Creditreform Sovereign Rating

Creditreform Rating

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 21-05-2021 "Sovereign Ratings" "Rating Criteria and Definitions"

Rating Action

Neuss, 21 May 2021

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.

Contents

Rating Action 1
Key Rating Drivers 1
Reasons for the Rating Decision and Latest Developments 2
Macroeconomic Performance 2
Institutional Structure 5
Fiscal Sustainability 7
Foreign Exposure 7
Rating Outlook and Sensitivity ...11
Analysts 11
Ratings* 11
Economic Data 13
ESG Factors 11
Appendix 13

Key Rating Drivers

1. Luxembourg features one of the highest per capita incomes worldwide, a run of strong economic growth prior to the outbreak of Covid-19, a high-skilled workforce, and a well-performing labor market, but also high private sector debt
2. While Luxembourg's very high trade openness, and its business model centered around its role as a leading international financial center, essentially imply a high susceptibility to external shocks, the structure of its economy proved vital in cushioning the devastating effects of the crisis, leading to a less adverse outcome than most economies in 2020; the Grand Duchy's economy should return to growth above that of the euro area this year and next
3. Outstanding quality of institutional conditions, extensive benefit from EU/EMU membership, as well as very responsive and sound policy-making, the latter also benefiting from a high degree of political stability
4. Covid-19 pandemic resulted in highest headline deficit on Eurostat records and surging public debt; nevertheless, and despite the upward-trending debt-to-GDP ratio, debt levels remain very low; thanks to ample fiscal resources, sound debt management, and very high debt affordability, we see contained fiscal risks entailed by contingent liabilities and changes in international taxation standards at this stage
5. Although the pivotal role of Luxembourg's financial sector does not come without external risks, we continue to see these as contained, mainly due to formidable external buffers as suggested by a very high and positive NIIP coming on the back of sustained current account surpluses

Reasons for the Rating Decision and Latest Developments[1]

Macroeconomic Performance

Despite one of the most devastating crises in modern history, Luxembourg's macroeconomic performance profile remains favorable, thereby buttressing the Grand Duchy's exceptionally high creditworthiness. The macro profile balances the extensive wealth of the Luxembourg economy, strong economic growth prior and prospectively after the Covid-19 pandemic, and a robust labor market, against high private sector debt, high volatility, and vulnerability to external shocks coming on the back of a strong focus on the financial sector and related services. While private sector debt is already high, albeit biased by strong MNE presence, it may weigh on post-pandemic growth, together with potential scarring effects on the labor market. However, we view these adverse effects as less pronounced than in most other European economies, mainly due to Luxembourg's economic structure, which has proven resilient owing to its significant tele-workability and robust ICT infrastructure.

Prior to the outbreak of the Covid-19 crisis, Luxembourg's economy had shown a run of strong economic growth, with real GDP expanding by 3.2% p.a. between 2015 and 2019, thus outpacing the euro average (1.9%) by far. As in other countries, things took a turn for the worse in 2020 when Luxembourg was heavily hit by the pandemic, which pushed its economy into recession. According to STATEC data, real GDP fell by 1.3% last year (2019: +2.3%), as compared to a decline by 4.4% back in 2009 in the wake of the global financial crisis, and a contraction by 6.6% in the euro area (EA) overall. That said, and despite the fact that Luxembourg saw its 14-day cumulative infection rate skyrocket to well above 1,000 in Q4 and took the appropriate confinement measures, the fallout was significantly less grave than in most other economies around the world. From a European perspective, only Lithuania (-0.8%) and Ireland (+3.4%) were hit less severely. Luxembourg's total output even grew by 1.0% in nominal terms last year.

Owing to the measures taken by the government restricting public life, household spending was substantially curtailed, plunging by 6.9% in 2020, thus taking 2.1 p.p. off last year's real GDP growth. Likewise, investment activity took a nosedive as most investment decisions appear to have been pushed back or scrapped in view of the extreme uncertainty and disrupted supply chains. Gross fixed capital formation decreased by 8.8% on the year, largely driven by machinery and equipment investment (-12.6%), whereas residential investment posted positive growth of 2.8%.

We think that two factors have been at play which have prevented the inflicted economic damage from becoming more pronounced. First and foremost, the worst has been averted due to Luxembourg's role as an international financial center, and the corresponding predominance of financial and business services. Financial and insurance services stood at 24.5% of total gross value added in Q4-20, as compared to a mere 4.5% in the euro area (EA) overall. ICT services and business services added for another 9.1% and 12.7% respectively (EA: 5.2% and 11.4%). While the financial sector often took center stage during past recessions, and can be seen as a source of heightened macro volatility even in tranquil times, the current health crisis mainly manifested its impact via retail trade and consumer-facing services, including food and accom-

[1] This rating update takes into account information available until 17 May 2021.

modation, as well as arts, entertainment and recreation. Equally important is the fact that Luxembourg's key industries offer significant scope for working from home, and can build on existing modern ICT infrastructure.

