

The Luxembourg's economy's growth outlook has deteriorated in recent months due to increases in energy prices, while budgetary pressures have increased moderately. According to OECD, growth in Luxembourg is set to slow in 2022 to around 2.9%, and will slow further in 2023 to 2.1%. The war in Ukraine will weigh on consumer confidence and consumption but investment, including residential construction, will support growth alongside government spending. Employment and wage growth will remain robust. Rising prices of intermediary goods will push up core inflation.

The outlook is highly uncertain, and near-term risks are tilted to the downside. While direct exposures to Russia and Ukraine are limited, Luxembourg's economic prospects depend on the reverberations of the war in Ukraine and monetary policy normalization throughout the globe. Domestically, persistent supply bottlenecks, including labor shortages, and a sharp drop in consumer confidence could weigh on prospects. We are affirming.

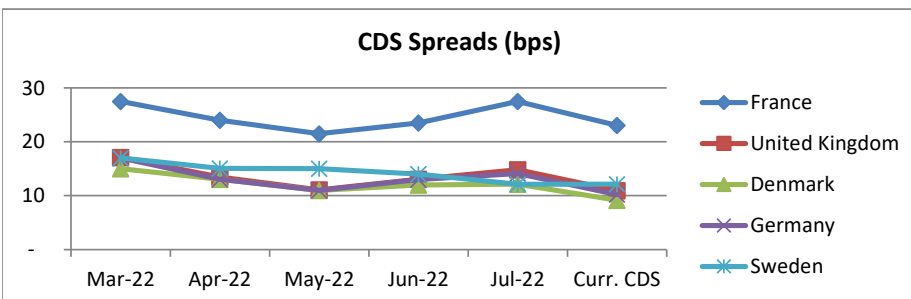
Annual Ratios (source for past results: IMF)

CREDIT POSITION	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>P2022</u>	<u>P2023</u>	<u>P2024</u>
Debt/ GDP (%)	29.9	32.2	30.5	27.4	22.4	15.7
Govt. Sur/Def to GDP (%)	4.2	-1.0	2.6	4.7	6.9	8.8
Adjusted Debt/GDP (%)	29.9	32.2	30.5	27.4	22.4	15.7
Interest Expense/ Taxes (%)	1.2	0.9	0.6	0.5	0.5	0.5
GDP Growth (%)	3.9	2.4	14.2	2.3	2.5	2.5
Foreign Reserves/Debt (%)	1.1	0.8	0.7	0.6	0.7	0.6
Implied Sen. Rating	AAA	AA+	AAA	AA+	AA+	AAA

INDICATIVE CREDIT RATIOS

	<u>AA</u>	<u>A</u>	<u>BBB</u>	<u>BB</u>	<u>B</u>	<u>CCC</u>
Debt/ GDP (%)	100.0	115.0	130.0	145.0	170.0	200.0
Govt. Sur/Def to GDP (%)	2.5	0.5	-2.0	-5.0	-8.0	-10.0
Adjusted Debt/GDP (%)	95.0	110.0	125.0	140.0	160.0	190.0
Interest Expense/ Taxes (%)	9.0	12.0	15.0	22.0	26.0	35.0
GDP Growth (%)	3.5	3.0	2.0	1.0	-1.0	-5.0
Foreign Reserves/Debt (%)	3.0	2.5	2.0	1.5	1.0	0.5

