fund for companies in the hotel/restaurant, cultural, and tourism sectors for a period of six months starting from July, aid for retail shops (non-food) and the health and social work sector, and a scheme to foster investment related to digitization of activities and enhancing energy efficiency.

Given the extraordinary circumstances, forecasts for economic development are much more difficult and obviously surrounded by substantial uncertainty. We currently expect a severe economic slump for 2020, with real GDP declining by about 5.6%, followed by a recovery from the second half of the year on the back of gradually unwinding containment initiatives and buttressed by aid measures. For 2021 therefore, we assume a rebound of GDP growth to about 6.2%, acknowledging that the fallout on the economy and the labor market may be graver and/or longer lasting, in particular if conceivable further waves of infections were to require re-establishing of restrictions, which would impair any economic recovery.

Private consumption looks set to experience a steep fall in a context of non-essential shops being closed and consumers having to stay at home for several weeks. Pronounced cross-border consumption may exacerbate the drop in consumption given the country's geographical location, relatively low taxes on items such as motor fuels, and its high dependence on non-residential workers. While gradually lifted restrictions and re-opened borders should facilitate the rebound in household spending, Covid-19 may have longer lasting negative effects on employment, with negative repercussions on consumption. To be sure, we expect that the government's measures such as short-time working schemes will prevent the worst effects in terms of redundancies and limit the economic damage.

Before the crisis hit, private consumption would have been an important driver of growth in 2020, as employment and incomes were set to continue growing, fostered by the automatic wage indexation applied from January this year, which should now at least provide

some cushioning effect, as should lower oil prices. Unsurprisingly, consumer confidence crumbled in March/April in light of Covid-19 and the related economic shutdown. Negative effects are by now becoming visible on the labor market, with March's unemployment rate rising sharply to 6.5% from 5.7% in February (LFS adjusted, Eurostat data). The number of jobseekers registered with employment agency ADEM jumped by 31.1% y-o-y to 20,253 this April.

Export growth should suffer from confinement measures enacted in countries all over the world and the global recession triggered by Covid-19. Export expectations collapsed in the second quarter, hitting their lowest level since Q1-09 and offering a first glimpse of things to come. We also anticipate a significant decline in imports, although somewhat less pronounced than the fall in exports, resulting in a negative growth contribution from foreign trade. Even in an environment in which corona-related restrictions are gradually lifted, uncertainty pertaining to external demand remains elevated, due to unclear prospects of a future trade agreement between the EU and the UK, as well as to the impression of re-intensifying tensions between the US and China, which may affect global trade relations more generally. Financial services exports could act as a mitigating factor, being of paramount importance with regard to Luxembourg's export activity (55.0% of all service exports in 2019). These may be regarded as less affected by border closures or the prohibitive Covid-19 measures. On the other hand, muted economic activity and increased stock market volatility will obviously have a negative bearing on the financial sector, curbing its performance in the current year.

We also expect a decline in gross fixed capital formation in view of the extremely high uncertainty and ramifications for corporate revenues. Sustained public investment should limit the fallout to some extent, as the government remains committed to its plan to ramp up public investment this year and next, targeting 4.8% and 4.7% of GDP in 2020 and 2021 respectively (SP2020). By the same token, government consumption should exert a positive effect on GDP growth against the backdrop of the emergency measures in response to Covid-19 and discretionary measures announced prior to the corona crisis.

As a corollary, Luxembourg's GDP per capita will receive a dent this year before resuming growth from next year. Luxembourg nevertheless continues to boast a very high level of economic wealth, with an estimated GDP p.c. of USD 108,951 (IMF data, PPP terms), corresponding to approx. 245% of the EU average (2019, incl. the UK). Its per capita income thus constitutes the highest in the EU and the third-highest in the world.