Hence, financial services were a key support to Luxembourg's export growth, faring significantly better than in other European economies, as exports of goods and services increased by 2.5% thanks to a 4.8% rise in services exports. As illustrated by balance of payment data, financial services exports accounted for 57.1% of total services exports in 2020. In fact, Luxembourg and Ireland were the only EU 27 member states displaying positive export growth. Net external trade contributed 1.4 p.p. to real GDP growth.

Another factor decisively alleviating the negative impact was the government's swift and forceful response in order to protect citizens' lives and mitigate adverse economic consequences for households and corporates. In quick succession, in March and May 2020, decision-makers adopted two substantial support packages to tackle the imminent Covid-19 effects and aid economic recovery, totaling approx. EUR 11.3bn (incl. guarantees). These initiatives were supplemented by a further series of measures in July 2020 targeted towards providing labor market support to young and elderly workers. In the wake of the second wave, in the fourth quarter, the government implemented a raft of measures aimed at further attenuating adverse effects on the corporate sector (Nov-20), such as capital grants to cover for fixed costs and lump sum grants to enable firms to pay workers the foreseen minimum wage increase in 2021. Public consumption spending thus jumped by 6.9% in 2020, lifting real GDP by 1.2 p.p.

As a corollary of the relatively moderate decline in economic growth, Luxembourg's per capita income is estimated to have been largely preserved last year. We continue to view the Grand Duchy's exceptionally high wealth levels, buttressed by its very high degree of productivity, as essential factors backing the sovereign's economic strength. According to IMF estimates, Luxembourg's GDP per capita (current prices, PPP terms) totaled USD 118,002 in 2020. At this level, its GDP p.c. not only lies materially above the levels of rating peers and key trading partners such as the Netherlands (USD 57,534) and Germany (USD 54,076), but essentially represents the highest per capita income in the world judging by latest estimates dating from this April. Drawing on latest Eurostat data, Luxembourg stands out as a frontrunner as regards its nominal labor productivity per hour worked, posting 75.1% above the EU-27 average in 2019.

Looking into the current year, we expect Luxembourg's economy to continue its incipient recovery, extending the run of positive quarterly growth rates which we have witnessed since the third quarter of 2020. The Q4 outcome is particular noteworthy against the backdrop of surging infection rates in November and December, though noting that Luxembourg's national account data are prone to large and frequent revisions. After dropping by 1.6% and 7.3% q-o-q in the first and second quarter of 2020 respectively, real GDP swung back in the second half of the year, with growth rates coming in at 9.3% and 1.6% in Q3 and Q4. Accordingly, real GDP had already recouped losses accumulated during the first half of the year, reaching its pre-pandemic level of real GDP by the end of 2020.

To be sure, uncertainty remains unusually high as the ever-evolving pandemic may require renewed restrictive measures, not least because of the circulation of mutated strains of the virus. At this stage we do not expect a strict national lockdown as witnessed during the first wave in the spring of 2020, but health measures have been repeatedly extended this year. More recently, authorities have relaxed containment measures targeted towards sport and musical activities, as well as for restaurants, cafes, and bars. Nevertheless, recent restrictions for travel

from India in the first half of May are a case in point for the challenge of predicting the epidemiological situation and related containment measures.

As the vaccination of Luxembourg's population becomes more widespread, we expect a gradual winding down of lockdown measures going forward, boding well for the country's economic outlook. As of 17 May, 37.0% of adults in Luxembourg had received at least one dose, somewhat above the cumulative uptake of at least one dose in the EU as a whole (36.0%, ECDC data). The country had passed its severe second infection wave by the turn of the year, but its cumulative 14-day infection rate has been moving around elevated levels of approx. 400 over the last couple of months before trending downwards more recently (week 18-2021: 333.6). At the same time, we note that Luxembourg commands over massive testing capacities, with one of the highest testing rates among the EU member states.

Whilst thus emphasizing that any forecast remains subject to abnormally high uncertainty, being ultimately dependent on the epidemiological situation and vaccination progress, we expect real GDP to grow by 4.7% in 2021, with economic activity gradually gaining traction throughout the year as vaccination coverage in Europe becomes more broad-based, followed by somewhat weaker growth of 3.1% in 2022. The recovery should mainly come on the back of recovering domestic demand, which primarily absorbed the impact of the pandemic in 2020. Net external trade will continue to support Luxembourg's output expansion, but at a diminishing rate as import growth should be boosted by higher domestic demand.

We expect fiscal support and the easing of containment measures to facilitate private consumption. Consumer confidence jumped in April, rising to levels last seen back in the second half of 2019. Households' expectation of a significant improvement of their economic situation over the next twelve months, with prospectively increasing major purchases, suggests the release of pent-up demand should boost household spending going forward. The government's macroeconomic policies continue to shield household incomes, in particular the 'chômage partiel', Luxembourg's furlough scheme which has been extended until June 2021, as well as payments for sick leave and leave for employees for family reasons. While the next automatic wage indexation should not be expected before mid-2022 (last 2.5% increase dates from Jan-20), rising wage growth (2020: 1.2%, 2017-19 avg: 6.4%) alongside a minimum wage hike to roughly EUR 2,202 from 2021 and moderate HICP inflation is likely to aid real disposable income.