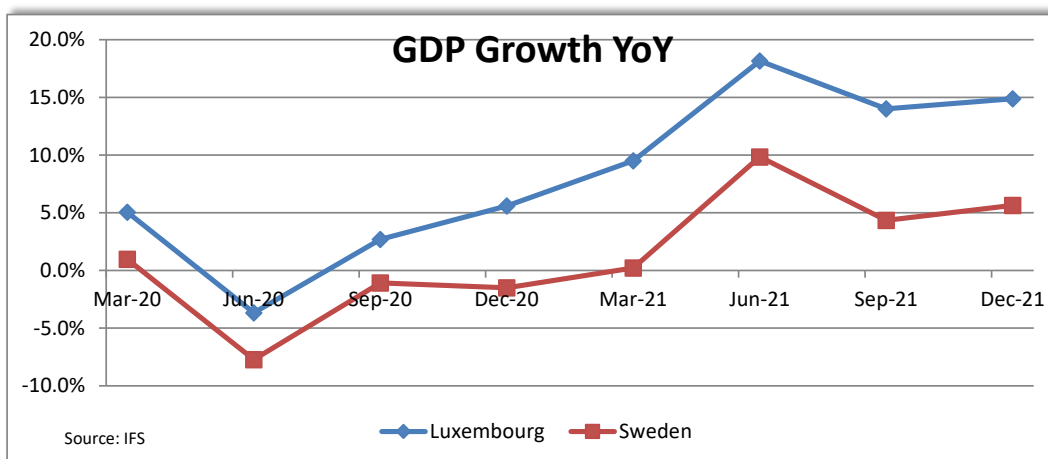
PEER RATIOS	<u>Other NRSRO Sen.</u>	<u>Debt as a % of GDP</u>	<u>Govt. Surp. Def to GDP (%)</u>	<u>Adjusted Debt/ GDP</u>	<u>Interest Expense/ Taxes %</u>	<u>GDP Growth (%)</u>	<u>Ratio- Implied Rating*</u>
Kingdom Of Sweden	AAA	58.9	1.1	58.9	0.6	8.3	AA+
Kingdom Of Denmark	AAA	50.0	3.2	50.0	1.1	7.2	AA+
Federal Republic Of Germany	AAA	77.8	-3.6	77.8	2.4	6.0	AA
French Republic	AA	137.3	-6.0	137.3	4.6	8.2	A-
United Kingdom	AA	190.8	-8.9	190.8	9.4	7.8	BBB



<u>Country</u>	<u>EJR Rtg.</u>	<u>CDS</u>
France	A+	23
United Kingdom	A+	11
Denmark	AA	9
Germany	AA	10
Sweden	AA+	12

Economic Growth

Real GDP surpassed its pre-pandemic trend in early 2021, and the labor market is tight. Inflation is increasing, mainly driven by energy prices, but core inflation is also edging up. Real GDP is projected to average 2 percent in 2022-23, supported by private consumption and accommodative fiscal policy. Luxembourg's economy expanded by 1.2 percent seq. in the three months to March 2022, following an upwardly revised 1 percent growth in the previous period and marking the seventh consecutive period of expansion. The main positive contribution came from an increase in household consumption (1.8 percent vs 0.4 percent in Q4), while government expenditure rose at a slower pace (0.3 percent vs 2.3 percent).



Fiscal Policy

In response to the energy price shock, the government has implemented several measures, including a cash allowance to disadvantaged households, and reduced network costs for gas and electricity. The total support to mitigate rising energy prices is around EUR 830 million with an additional EUR 500M in business loan guarantees (around 1.7% of GDP in total). Public investment of over 4% of GDP in 2022 and 2023 will be implemented in order to support infrastructure and innovation. Maintain flexibility. Support measures, if any, should be targeted and time-bound, given the tight labor and housing markets and revenue risks, including from international taxation.

	Surplus-to-GDP (%)	Debt-to-GDP (%)	5 Yr. CDS Spreads
Luxembourg	2.64	30.54	0.00
Sweden	1.11	58.90	12.14
Denmark	3.18	50.04	9.16
Germany	-3.62	77.80	10.21
France	-5.97	137.28	23.02
United Kingdom	-8.88	190.85	10.93

Sources: Thomson Reuters and IFS

Unemployment

Employment increased by 3.6 percent in 2021. About half of these—mostly public jobs—benefited resident workers. This, together with a slower increase in the active population due to lower immigration flows, contributed to a rapid drop in unemployment to its pre-pandemic level (5.2 percent in December 2021). Job vacancies have almost doubled compared to end-2019, partly reflecting growing skills mismatches, and wages have grown by 2.7 percent YoY.