Luxembourg's per capita income is buttressed by a high level of labor productivity per hour worked, which stood 78.7% above the average level in the European Union (2018 data), partly driven by the country's attractiveness for high value-added industries such as financial services, ICT, and business services (see below), hence attracting highly-skilled foreign labor. At the same time, measurement challenges associated with the complex economic structure, mostly due to presence of internationally operating companies, including MNEs, remain in place. In this vein, Luxembourg's national account statistics are at times difficult to interpret and prone to relatively frequent and large revisions.

We would reiterate our belief that Luxembourg's labor market is a credit strength, with high employment growth and relatively low unemployment, indicating the fundamental strength of the economy. Looking at the EU's social scoreboard, Luxembourg performs relatively well, also with good results in the category social protection and inclusion. We would recall that we see pockets of unused resources, in particular concerning the elderly workforce. Despite a considerable increase, the employment rate of 43.1% (2019) among 55-64 year-olds is comparatively low (EU-28: 60.0%).

Even though Luxembourg has made progress in diversifying its economy and is driving forward the digital transformation and technical innovations, also through its so-called smart specialization strategy, its financial and insurance activity is still of utmost importance. The respective share of total gross value added (GVA) amounted to a very high 26.6% in Q4-19 (EA: 4.5%) and total services accounted for 87.0% of GVA EA: 73.7%). Due to the industry sector concentration, Luxembourg's economy is highly vulnerable to external shocks and adverse developments in a few sectors. That being said, given the characteristics of the current health crisis, Luxembourg's specific economic structure may in fact shield the country to some extent against adverse effects from disrupted goods flows. According to Statec, financial services are assumed to experience a 10% decline versus 47% in the industrial sector during the most restrictive lockdown phase from mid-March to mid-April. However, due to its significant GVA share, the economic damage emanating from contracting financial services activities is reckoned to be comparatively large.

We also note that Luxembourg is not only dependent on a few key industries, but also continues to be highly dependent on international trade, with trade-to-GDP posting at an enormous 381.6% of GDP in 2019, with significant exposure to trade in services (315.5% of GDP). Hence, we think that retaining a competitive economy is key to Luxembourg's business model; however, its competitiveness shows mixed results. In terms of its business environment, Luxembourg has dropped six ranks in the World Bank's latest Doing Business compilation, now occupying the 72nd rank out of 190 economies, pointing to significant room for improvement. Resolving insolvencies and registering property (rank 93 respectively), as well as protecting minority investors (rank 97), appear to be the main weaknesses. On the other hand, the Grand Duchy maintained a good rank 18 (out of 141 economies) in the Global Competitiveness Report of the World Economic Forum. Moreover, its global export market share remained virtually unchanged at 0.54% in 2019 (2018: 0.55%), but the respective services share tumbled from 1.95% to 1.88% in 2018-19, the lowest reading since 2012. As far as cost competitiveness is concerned, Luxembourg has had to give up some ground lately, compared to key trading partners. Since 2016, real unit labor costs (ULC) have risen by 3.8%, comparing unfavorably to its main trading partners. In 2019, however, real ULC stabilized, falling slightly by 0.4%, owing to declining real compensation per employee (-1.7%). Developments will have to be monitored here. This is all the more, as labor productivity growth has been anemic over the last decade, with labor productivity per hour worked increasing by only 3.8% in 2010-19, creating a weaker backdrop for Luxembourg's potential growth going forward.

In addition, we still view the economy's resilience and flexibility as somewhat constrained by high levels of private debt. High private indebtedness is weighing on corporate risk-

bearing capacities, as reflected by the Q4 outturn, which puts NFC debt at 224.1% of GDP, the highest level in the EU according to ECB data – largely driven by intra-group financing operations of MNEs. Meanwhile, household debt as measured by disposable income is also among the highest in the EU, amounting to 174.4% in 2018, around 16 p.p. higher than five years ago and driven by mortgage lending.