Luxembourg's labor market should also stay supportive of household spending. Labor market conditions remained robust during the corona crisis, also explained by the high incidence of remote work in the pivotal financial, ICT, and business services industries. We continue to view the sovereign's labor market as credit positive. Indeed, Luxembourg was the only EU member besides Poland (0.1%) and Malta (2.6%) to exhibit positive employment growth in 2020 (2.0%). Monthly unemployment (LFS adj.) peaked in May 2020 (7.7%) and receded to 6.5% by Oct-20, moving sideways since then – posting at 6.6% in March 2021, well below the 8.1% observed in the euro area overall. Looking forward, we expect its labor market to continue to benefit from far-reaching ICT adoption and flexible work arrangements in the corporate sector. As illustrated by the World Economic Forum's assessment, Luxembourg has one of the most flexible labor markets worldwide. Forward-looking policies such as the agreement with Belgium, France and Germany on a more flexible approach with a view to telework in the Greater Region should also cater for stable labor market conditions.

Meanwhile, upbeat sentiment in the industrial and construction sectors points at recovering investment activity. Our assumption of rising business investment is also backed by industry

new orders which have shot up to their highest level in years, and capacity utilization standing at 88.2% in Q2-21, surpassing the historical average (79.0%) by a wide margin. Furthermore, government measures targeted towards corporate sectors affected by the pandemic have been strengthened and extended to June 2021, while the state guarantee scheme will presumably be extended to the end of 2021. Borrowing terms should remain favorable, as financial policies have been set to aid the flow of credit. On the other hand, gross fixed capital formation will likely be boosted by sizable public investment spending, as authorities envisage investing roughly EUR 3bn in 2021 and 2022 respectively, mainly into its green and digital economies.

Export growth looks set to increase further on the back of financial services exports amidst very accommodative global financial conditions. Judging by the country-level index of financial stress (ECB data), financial stress spiked again in Feb-21, but remained below the levels observed during the first infection wave, and substantially below the peak reached during the global financial crisis. The European Commission's (EC) financial services confidence indicator has recovered to pre-pandemic levels after plummeting in last year's second quarter. On the whole, we assume net external trade to support real GDP growth this and next year.

Over the medium term, economic growth should move broadly in line with the economy's underlying growth, which the EC estimates at 2.9% in 2022 (EA: 1.4%). We believe that chances of persistent scarring effects will be mitigated by government policies which foresee fostering investment and labor allocation towards green and digitalization projects (see also below). That being said, medium- to long-term effects from the pandemic on the labor market should be monitored. Whilst the headline figures give no reason for concern (see above), below-the-line figures highlight that vulnerable groups have been more exposed to adverse effects from the pandemic. Thus, unemployment among workers with level 0-2 education rose by 2.1 p.p. to 11.2% (LFS-adj, s.a.) in the year up to Q4-20, as compared to a 1.4 p.p. increase for workers with tertiary education. Concurrently, the unemployment rate for the group of 15-24y-old workers leapt by 9.4 p.p. to 25.7% (total UE: +0.7 p.p.).

In the same vein, we note that stretched balance sheets in the private non-financial sector may act as a drag on medium-term growth going forward, providing less of a cushion for inevitably rising insolvencies. Due to the above-mentioned role as an international financial center with a strong MNE presence, Luxembourg continues to display the highest reading of NFC debt in the EU, totaling 253.1% of GDP in Q4-20, virtually the same level as a year before, after spiking to 270.8% of GDP in last year's second quarter (ECB data). Judging by available data (BCL), non-consolidated household debt rose from 66.8% in Q4-19 to 70.8% of GDP in Q4-20, while remaining high and rising as measured by disposable income, coming in at approx. 174% in Q4-19, also corresponding to one of the highest levels in the EU. Meanwhile, insolvencies still remained at low levels, standing 14.2% below the previous year's level in Q1, but should increase once the exceptional support measures are wound down.

Institutional Structure

The Grand Duchy's outstanding institutional quality remains a key factor reinforcing our assessment of its creditworthiness. While we deem the sovereign as a strong beneficiary of euro area membership, which offers decisive advantages from free movement of capital and people to its financial center ecosystem, institutional conditions are further buttressed by the ECB's credible and accountable monetary policy. We observe broad synchronization in HICP inflation and MFI interest rate movements.

These strengths are complemented by very sound, cohesive, and forward-looking policy-making, underpinned by a very high degree of political stability.