	Unemployment (%)	
	2020	2021
Luxembourg	6.69	5.47
Sweden	8.53	8.80
Denmark	5.65	5.08
Germany	3.83	3.58
France	8.03	7.88
United Kingdom	0.00	0.00

Source: Intl. Finance Statistics

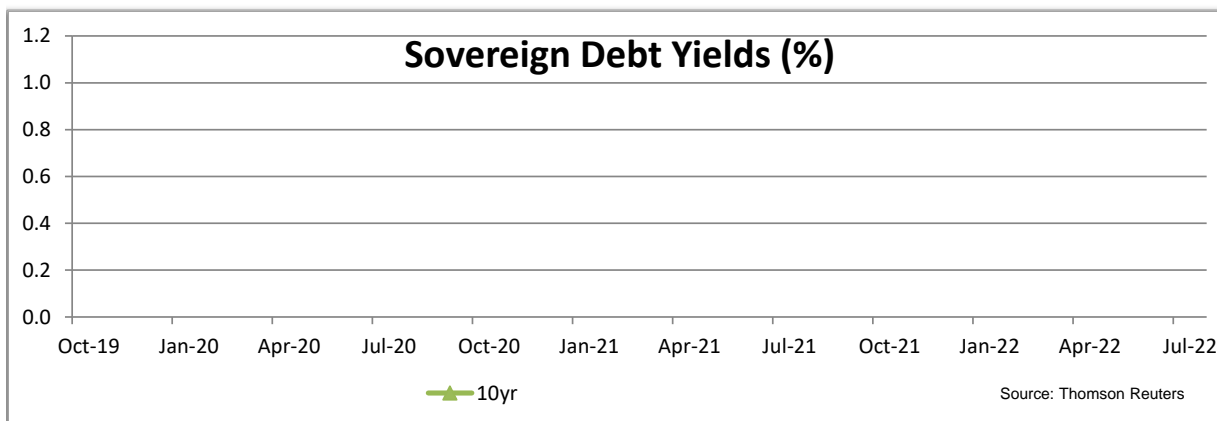
Banking Sector

The Luxembourg banking system remains resilient, although the longer-term impact of the pandemic is still uncertain and structural vulnerabilities remain. On aggregate, banks remain well-capitalized and liquid, and asset quality has improved. Provisioning (including for performing loans) and the share of loans covered by collateral has increased.

	Assets	Mkt Cap/ Assets %
BCEE	50.2	0.00
Deutsche Bank Luxembourg S.A.	30.1	0.00
Total	80.4	
EJR's est. of cap shortfall at 10% of assets less market cap		8.0
Luxembourg's GDP		73.3

Funding Costs

Already on the rise since the beginning of the year, long-term fixed interest rates for home loans have continued to rise following the outbreak of war in Ukraine. They are now around 3%, compared to 1.8% two months ago and 1.4% at the end of 2021. Banque de Luxembourg reported that because of inflation, money is more expensive for banks. The increase in refinancing costs is thus passed on to long-term fixed interest rates.



Ease of Doing Business

Major factors for growing the economy are the ease of doing business and the economic freedom; although not the sole factor for determining economic growth, a country which makes it easy for businesses to operate and provides a reasonably free environment to conduct business has a good chance for growth. The chart on the right indicates that with an overall rank of 72 (1 is best, 189 worst) is mediocre.

	2021 Rank	2020 Rank	Change in Rank
Overall Country Rank:	72	72	0
Scores:			
Starting a Business	76	76	0
Construction Permits	14	14	0
Getting Electricity	45	45	0
Registering Property	93	93	0
Getting Credit	176	176	0
Protecting Investors	97	97	0
Paying Taxes	23	23	0
Trading Across Borders	1	1	0
Enforcing Contracts	18	18	0
Resolving Insolvency	93	93	0

* Based on a scale of 1 to 189 with 1 being the highest ranking.