Institutional Structure

Luxembourg's exceptionally strong institutional quality constitutes a key pillar of Luxembourg's credit rating, primarily reflected by the excellent results on the World Bank's Worldwide Governance Indicators (WGIs) we consider. The sovereign thus consistently ranks among the best performers, standing at rank 10 out of 209 when it comes to perceived government effectiveness, rank 7 in control of corruption, rank 8 with regard to voice and accountability, and rank 10 in terms of rule of law. With that, the Grand Duchy lies well above the respective euro area averages and moves in line with the ranking of our AAA peers. Also noteworthy is the exceptionally high perceived political stability, a category in which Luxembourg retained the top position among EU member states, and rank 9 worldwide. This being said, we are aware that the ruling three-party government coalition currently holds a thin majority in parliament (31 out of 60 seats), but do not think that this obstructs efficient policy-making.

On the contrary, we continue to view policy credibility and a high degree of responsiveness to structural bottlenecks as a strength. Cognizant of key impediments which may adversely impact the economy's medium- to long-term growth, the government has implemented a completely free public transport system from March 2020. Shortages as regards housing supply are to be tackled by a new housing initiative which passed through parliament in March 2020. Other real estate reforms to stimulate housing supply are underway. In the same vein, the National Action Plan on space 2020-2024 points to ongoing government efforts to diversify the country's economy. Further planned reforms relate to the overall debate on climate protection and the ambition to push for greater use of renewables. In this regard, policy-makers presented the National Energy and Climate Plan in December.

Moreover, Luxembourg's institutional set-up is backed by its EU/euro area membership, from which the country draws significant advantages in terms of trade opportunities, for instance as reflected in one of the highest ratios in the EU as regards intra-EU/extra-EU trade in goods (4.6) and services (2.9). Likewise, free movement of labor and capital represent vital pillars on which the country's economic model rests.

Adding to this, we think that institutional quality is also mirrored by the sound supervisory framework in which the Commission de Surveillance du Secteur Financier (CSSF) plays a pivotal role, being responsible for supervising and regulation professionals and products in the financial sector. In the recent past, we have observed that CSSF is now assessing fund-bank interlinkages and regularly increasing its staff. The latter may be of particular importance, as potential pockets of vulnerability may emerge as Luxembourg embraces financial innovations related to cryptocurrencies and fintech more generally.

We note that Luxembourg updates its taxation framework on an ongoing basis and strongly supports international initiatives to combat tax avoidance and enhance transparency. We understand that the authorities presented draft legislation that would disallow tax deduction of interest or royalties paid or due to associated enterprises established in countries that are on the EU's 'black list' for being 'non cooperative' for tax purposes. In a similar vein, we gather that the EU directive on administrative cooperation in direct taxation (DAC-6) was transposed into law by Parliament in March 2020 and will come into force in July 2020, thus strengthening efforts to enhance transparency as regards cross-border activities. Notwithstanding, in May Luxembourg and eight other countries were issued a reminder by the European Commission to complete implementation of the 5th Anti-Money Laundering Directive – or risk potential fines – as a deadline for this had passed on 10 January.

Fiscal Sustainability

In our view, fiscal sustainability remains a further key strength of the sovereign, reflected by a very low debt level and repeated general government surpluses, as well as by high debt affordability and prudent fiscal policies, which have contributed to now having substantial fiscal leeway to deal with the corona crisis.

Luxembourg's public finances remained in good shape last year, as indicated by a ninth consecutive general government surplus, amounting to 2.2% of GDP. Compared to the prior year (3.1% of GDP), the positive balance decreased mainly due to a lower revenue intake, which in 2018 had been boosted by a one-off related to the introduction of electronic corporate tax declarations, but also due to higher expenditure. Revenue increased by a still healthy 4.4% (2018: 10.4%), with net social contributions posting an increase of 5.6%, taxes on production and imports rising by 3.8%, and current taxes on income and wealth growing by 3.7%. General government expenditure meanwhile expanded by 6.6% (2018: 6.0%), seeing another strong rise in compensation of employees (+7.4%), while gross capital formation surged by 14.6%.