Our preferred metrics for good governance, namely the Worldwide Governance Indicators (WGIs), continue to deliver strong evidence of the exceptionally high quality of Luxembourg's institutional framework. In its latest assessment, the World Bank affirmed the sovereign's extremely good performance, as it took a top ten spot on every WGI dimension we assess. The WGIs remained broadly unchanged, with the notable exception of the perception of the extent to which public power is exercised for private gain in which Luxembourg climbed two places to an excellent rank 5 out of 209 economies (EA median rank 42). When it comes to the WGIs rule of law and voice and accountability, the sovereign retained the previous year's ranks, rank 8 and 10 respectively. We gather that the long awaited constitutional reform is imminent and the respective proposals to strengthen judicial independence, e.g. by establishing a council for the judiciary, may be presented for the vote to parliament in the coming months.

While the perception of the likelihood of political instability and politically-motivated violence remains extremely low, as suggested by a 10th rank out of 211 economies worldwide (1st among EU member states), the Grand Duchy was placed at rank 10/209 concerning the quality of policy formulation and implementation (EA: median rank 35), the same rank as a year before. In particular, the latter observation largely confirms our position that the sovereign's policy-making is highly responsive and forward-looking. This view is not only backed by Luxembourg's timely and targeted response to the Covid-19 pandemic more recently, but arguably more importantly by the government's ambition to facilitate the greening and digitalization of its economy. It is noteworthy that policy-makers, in our view, followed along these lines before the European Commission envisioned NextGenerationEU (NGEU), with its strong focus on transforming the European economy. This is underscored e.g. by the 2018 coalition agreement which set promoting a sustainable and innovative economy as one of its key priorities, and the creation of a Ministry for Environment, Climate and Sustainable Development (MECSD), as well as the Ministry of Sustainable Development and Infrastructure (MSDI) early on.

Luxembourg persistently acts to encourage innovation to permeate the economic and social fabric, also to keep its competitive edge as one of the world's leading financial hubs. In recent years, the sovereign has striven to position Luxembourg as a hub of sustainable finance, e.g. via the Sustainability Bond Framework last September. According to the EC's European Innovation Scoreboard 2020, Luxembourg is assessed as being a leader in innovation, with its performance increasing relative to that of the EU in 2012.

On 26 April, Luxembourg published its Recovery and Resilience Plan (PRR), which rests on three pillars – cohesion and social resilience, green transition, as well as digitalization, innovation and governance. Besides progressing on issues such as enhancing affordable housing - e.g. by continuing along the lines of its Housing Pact 2.0 as well as aiding rental supply - strong emphasis lies on digitalization. The government aims to support the re- and upskilling of workers, essentially with a view to digital skills (Skillsdesch, Future Skills, Digital Skills initiatives), and advancing new IT solutions in its health system. In addition, policy-makers urge stepping up the development of digital public services and increase ICT security.

At the heart of the PRR is the greening of the economy, with the de-carbonization of transport and protection of biodiversity being key priorities. For instance, the government is to formulate minimum targets for low and zero emission vehicles in public procurement, implement an aid scheme for EV charging stations, and adopt the so-called Naturpakt, a framework for supporting

initiatives geared towards biodiversity at the municipal level. In addition, a new CO2 tax on fuel, financial aid and purchase premiums to promote environmental sustainability (e.g. energy renovation, electric cars), as well as incentives to stimulate investment in green projects have already been adopted with the budget 2021.

This ties in with Integrated National Energy and Climate Plan (NCEP) 2021-30 which was enacted in May 2020 and lays down the foundation for Luxembourg's climate and energy policies, sketching out measures to achieve the targets for reducing greenhouse gas (GHG) emissions by 55% and increasing the renewable energy share to 25% by 2030. We note that Luxembourg features the highest reading of GHG emissions per capita among EU member states, at 20.3 tons p.c. (2018) more than double the EU-27 average of 8.7 tons, despite being well below the 25.8 tons seen in 2009. What is more, the country's overall share of energy from renewable sources is the lowest in the EU, amounting to 7.0% in 2019 (EU-27: 19.7%). At the same time, Luxembourg is an outperformer in terms of eco-innovation, clinching the first rank in the EC's eco-innovation index for the second year in a row.

Fiscal Sustainability

Irrespective of the record-high deficit as a result of the tremendous amounts which the authorities had to spend in order to limit adverse repercussions from the pandemic, we continue to view the sovereign's public finances as a key rating strength. Despite the upward-sloping debt trend, in view of a public debt ratio which should continue to rise in the near term, debt levels will remain very low. Moreover, very high debt affordability, sound debt management, sizable government assets, and a track record of fiscal prudence further limit fiscal risks. For the same reasons, we do not deem medium- to long-term fiscal sustainability to be threatened at present, inter alia by contingent liability risks stemming from the very large financial sector, possibly changing international taxation standards, and rising aging costs.