Economic Freedom

As can be seen below, Luxembourg is strong in its overall rank of 76.0 for Economic Freedom with 100 being best.

Heritage Foundation 2021 Index of Economic Freedom				
World Rank 76.0*				
	2021 Rank**	2020 Rank	Change in Rank	World Avg.
Property Rights	85.7	86.4	-0.7	53.6
Government Integrity	77.6	90.3	-12.7	45.9
Judicial Effectiveness	92.5	74.4	18.1	45.4
Tax Burden	63.4	64.1	-0.7	77.7
Gov't Spending	46.2	45.4	0.8	67.1
Fiscal Health	99.0	99.0	0.0	72.1
Business Freedom	66.1	66.8	-0.7	63.2
Labor Freedom	45.9	45.3	0.6	59.5
Monetary Freedom	76.5	76.4	0.1	74.7
Trade Freedom	84.0	86.4	-2.4	70.7

*Based on a scale of 1-100 with 100 being the highest ranking.
 **The ten economic freedoms are based on a scale of 0 (least free) to 100 (most free).
 Source: The Heritage Foundation

Credit Quality Driver: Taxes Growth:

GRAND DUCHY OF LUXEMBOURG has grown its taxes of 15.7% per annum in the last fiscal year which is more than the average for its peers. We expect tax revenues will grow approximately 8.7% per annum over the next couple of years and 7.8% per annum for the next couple of years thereafter.

Credit Quality Driver: Total Revenue Growth:

GRAND DUCHY OF LUXEMBOURG's total revenue growth has been more than its peers and we assumed a 9.7% growth in total revenue over the next two years.

Income Statement	Peer Median	Issuer Avg.	Assumptions	
			Yr 1&2	Yr 3,4,5
Taxes Growth%	8.7	15.7	8.7	7.8
Social Contributions Growth %	5.6	5.8	5.0	5.0
Grant Revenue Growth %	0.0	NMF		
Other Revenue Growth %	0.0	NMF		
Other Operating Income Growth%	0.0	14.6		
Total Revenue Growth%	8.4	12.7	9.7	8.7
Compensation of Employees Growth%	4.3	5.1	5.1	5.1
Use of Goods & Services Growth%	6.4	8.8	8.8	8.8
Social Benefits Growth%	1.2	(0.5)	(0.5)	(0.5)
Subsidies Growth%	(14.7)	1.9		
Other Expenses Growth%	0.0			
Interest Expense	1.8	0.5	0.5	
Currency and Deposits (asset) Growth%	3.3	0.0		
Securities other than Shares LT (asset) Growth%	6.9	0.0		
Loans (asset) Growth%	(80.6)	272.5	8.7	8.7
Shares and Other Equity (asset) Growth%	(70.9)	(333.1)	2.0	2.0
Insurance Technical Reserves (asset) Growth%	0.0	0.0		
Financial Derivatives (asset) Growth%	(7.4)	(39.1)	(10.0)	(10.0)
Other Accounts Receivable LT Growth%	(1.8)	0.8	0.8	0.8
Monetary Gold and SDR's Growth %	0.0	0.0	5.0	5.0
Other Assets Growth%	0.0	0.0		
Other Accounts Payable Growth%	1.4	3.5	3.5	3.5
Currency & Deposits (liability) Growth%	10.1	2.8	2.8	2.8
Securities Other than Shares (liability) Growth%	2.6	16.6	11.6	11.6
Loans (liability) Growth%	0.1	(14.2)	0.5	0.5
Insurance Technical Reserves (liability) Growth%	0.0	166.7	2.0	2.0
Financial Derivatives (liability) Growth%	4.4	60.0	11.3	11.3
Additional ST debt (1st year)(millions EUR)	0.0	0.0		

ANNUAL OPERATING STATEMENTS

Below are GRAND DUCHY OF LUXEMBOURG's annual income statements with the projected years based on the assumptions listed on page 5.