Before the outbreak of Covid-19, we would have expected a moderate headline surplus of close to 1.5% of GDP. The 2020 budget had foreseen some fiscal impulses, including increases on public wages and public investment. In the short to medium term, the government had envisaged reforms such as generalizing individual taxation, adjusting housing taxation, and overhauling environmental taxation.

In light of the measures taken to combat the Covid-19 crisis, we expect public finances to deteriorate significantly in 2020 before turning broadly balanced next year. The government's aforementioned aid package with an envelope of EUR 10.4bn, or about 17.5% of GDP, features liquidity measures such as deferrals of direct and indirect taxes and social security contributions (EUR 4.55bn), as well as loans that are granted to companies of all sizes (EUR 3.6bn). EUR 2.26bn will be provided to strengthen the healthcare system and to bolster short-time working schemes. The measures contained in the additional package announced on 20 May are estimated to cost another EUR 700-800m.

Overall, the government's Covid-19 measures will have a major impact on this year's budget. Furthermore, revenues will be seriously hit, as the tax intake will decline significantly, accompanied by fully-operating automatic stabilizers. We would expect the deficit to be around 6.0% of GDP in 2020, but we point out that uncertainty surrounding these estimates remains unusually high. It is unclear to what extent deferrals and guarantees, accounting for approx. 12% of GDP, will be taken up. In addition, the course of the corona crisis is unpredictable and conceivable further rounds of infections and restrictions, also elsewhere, could hamper domestic economic developments more severely and delay a recovery.

Luxembourg's very low public debt ratio has been broadly stable, averaging 21.7% since 2014, substantially below average EU-27 or EA-19 levels at 77.8% of GDP and 84.1% of GDP respectively. General government debt increased from 21.0% to 22.1% of GDP in 2018-19, driven by the pre-financing of a maturing government bond (May 2020). Looking ahead, we expect the public debt ratio to leap to approx. 29% of GDP in 2020 as a result of the government's fiscal package and plunging economic activity, subject to high uncertainty. If our baseline scenario materializes and GDP growth rebounds in 2021, we would expect public debt to decline gradually over the medium term.

Fiscal risks are mitigated by Luxembourg's very high debt affordability. Supported by the ECB's accommodative monetary policy, interest payments in 2019 dropped by 8.4% compared to the previous year, leaving them at a very low 0.3% of GDP or, measured against revenue, at 0.57% respectively. While bond yield movements on financial markets have shown somewhat higher volatility in connection with events around the corona crisis, yields generally remain very low. Since the ECB has added to its asset purchase program in response to corona, enhancing the regular APP by net purchases of EUR 120bn until the end of the year, along with an emergency envelope of asset purchases (PEPP) comprising EUR 750bn, we expect yields to remain very low for the foreseeable future. To be sure, Luxembourg would be in a position to cope with a sharper increase.

Apart from low interest payments, Luxembourg benefits from fiscal buffers when taking the favorable initial fiscal position and the sizeable, relatively stable amount of liquid assets into account, which we reckon to total approx. 41% of GDP. Concurrently, general government net assets amounted to 13% of GDP in Q4-19, so that Luxembourg remains one of two EU member states with a positive net asset balance.

We have to highlight that we deem the sovereign's considerable fiscal headroom appropriate given looming medium- to long-term fiscal risks, namely markedly increasing age-related costs beyond 2030, risks from changes to international taxation standards, and a relatively high dependence on corporate income tax revenues coupled with a high exposure to a number of few industries.