After years of running a sustained headline budget surplus, Luxembourg's fiscal metrics deteriorated materially in the wake of the Covid-19 pandemic. The sovereign had achieved strong surpluses of 3.0% and 2.4% of GDP in 2018 and 2019 respectively, and displayed a five-year average of 2.0% of GDP in 2015-19, significantly higher than all of its EU counterparts. According to preliminary data for 2020, its headline budget turned into a marked deficit of 4.1% of GDP, the highest reading on Eurostat records. We note that before the crisis hit, Luxembourg posted a headline deficit (max. 1.4% of GDP) in only four of the years since 1995. The negative outturn mainly reflects plunging economic growth as well as the substantial government measures which the government had to implement to limit the spread of the pandemic and avert economic fallout from the corona crisis.

The Ministry of Finance (MOF) reckons that roughly 4.2% of GDP (excl. guarantees) out of the total Covid-19 envelope of approx. 18.6% of GDP was disbursed last year. Accordingly, the deficit was largely driven by the spending side, with total general government expenditure soaring by 14.1%, up to 47.8% of GDP in 2020. While the public wage bill increased by 9.8%, the increase of public gross fixed capital formation by a whopping 26.1% (4.0% to 5.0% of GDP in 2019-20), also due to the purchase of a military aircraft, is particularly noteworthy. The comparatively moderate decline in general government revenue (-1.2%) was mainly due to the crisis-related shortfall in income tax intake, which seems to have come mainly on the back of plummeting corporate income taxes. On the whole, current taxes on income and wealth fell by 4.5%, whilst VAT receivables held up relatively well (-0.1%).

Although uncertainty around our forecasts remains extraordinary high, we forecast the headline deficit to decrease notably this year, to 1.0% of GDP, as vaccination coverage becomes more broad-based, accompanied by a rebound in economic activity. In line with the strong recovery, we expect invigorated income tax and VAT receipts, with particularly corporate income taxes seeing a brisk increase, although the outturn should be lower than observed in 2018/19 (7.5% and 7.1% of GDP, BCL), due in part to technical changes to the tax base.

At the same time, we expect only a moderate increase of public spending, as most containment and support measures are assumed to sunset in our baseline scenario. Whilst the government plans to deploy sizable amounts towards public investment, we project a decline in both absolute terms and as measured by GDP. In terms of Covid-19 measures, the government envisaged outlays totaling approx. EUR 575mn or 0.8% of estimated GDP. Roughly half (0.4% of GDP) of the pandemic envelope is devoted to the labor scheme chômage partiel, and another 0.2% of GDP will be shelled out for the Recovery and Solidarity Fund (FSR). Results for public finances in Q1 support our expectations, as revenues collected in the first three months of the year rose by 9.5% y-o-y - even though containment measures were still in place in this period - contrasting with a modest increase by 0.6% in government outlays at the central government level (MOF data).

Driven by declining total output and the significant headline deficit, general government debt rose from 22.0% of GDP in 2019 to 24.9% of GDP, which we hold as a rather modest increase in light of the severe health crisis and the concurrent deep global recession. From a European perspective, only Ireland displayed a smaller rise in its public debt ratio. In spite of the incipient recovery and the prospective budget situation, we expect a further rise of general government debt to 27.5% of GDP in 2021 and 28.1% of GDP in 2022, partly due to stock flow adjustments, before the public debt ratio should stabilize and embark on a gradual downward trend from 2023.

We think the Grand Duchy's debt would remain at prudent levels even if the downward trend resumed somewhat later, due to the very low starting point and the very large fiscal buffers. Among the EU member states, only Estonia posted a lower debt level in 2020 (18.9% of GDP). It has to be highlighted that the Grand Duchy is the only sovereign in the EU that finds itself in a positive net asset position (Q4-20: 9.8% of GDP). Luxembourg holds substantial amounts of financial assets, which the MOF puts at approx. 47.6% of GDP as of Q4-20. Judging by Eurostat data, Luxembourg's holdings of equity and investment fund shares totaled 37.8% of GDP, assets in the form of currency and deposits added another 16.7% of GDP at the end of 2020.

Debt affordability is very high, as the sovereign continues to face extremely low debt servicing costs. As measured by general government revenue, already low interest outlays edged down in 2019-20 from 0.7% to 0.5% (second lowest reading in EU-27). Furthermore, Luxembourg shows a favorable debt profile with a well-diversified holding structure (geographical, market participants) and no FX risk, while the average weighted maturity increased from 4.88y to 6.14y in the twelve months to February 2021 (ECB data). The LGB redemption schedule appears well-laddered, and we note that debt servicing costs should continue to fall as higher yielding bonds such as the 10y LGBs carrying a coupon of 2.25% and 2.215% mature in 2022 and 2023, and the interest rate environment is very likely to remain favorable in the near term.

Against this background, we believe that risks to medium- to long-term fiscal sustainability remain manageable. However, we have to reiterate concerns regarding sharply rising aging costs

over the long term. While the recently-published Ageing Report 2021 presents updated estimates for the period until 2070, the Grand Duchy is still among the EU member states with the strongest increases in age-related costs. At present, Luxembourg has one of the lowest readings - 16.9% of GDP - but this ratio is projected to increase rapidly over the coming decades, to 18.8% of GDP by 2030 and 27.3% of GDP by 2070, the second-highest increase in the EU, which is mainly due to vividly rising spending on public pensions.