	ANNUAL REVENUE AND EXPENSE STATEMENT					
	(MILLIONS EUR)					
	2018	2019	2020	2021	P2022	P2023
Taxes	17,107	17,732	17,327	20,044	21,788	23,683
Social Contributions	7,305	7,723	8,122	8,592	9,022	9,473
Grant Revenue						
Other Revenue						
Other Operating Income	<u>2,816</u>	<u>2,869</u>	<u>2,643</u>	<u>3,029</u>	<u>3,029</u>	<u>3,029</u>
Total Revenue	<u>27,228</u>	<u>28,324</u>	<u>28,092</u>	<u>31,665</u>	<u>33,838</u>	<u>36,185</u>
Compensation of Employees	5,955	6,331	6,937	7,293	7,667	8,061
Use of Goods & Services	2,468	2,660	2,798	3,045	3,314	3,606
Social Benefits	10,928	11,521	13,368	13,296	13,224	13,153
Subsidies	653	673	735	749	749	749
Other Expenses				3,531	3,531	3,531
Grant Expense						
Depreciation	1,404	1,488	1,580	1,700	1,700	1,700
Total Expenses excluding interest	<u>24,132</u>	<u>25,504</u>	<u>28,575</u>	<u>29,614</u>	<u>30,186</u>	<u>30,800</u>
Operating Surplus/Shortfall	3,096	2,820	-483	2,051	3,653	5,385
Interest Expense	<u>212</u>	<u>208</u>	<u>148</u>	<u>116</u>	<u>117</u>	<u>117</u>
Net Operating Balance	<u>2,884</u>	<u>2,611</u>	<u>-631</u>	<u>1,935</u>	<u>3,536</u>	<u>5,267</u>

ANNUAL BALANCE SHEETS

Below are GRAND DUCHY OF LUXEMBOURG's balance sheets with the projected years based on the assumptions listed on page 5.

Base Case	ANNUAL BALANCE SHEETS (MILLIONS EUR)					
	2018	2019	2020	2021	P2022	P2023
ASSETS						
Currency and Deposits (asset)	9,420	11,666	10,600	12,432	17,771	25,261
Securities other than Shares LT (asset)	9,124	9,941	10,650	11,802	11,802	11,802
Loans (asset)	97	86	51	190	207	224
Shares and Other Equity (asset)	1,066	632	332	-774	-789	-805
Insurance Technical Reserves (asset)					0	0
Financial Derivatives (asset)	13	53	64	39	35	32
Other Accounts Receivable LT	5,633	5,399	5,305	5,346	5,387	5,429
Monetary Gold and SDR's						
Other Assets					30,070	30,070
Additional Assets	<u>21,766</u>	<u>24,919</u>	<u>26,230</u>	<u>30,070</u>		
Total Financial Assets	47,119	52,696	53,232	59,105	64,483	72,013
LIABILITIES						
Other Accounts Payable	3,764	4,064	3,977	4,117	4,262	4,412
Currency & Deposits (liability)	301	311	316	325	325	325
Securities Other than Shares (liability)	8,932	10,425	12,542	14,620	16,316	18,208
Loans (liability)	4,060	3,950	3,865	3,317	-219	-5,487
Insurance Technical Reserves (liability)			3	8	8	8
Financial Derivatives (liability)	11	5	5	8	9	10
Other Liabilities	<u>1</u>					
Liabilities	17,069	18,755	20,708	22,395	24,237	26,499
Net Financial Worth	<u>30,051</u>	<u>33,941</u>	<u>32,524</u>	<u>36,710</u>	<u>40,246</u>	<u>45,514</u>
Total Liabilities & Equity	47,120	52,696	53,232	59,105	64,483	72,013

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Comments on the Difference between the Model and Assigned Rating

In this case, there has been little change in the recent results and therefore we have used our best judgement in making adjustments which are reflected in the results for the projected ratings. We have assigned a rating of "AAA" whereas the ratio-implied rating for most recent period is "AAA"; we expect results to remain approximately the same.