Of equal importance are risks pertaining to the country's extraordinarily large financial sector. Luxembourg's banking sector is tremendously large, mirrored by total bank assets at 1,473% of GDP (Q3-19), most of which are associated with foreign-controlled subsidiaries (1,303% of GDP) – suggesting heightened vulnerabilities to external developments. That being said, the banking sector appears to have entered the corona crisis on a relatively

stable footing, judging by metrics relating to capitalization and asset quality. Although somewhat biased by denominator effects driven by sizeable intra-group lending, the NPL ratio stood at a mere 0.9% in Q4-19 (Q4-18: 1.1%, EBA data), one of the lowest readings in the EU-28, while the CET1 ratio posted at a relatively high 19.1% (Q4-18: 23.0%). Banks generally appear profitable, notwithstanding some variations in segments which, in some cases, may warrant monitoring, for instance due to a high dependency on capital market developments.

We gather that efforts to further enhance supervision of banks' cross-border exposure and engage with supervisors of parent companies outside the euro area continue, as do efforts to strengthen the supervision and regulation of the investment fund industry. The latter boasted net assets totaling roughly EUR 4,719bn, or approx. 7,429% of GDP, at the end of 2019 (CSSF data). Recent research by Banque Centrale du Luxembourg dating from March 2020 indicates that main fund categories such as equity funds, bond funds, and mixed funds seem broadly resilient. Given possible negative reverberations for the financial industry in connection with the fallout from Covid-19, not least in a lower-for-longer interest rate environment, we will follow developments vigilantly.

The same applies to Luxembourg's continuously rising house prices, driven by persistent employment growth and expanding population, with 3-year growth rates in double-digit territory since Q3-14, standing at 19.1% in Q4-19 (Q4-18: 16.6%). Affordability ratios such as price-to-income and price-to-rent have continued to deteriorate, posting 29.2% and 34.1% above their respective long-term average. These developments have to be seen in the context of rising household indebtedness (see above), which has been driven by mortgage lending, where growth rates have been approaching 9% lately. In light thereof, December 2019 saw the introduction of a macroprudential tool authorizing CSSF, to set stricter limits as regards debt-to-income, loan-to-value and loan-to-income-ratios. Moreover, counter-cyclical capital buffers were activated and have taken effect in January 2020 (0.25% of risk-weighted assets), with new communication from CSSF in April announcing a further rise to 0.50% from January 2021. Nevertheless, CSSF signaled that, along the ECB Banking Supervision guidelines from 20 March, it gives financial institutions flexibility in prudential treatment of loans and with regard to fulfilling capital requirements, also allowing that all capital buffers may be used to withstand potential stress.

Foreign Exposure

Luxembourg's position as a large net creditor as expressed in a highly positive net international investment position (NIIP), buttressed by large current account surpluses, is balanced by NIIP volatility due to large variations in gross asset and liability positions, reflecting its status as an international financial center and its exceptionally high degree of trade and financial openness. The latter leaves the economy thus highly susceptible to global growth and trade dynamics, and in particular to developments on international financial markets and in the banking sector.

The country's current account surplus has been rather stable at around 5% of GDP over the last few years, and is driven by the high surplus in services trade, predominantly re-

flecting financial services exports. These are mainly related to private banking and investment funds managers, as well as companies managing (corporate) cash, and are typically linked to MNE's activities. Last year, the country's current account surplus declined slightly to 4.5% of GDP (2018: 4.8% of GDP), with the surplus in services trade narrowing somewhat to 37.3% of GDP, while the highly negative primary income balance shrunk marginally to -30.4% of GDP.

The substantial current account surpluses of recent years have backed Luxembourg's high net asset position towards international partners. At 50.9% of GDP last year, the NIIP was slightly below its previous year's level (2018: 53.8% of GDP) and remained among the highest in the EU-28. We expect some further narrowing of the current account surplus this year in light of the likely strong, albeit presumably temporary, deterioration of the European and global economy, and reduced activities as regards financial services.

Rating Outlook and Sensitivity

Our rating outlook on Luxembourg's long-term credit ratings is stable, as we assume that the risk situation underlying the key factors affecting sovereign credit risk is likely to remain fundamentally unchanged at this stage. This assessment is subject to a very high degree of uncertainty in view of the dynamic developments around Covid-19 and the associated economic restrictions.