Secondly, the momentum with a view to an OECD reform of international taxation standards has gained significant traction since our last review, as the Biden administration in the United States appears to support the introduction of a global minimum corporate tax rate to establish a more level playing field in the taxation of MNEs. A new regime requiring MNEs to pay taxes in the country where profits are generated and/or introducing a universal minimum corporate tax rate may entail substantial effects on tax revenues and the attractiveness of the sovereign for foreign direct investments. According to an OECD assessment, Luxembourg has 83 bilateral tax agreements in force, as well as a comparatively generous participation exemption regime, making it an appealing destination. To be sure, we see the Grand Duchy as a strong advocate of international initiatives such as the OECD's BEPS and the EU'S ATADs, frequently updating its taxation framework to mitigate tax avoidance and to adapt to potential risks stemming from changes in the revenue mix.

Thirdly, contingent liability risks stemming from the very large financial sector remain in place. In the wake of the corona crisis, public guarantees have not increased significantly so far. While the maximum guarantee framework in response to Covid-19 is being capped at approx. 4% of GDP, the take-up was modest up to the end of 2020, amounting to 0.4% of GDP as per Stability Program 2021, adding to a relatively high 11.8% of GDP in other guarantees (incl. Single Resolution Fund).

In light of the enormous size and the sensitivity of the financial sector to economic developments, in particular in the euro area, as well as financial market volatility and of residential property markets, we continue to monitor Luxembourg's financial ecosystem vigilantly. Despite the sharp contraction in economic activity, Luxembourg's huge banking sector, with total bank assets surpassing nominal GDP by the factor of 14.3 in the third quarter of 2020 (ECB data), remains sound – also thanks to moratoria and flexibility in terms of prudential regulation at the euro area level. Luxembourg's banks command over comfortable risk buffers, as signaled by its CET1 ratio, which stood at 20.2% at the end of 2020, well above the EU average of 15.9% (EBA).

Asset quality has deteriorated somewhat, but at 1.8% in Q4-20 - up from 0.9% a year before - the NPL ratio remains well below the EU average of 2.6%. At the same time, stage 2 loans increased only modestly, making up for a rather small share of total loans and advances at amortized costs – at 5.8% in Q4-20 (Q4-19: 4.8%) one of the lowest readings in the EU (average 9.1%). Moreover, we note that Luxembourg's banks essentially feature a very low sector-specific exposure (as measured by share of tier 1 capital) to industries heavily hit by the Covid-19 pandemic, such as accommodation and food services, wholesale and retail trade, etc.

We remain cautious regarding housing price developments amidst rising household debt (see above). House prices have shown double-digit growth rates since the second quarter of 2019, and the pandemic has not disrupted this trend. To the contrary, residential property prices rose by 16.7% y-o-y in Q4-20 (Q4-19: 10.7%), so that the house price index now posts 41.1% above the level seen three years ago. Affordability indicators (OECD data) point to significant misalignments, and mortgage lending has grown vividly over the last 12 months (Mar-21: 10.5%). While

BCL calculations suggest rather moderate overvaluation, with prices being mainly driven by structural factors, macroprudential measures have been tightened. The countercyclical buffer rate was raised to 0.5%, in force from Q1-21.

On the other hand, the investment fund industry and concurrent pockets of vulnerabilities – such as procyclicality as illustrated during the corona crisis – should also continue to be followed closely. Luxembourg's fund industry eventually came through last year's turmoil largely unscathed, as assets under management (AUM) now total roughly EUR 5.25tn (Mar-21), posting 9.6% above the pre-pandemic level of Jan-20. However, this masks significant volatility in AUM over the past 12 months, as the first infection wave caused large outflows and sell-offs, translating into a 2.5% and 11.1% m-o-m decline in AUM in the months of February and March 2020.

Foreign Exposure

Persistent current account surpluses continue to underpin Luxembourg's position as a large net international creditor. Owing to its status as a very open economy and an international financial hub, the latter being associated with high levels of both gross assets and liabilities, the highly positive net international investment position (NIIP) is prone to considerable volatility, partly linked to MNE activity. Vulnerabilities relate to the high susceptibility to shocks to the financial markets as well as to international trade dynamics.

Luxembourg's comparatively large current account surplus shrank slightly last year by 0.3 p.p. to 4.3% of GDP (2019: 4.6%), thus continuing a moderating trend since 2015, when the surplus in the dominating service balance reached a peak. Major developments behind the 2020 outturn include a diminishing surplus in goods trade (-1.2 p.p. to 3.8% of GDP), amid strongly falling general merchandise exports and imports, whereas net exports under merchanting rose slightly. The smaller surplus in services trade (2020: -0.6 p.p. to 33.1% of GDP) masks increasing net exports of financial services, which benefited from recovering financial markets following their downturn in March 2020, as well as increasing net exports of transport services bolstered by air freight. Also contributing to the narrowing current account surplus last year was an increasing deficit in the secondary income balance (-0.8 p.p. to-1.5% of GDP), driven by allowances to cross-border commuters in light of the pandemic, whereas a narrower primary income deficit, mainly as dividend payments were reduced, had the opposite effect. For 2021, we assume that the current account surplus will expand again on the back of the imminent economic recovery, also in many partner countries. In the medium term, we would expect a pronounced positive balance to prevail.