Changes in Indicative Ratios

We have not made any adjustment in the indicative ratios at this time.

SEC Rule 17g-7(a) Disclosure (Non-NRSRO)

Below are the disclosures as required by Paragraph (a) of Rule 17g-7.

1. The symbol in the rating scale used to denote the credit rating categories and notches within categories and the identity of the obligor, security, or money market instrument as required by Paragraph (a)(1)(ii)(A) of Rule 17g-7:

For the issuer GRAND DUCHY OF LUXEMBOURG with the ticker of 1110Z LX we have assigned the senior unsecured rating of AAA. There are three notches in our rating categories (e.g., A- A, and A+) except for AAA and those deep into speculative grade, i.e., CC, C, and D do not have notches.

2. The version of the procedure or methodology used to determine the credit rating as required by Paragraph (a)(1)(ii)(B) of Rule 17g-7:

We are using the Methodologies for Determining Credit Ratings (Main Methodology) version #15a available via egan-jones.com under the tab at the bottom of the page "Methodologies".

3. The main assumptions and principles used in constructing the procedures and methodologies used to determine the credit rating as required by Paragraph (a)(1)(ii)(C) of Rule 17g-7:

The credit rating assigned reflects our judgement regarding the future credit quality of the issuer. Regarding the specific assumptions used, please refer to projections on pages 1, 6, and 7 of this Rating Analysis Report.

4. The potential limitations of the credit rating as required by Paragraph (a)(1)(ii)(D) of Rule 17g-7:

Our rating pertains solely to our view of current and prospective credit quality. Our rating does not address pricing, liquidity, or other risks associated with holding investments in the issuer.

5. Information on the uncertainty of the credit rating as required by Paragraph (a)(1)(ii)(E) of Rule 17g-7:

Our rating is dependent on numerous factors including the reliability, accuracy, and quality of the data relied upon in determining the credit rating. The data is sourced from publicly available information from the IMF and other similar sources. In some cases, the information is limited because of issues such as the lack of reported data, a delay in reporting data, restatements, inaccurate accounting and other issues. Such issues are not always readily apparent. EJR aims to identify such shortcomings and make adjustments using its best judgement.

6. Whether and to what extent third-party due diligence services have been used in taking the rating action as required by Paragraph (a)(1)(ii)(F) of Rule 17g-7:

EJR does not utilize third-party due diligence services.

7. How servicer or remittance reports were used, and with what frequency, to conduct surveillance of the credit rating as required by Paragraph (a)(1)(ii)(G) of Rule 17g-7:

Servicer or remittance reports normally pertain to structured finance issuers; this report does not pertain to a structured finance issuer (EJR is not an NRSRO for structured finance or sovereigns/ municipal issuers). Regarding surveillance, the minimum time period for corporation issuers is normally one year.

8. A description of the data that were relied upon for the purpose of determining the credit rating as required by Paragraph (a)(1)(ii)(H) of Rule 17g-7:

EJR uses publicly available information from the IMF, governmental filings and other similar sources for ratings on sovereign issuers.

9. A statement containing an overall assessment of the quality of information available and considered in the credit rating as required by Paragraph (a)(1)(ii)(I) of Rule 17g-7: The information is generally high quality and readily available.**10. Information relating to conflicts of interest as required by Paragraph (a)(1)(ii)(J) of Rule 17g-7:**

This rating is unsolicited.

11. An explanation or measure of the potential volatility of the credit rating as required by Paragraph (a)(1)(ii)(K) of Rule 17g-7:

Our rating aims to assess the probability of the payment of obligations in full and on-time. Factors which affect such probability, and in turn our rating, include changes in the operating performance of the issuer, changes in capital structure, and merger and acquisition events.