Downward pressure on Luxembourg's ratings and the outlook would thus arise if the economic downturn turned out more severe and/or longer lasting than assumed in our baseline scenario, with detrimental and persistent effects on the labor market and the financial markets. This could also be the case if renewed waves of infections occurred, requiring a return to more restrictions.

Aside from corona-related news flow, escalating tensions concerning the global trade environment including a hard Brexit, as well as risks engendered by the evolving international taxation architecture, could add to a negative scenario prompting us to consider adjustments to the outlook and/or ratings, especially if significantly tighter financial conditions were to accompany these events.

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Ratings*

Long-term sovereign rating	AAA /stable
Foreign currency senior unsecured long-term debt	AAA /stable
Local currency senior unsecured long-term debt	AAA /stable

*) Unsolicited

Economic Data

[in %, otherwise noted]	2014	2015	2016	2017	2018	2019	2020e
Real GDP growth	4.3	4.3	4.6	1.8	3.1	2.3	-5.6
GDP per capita (PPP, USD)	98,614	101,100	102,197	103,150	106,372	108,951	n.a.
HICP inflation rate, y-o-y change	0.7	0.1	0.0	2.1	2.0	1.6	0.6
Default history (years since default)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Life expectancy at birth (years)	82.3	82.4	82.7	82.1	82.3	n.a.	n.a.
Fiscal balance/GDP	1.3	1.3	1.8	1.3	3.1	2.2	-6.0
Current account balance/GDP	5.2	5.1	4.9	4.9	4.8	4.5	n.a.
External debt/GDP	6,908.0	7,258.5	7,118.2	6,476.5	6,130.3	5,633.2	n.a.

Source: International Monetary Fund, Eurostat, own estimates

ESG Factors

While there is no universal and commonly agreed typology or definition of environment, social, and governance (ESG) criteria, Creditreform Rating views ESG factors as an essential yardstick for assessing the sustainability of a state. Creditreform Rating thus takes account of ESG factors in its decision-making process before arriving at a sovereign credit rating. In the following, we explain how and to what degree any of the key drivers behind the credit rating or the related outlook is associated with what we understand to be an ESG factor, and outline why these ESG factors were material to the credit rating or rating outlook.

For further information on the conceptual approach pertaining to ESG factors in public finance and the relevance of ESG factors to sovereign credit ratings and to Creditreform Rating credit

ratings more generally, we refer to the basic documentation, which lays down key principles of the impact of ESG factors on credit ratings.

ESG Factor Box

Environmental Quality	Ecological Risks	Ressource Management	Education	Health	Demographics
Labor	Equality	Technology & Infrastructure	**Safety & Security**	**Judicial system**	**Quality of Public Services**
Integrity of Public Officials	Quality and Efficacy of Regulations	**Civil Liberties/ Political Participation**	Market Access	Business Environment	Data Transparency

Environment	Social	Governance	Highly significant	Significant	Less significant	Hardly significant

The governance dimension plays a pivotal role in forming our opinion on the creditworthiness of the sovereign. As the World Bank's Worldwide Governance Indicators Rule of Law, Government Effectiveness, Voice and Accountability, and Control of corruption have a material impact on Creditreform Rating's assessment of the sovereign's institutional set-up, which we regard as a key rating driver, we consider the ESG factors 'Judicial System and Property Rights', 'Quality of Public Services and Policies', 'Civil Liberties and Political Participation', and 'Integrity of Public Officials' as highly significant to the credit rating.

The social dimension plays an important role in forming our opinion on the creditworthiness of the sovereign. Labor market metrics constitute crucial goalposts in Creditreform Rating's considerations on macroeconomic performance of the sovereign, and we regard the ESG factor 'Labor' as significant to the credit rating or adjustments thereof. What is more, exceptionally high perceived political stability would also touch upon the social dimension, which is reflected among other things by the respective WGI, and would ultimately affect the sovereign's institutional performance, so that we regard the ESG factor 'Safety and Security' as significant.