While generally underpinned by persistent current account surpluses, Luxembourg's positive NIIP, one of the highest in the EU and characterized by high levels of both gross assets and liabilities, narrowed by 8 p.p. to 48.1% of GDP last year. A widening effect through a smaller net negative position in portfolio investment was more than offset by the narrowing effect through a lower net positive position in other investment as well as in direct investment, with valuation effects playing a key role. Owing to Luxembourg's very open economy and the importance of its financial ecosystem, its NIIP is prone to considerable volatility, partly linked to MNE activity. The recently intensified global debate and possibly emerging consensus over aspects of international corporate taxation (see above) could potentially have an impact on the external side as well, but we see main risks essentially on the macro and fiscal side.

Rating Outlook and Sensitivity

Our rating outlook on Luxembourg's long-term credit ratings is stable, as we perceive limited downside risks to the sovereign's macroeconomic performance, its fiscal outlook, and its external position as being offset by ample fiscal space, the outstandingly high quality of its institutional framework, and its sizeable external buffers. We have to emphasize that the assessment and interpretation of economic developments remains more challenging than under normal circumstances, as is the case for other indicators, in particular from the fiscal realm.

We could consider lowering our rating or the outlook if it takes significantly longer to control the spread of the virus and its mutations, resulting in stronger and longer-lasting adverse effects on the economy, including the labor market, conceivably exacerbated by negative financial market performance. A negative rating action could also be prompted if developments concerning international taxation practices created a considerably more challenging environment for hosts to multinational enterprises, possibly accompanied by significantly tighter financial conditions. Resurfacing tensions concerning the global trade environment could also create conditions detrimental to the macroeconomic outlook of the small open economy, causing downward pressure on the ratings and the related outlook.

Analysts

Primary Analyst
Fabienne Riefer
Sovereign Credit Analyst
f.riefer@creditreform-rating.de
+49 2131 109 1462

Chairperson
Dr Benjamin Mohr
Head of Sovereign Ratings
b.mohr@creditreform-rating.de
+49 2131 109 5172

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

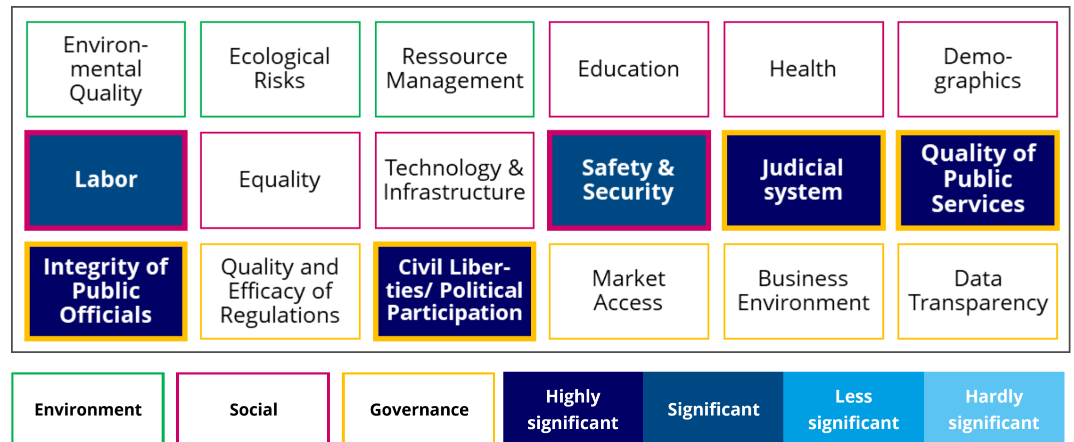
ESG Factors

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.

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



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.