12. Information on the content of the credit rating as required by Paragraph (a)(1)(ii)(L) of Rule 17g-7:

Regarding the historical performance of the credit rating, our rating transition matrix is available in our Form NRSRO, exhibit 1. The expected probability of default and the expected loss in the event of default is listed on the first page of this report.

13. Information on the sensitivity of the credit rating to assumptions as required by Paragraph (a)(1)(ii)(M) of Rule 17g-7:

Below is a summary of the impact of the 5 assumptions which independently would have the greatest impact on our "ratio-implied rating":

	Assumptions			Resulting Ratio-Implied Rating		
	Base	Optimistic	Pessimistic	Base	Optimistic	Pessimistic
Taxes Growth%	8.7	12.7	4.7	AA+	AAA	AA+
Social Contributions Growth %	5.0	8.0	2.0	AA+	AA+	AA+
Other Revenue Growth %		3.0	(3.0)	AA+	AA+	AA+
Total Revenue Growth%	9.7	11.7	7.7	AA+	AA+	AA+
Monetary Gold and SDR's Growth %	0.8	2.8	(1.2)	AA+	AA+	AA+

14. If the credit rating is assigned to an asset-backed security, a description of: (i) the representations, warranties, and enforcement mechanisms available to investors; and (ii) how they differ from the representations, warranties, and enforcement mechanisms in issuances of similar securities, as required by Paragraph (a)(1)(ii)(N) of Rule 17g-7:

This credit rating is not assigned to an asset-backed security.

ATTESTATION FORM

In compliance with the US Securities and Exchange Commission (SEC) Rule 17g-7(a), the Egan-Jones analyst who published the report is responsible for the rating action and to the best knowledge of the person:

- 1) No part of the credit rating was influenced by any other business activities,
- 2) The credit rating was based solely upon the merits of the obligor, security, or money market instrument being rated, and
- 3) The credit rating was an independent evaluation of the credit risk of the obligor, security, or money market instrument.

Analyst Signature:

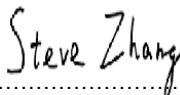
Today's Date

.....
 Subramanian NG
 Senior Rating Analyst

August 29, 2022

Reviewer Signature:

Today's Date

.....

 Steve Zhang
 Senior Rating Analyst

August 29, 2022

Sovereign Rating Methodology (Non-NRSRO)

Scope and Limitations: Sovereign Issuer Credit Quality Ratings (CQR) are a forward-looking assessment of a sovereign's capacity and willingness to honor its existing and future obligations in full and on time. Sovereigns are assigned two CQRs: a Local-Currency CQR, which reflects the likelihood of default on debt issued and payable in the currency of the sovereign, and a Foreign-Currency CQR, which is an assessment of the credit risk associated with debt issued and payable in foreign currencies.

Key Rating Drivers: EJR's approach to sovereign risk analysis is a synthesis of quantitative and qualitative judgments. The quantitative factors EJR uses are:

- Debt in relation to GDP.
- Surplus or deficit in relation to GDP.
- Debt plus potential under-funding of major banks in relation to GDP.
- Interest expense in relation to taxes.
- GDP growth.
- Foreign reserves in relation to debt.

Debt levels for many sovereign issuers have increased at an accelerating rate over the past decade, affecting implied ratings. EJR also considers unemployment levels and funding costs. EJR recognizes that no model can fully capture all the relevant influences on sovereign creditworthiness, meaning that the its sovereign ratings can and do differ from those implied by the rating model. Some of the qualitative factors that impact its ultimate assessment of credit quality include the flexibility, stability and overall strength of the economy, efficiency of tax collection, acceptance of contract law, ease of doing business, trade balances, prospects for future growth and health and monetary policy, and economic freedom. These subjective and dynamic qualitative issues are not captured by the model but affect sovereign ratings

For additional information, please see Exhibit 2: Methodologies in EJR's Form NRSRO.