While Covid-19 may have significant adverse effects on several components in our ESG factor framework in the medium to long term, it has not been visible in the relevant metrics we consider in the context of ESG factors – though it has a significant bearing concerning economic prospects and public finances. To be sure, we will follow ESG dynamics closely in this regard.

Appendix

Rating History

Event	Publication Date	Rating /Outlook
Initial Rating	29.07.2016	AAA /stable
Monitoring	30.06.2017	AAA /stable
Monitoring	01.06.2018	AAA /stable
Monitoring	31.05.2019	AAA /stable
Monitoring	29.05.2020	AAA /stable

Regulatory Requirements

In 2011 Creditreform Rating AG (CRAG) was registered within the European Union according to EU Regulation 1060/2009 (CRA-Regulation). Based on the registration Creditreform Rating AG is allowed to issue credit ratings within the EU and is bound to comply with the provisions of the CRA-Regulation.

This sovereign rating is an unsolicited credit rating. The Ministry of Finance (MOF) participated in the credit rating process as it provided additional information and commented on a draft version of the report. Thus, this report represents an updated version, which was augmented in response to the factual remarks of MOF during their review. However, the rating outcome as well as the related outlook remained unchanged.

Unsolicited Credit Rating	
With Rated Entity or Related Third Party Participation	YES
With Access to Internal Documents	NO
With Access to Management	NO

The rating was conducted on the basis of CRAG's "Sovereign Ratings" methodology (v1.2, July 2016) in conjunction with its basic document "Rating Criteria and Definitions" (v1.3, January 2018). CRAG ensures that methodologies, models and key rating assumptions for determining sovereign credit ratings are properly maintained, up-to-date, and subject to a comprehensive review on a periodic basis. A complete description of CRAG´s rating methodologies and basic document "Rating Criteria and Definitions" is published on the following internet page: www.creditreform-rating.de/en/regulatory-requirements/.

To prepare this credit rating, CRAG has used following substantially material sources: International Monetary Fund, World Bank, Organization for Economic Co-operation and Development, Eurostat, European Commission, European Banking Authority, European Central Bank, World Economic Forum, Banque de Luxembourg, Institute national de la statistique et des étude économiques (STATEC), Grand Duchy of Luxembourg – Ministry of Finance, Commission de Surveillance du Secteur Financier (CSSF), ADEM.

A Rating Committee was called consisting of highly qualified analysts of CRAG. The quality and extent of information available on the rated entity was considered satisfactory. The analysts and committee members declared that the rules of the Code of Conduct were complied with. No conflicts of interest were identified during the rating process that might influence the analyses and judgements of the rating analysts involved or any other natural person whose services are placed at the disposal or under the control of Creditreform Rating AG and who are directly involved in credit rating activities or approving credit ratings and rating outlooks. The analysts presented the results of the quantitative and qualitative analyses and provided the Committee with a recommendation for the rating decision. After the discussion of the relevant quantitative and qualitative risk factors, the Rating Committee arrived at a unanimous rating decision. The weighting of all risk factors is described in CRAG´s "Sovereign Ratings" methodology. The main arguments that were raised in the discussion are summarized in the "Reasons for the Rating Decision".

As regards the rating outlook, the time horizon is provided during which a change in the credit rating is expected. This information is available within the credit rating report. There are no other attributes and limitations of the credit rating or rating outlook other than displayed on the CRAG website. In case of providing ancillary services to the rated entity, CRAG will disclose all ancillary services in the credit rating report.

The date at which the credit rating was released for distribution for the first time and when it was last updated including any rating outlooks is indicated clearly and prominently in the rating report; the first release is indicated as "initial rating"; other updates are indicated as an "update", "upgrade or downgrade", "not rated", "affirmed", "selective default" or "default".

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An explanatory statement of the meaning of each rating category and the definition of default are available in the credit rating methodologies disclosed on the website.

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