Economic Data

[in %, otherwise noted]	2015	2016	2017	2018	2019	2020e	2021e
Macroeconomic Performance							
Real GDP growth	4.3	4.6	1.8	3.1	2.3	-1.3	4.7
GDP per capita (PPP, USD)	104,976	111,757	113,905	118,004	120,491	118,002	122,740
Credit to the private sector/GDP	156.2	157.1	163.7	162.8	164.5	162.9	n/a
Unemployment rate	6.7	6.3	5.5	5.6	5.6	6.8	n/a
Real unit labor costs (index 2015=100)	100.0	98.5	101.3	102.7	102.3	102.5	n/a
Ease of doing business (score)	69.2	69.2	69.6	69.6	69.6	n/a	n/a
Life expectancy at birth (years)	82.4	82.7	82.1	82.3	82.7	81.8	n/a
Institutional Structure							
WGI Rule of Law (score)	1.9	1.8	1.7	1.8	1.8	n/a	n/a
WGI Control of Corruption (score)	2.1	2.1	2.0	2.1	2.1	n/a	n/a
WGI Voice and Accountability (score)	1.5	1.5	1.5	1.6	1.5	n/a	n/a
WGI Government Effectiveness (score)	1.7	1.7	1.7	1.8	1.7	n/a	n/a
HICP inflation rate, y-o-y change	0.1	0.0	2.1	2.0	1.6	0.0	2.0
GHG emissions (tons of CO2 equivalent p.c.)	20.4	19.8	20.0	20.3	n/a	n/a	n/a
Default history (years since default)	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Fiscal Sustainability							
Fiscal balance/GDP	1.4	1.9	1.3	3.0	2.4	-4.1	-1.0
General government gross debt/GDP	22.0	20.1	22.3	21.0	22.0	24.9	27.5
Interest/revenue	0.9	0.9	0.9	0.8	0.7	0.5	n/a
Debt/revenue	50.7	46.8	51.3	46.2	49.2	56.9	n/a
Weighted average maturity of debt (years)	8.3	7.2	6.9	6.0	5.1	5.7	n/a
Foreign exposure							
Current account balance/GDP	5.1	4.9	4.9	4.8	4.6	4.3	n/a
International reserves/imports	0.0	0.0	0.0	0.0	0.0	0.1	n/a
NIIP/GDP	66.5	57.7	70.4	55.2	56.2	48.1	n/a
External debt/GDP	7,396	7,312	6,767	6,326	5,733	5,104	n/a

Sources: IMF, World Bank, Eurostat, AMECO, ECB, STATEC, own estimates

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
Monitoring	21.05.2021	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. The rating was not endorsed by Creditreform Rating AG from a third country as defined in Article 4 (3) of the CRA-Regulation.

This sovereign rating is an unsolicited credit rating. Creditreform Rating AG had access to representatives, as the Ministry of Finance reviewed the draft report without making any factual comments. Thus, between the disclosure of the credit rating to the rated entity and the public disclosure no amendments were made to the credit rating.

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 our website.

To prepare this credit rating, CRAG has used the 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, European Center for Disease Prevention and Control (ECDC), Banque Centrale du Luxembourg (BCL), Institute national de la statistique et des étude économiques (STATEC), Grand Duchy of Luxembourg – Ministry of Finance, Commission de Surveillance du Secteur Financier (CSSF).

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".

In accordance with Article 11 (2) EU-Regulation (EC) No 1060/2009 registered or certified credit rating agency shall make available in a central repository established by ESMA information on its historical performance data, including the ratings transition frequency, and information about credit ratings issued in the past and on their changes. Requested data are available on the ESMA website: https://cerep.esma.europa.eu/cerep-web/statistics/defaults.xhtml.

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.

Disclaimer

Any rating issued by Creditreform Rating AG is subject to the Creditreform Rating AG Code of Conduct which has been published on the web pages of Creditreform Rating AG. In this Code of Conduct, Creditreform Rating AG commits itself – systematically and with due diligence – to establish its independent and objective opinion as to the sustainability, risks and opportunities concerning the entity or the issue under review.

When assessing the creditworthiness of sovereign issuers, Creditreform Rating AG relies on publicly available data and information from international data sources, governments and national statistics. Creditreform Rating AG assumes no responsibility for the true and fair representation of the original information.

Future events are uncertain, and forecasts are necessarily based on assessments and assumptions. Hence, this rating is no statement of fact but an opinion. Neither should these ratings be construed as recommendations for investors, buyers or sellers. They should only be used by market participants (entrepreneurs, bankers, investors etc.) as one factor among others when arriving at investment decisions. Ratings are not meant to be used as substitutes for one's own research, inquiries and assessments. Thus, no express or implied warranty as to the accuracy, timeliness or completeness for any purpose of any such rating, opinion or information is given by Creditreform Rating AG in any form or manner whatsoever. Furthermore, Creditreform Rating AG cannot be held liable for the consequences of decisions made on the basis of any of their ratings.

This report is protected by copyright. Any commercial use is prohibited without prior written permission from Creditreform Rating AG. Only the full report may be published in order to prevent distortion of the report's overall assessment. Excerpts may only be used with the express consent of Creditreform Rating AG. Publication of the report without the consent of Creditreform Rating AG is prohibited. Only ratings published on the Creditreform Rating AG web pages remain valid.

Creditreform Rating AG

Creditreform Rating AG
Europadamm 2-6
D - 41460 Neuss

Phone +49 (0) 2131 / 109-626
Fax +49 (0) 2131 / 109-627
E-Mail info@creditreform-rating.de
Internet www.creditreform-rating.de

CEO: Dr. Michael Munsch
Chairman of the Board: Dr. Hartmut Bechtold
HRB 10522, Amtsgericht Neuss