GRAND DUCHY OF LUXEMBOURG

*EJR Sen Rating(Curr/Prj) AAA/ AAA

Rating Analysis - 8/18/23

According to the OECD, Luxembourg's GDP growth is projected to slow to 0.8% in 2023 with an expected pickup to 2% in 2024. The key financial and insurance services sector is experiencing weakened activity, and tightened financial conditions are impeding private investment. However, domestic consumption is expected to remain a driving force for economic activity in both 2023 and 2024.

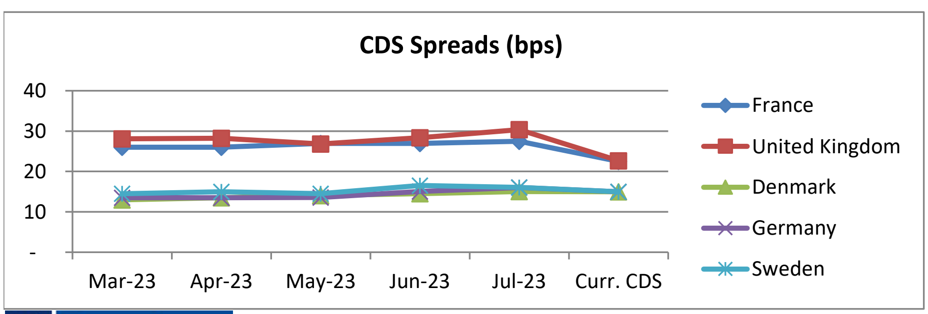
To address the current economic conditions, some mild fiscal expansion may be warranted in the short term to sustain consumption. However, it is essential to gradually phase out energy-related support and tighten the fiscal stance as the economy recovers. Looking ahead, priority should be given to reforming the pension system to ensure long-term fiscal sustainability. Moreover, considering a reform of the wage indexation system to restrict indexation to non-energy price inflation should be explored. A crucial aspect for Luxembourg's economic recovery is a return to normalcy after facing the health crisis and the sharp rise in energy prices during 2022 and 2023. Affirming

Annual Ratios (source for past results: IMF)

CREDIT POSITION	2020	2021	2022	P2023	P2024	P2025
Debt/ GDP (%)	32.7	31.4	28.9	25.8	23.1	20.9
Govt. Sur/Def to GDP (%)	-1.0	2.5	1.9	1.8	1.6	1.1
Adjusted Debt/GDP (%)	32.7	31.4	28.9	25.8	23.1	20.9
Interest Expense/ Taxes (%)	0.8	0.6	0.6	0.5	0.5	0.5
GDP Growth (%)	3.9	11.6	8.1	2.5	3.6	3.6
Foreign Reserves/Debt (%)	0.8	0.7	0.8	0.9	1.0	1.1
Implied Sen. Rating	AA+	AAA	AAA	AA+	AA+	AA+

INDICATIVE CREDIT RATIOS	AA	A	BBB	BB	B	CCC
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

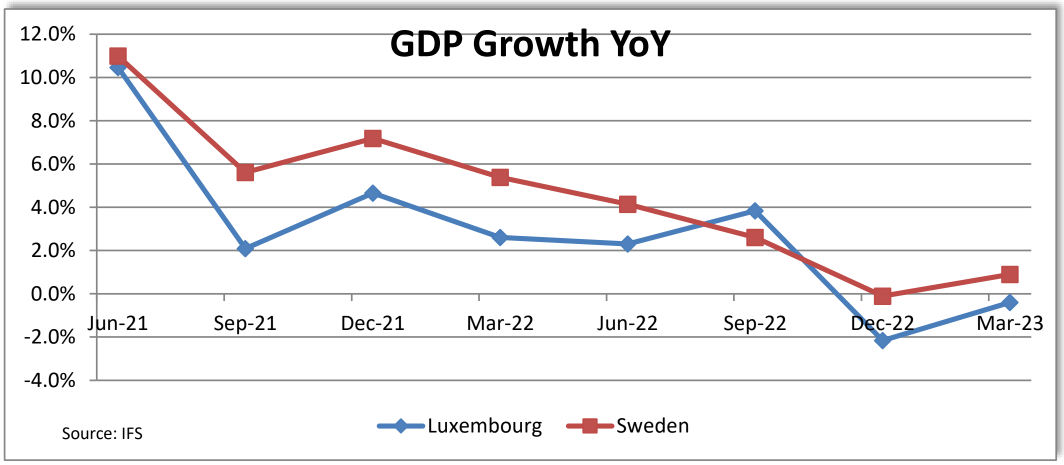
PEER RATIOS	Other NRSRO Sen.	Debt as a % GDP	Govt. Surp. Def to GDP (%)	Adjusted Debt/ GDP	Interest Expense/ Taxes %	GDP Growth (%)	Ratio-Implied Rating*
Kingdom Of Sweden	AAA	53.6	2.1	53.6	1.3	8.7	AAA
Kingdom Of Denmark	AAA	50.3	4.3	50.3	1.2	7.8	A-
Federal Republic Of Germany	AAA	65.3	-2.6	65.3	2.7	7.4	BBB
French Republic	AA	117.1	-4.2	117.1	6.1	5.5	BB+
United Kingdom	AA	147.9	-5.5	147.9	15.0	9.7	BBB-



Country	EJR Rtg.	CDS
France	A+	23
United Kingdom	A+	23
Denmark	AA	15
Germany	AA	15
Sweden	AA+	15

Economic Growth

The economy showed signs of improvement as the contraction rate eased to 0.4% in Q1, compared to the steeper 2.2% decline in Q4. This positive shift was primarily driven by a rebound in private consumption and more moderate contractions in fixed investment and exports. However, public consumption growth weakened during this period. Looking at quarter-on-quarter figures, economic activity returned to expansion. The economy is expected to continue expanding both on an annual and quarterly basis, although the available data presents a mixed picture. Business sentiment in April and May was lower than in Q1, and average consumer sentiment during the same period also dipped.



Fiscal Policy

The tightening of financial conditions is anticipated to continue, influenced by the euro area's monetary policy, and it is contributing to a correction in the housing market. To counter the impact of the energy price shock and to manage inflationary pressures and the extent of automatic wage indexation, the government implemented a fiscal support package last year, equivalent to approximately 3% of GDP over 2022-2023. The package has been instrumental in supporting the economy during these challenging times. The fiscal support measures include capping gas and electricity prices for all households, providing subsidies to disadvantaged households and energy-intensive firms, and implementing a one-year cut in the value-added tax (VAT) rate.

	Surplus-to-GDP (%)	Debt-to-GDP (%)	5 Yr. CDS Spreads
Luxembourg	1.87	28.85	0.00
Sweden	2.14	53.60	15.01
Denmark	4.05	29.70	15.01
Germany	-2.62	65.28	15.01
France	-4.25	117.11	22.50
United Kingd	-5.52	147.88	22.67

Sources: Thomson Reuters and IFS

Unemployment

In June 2023, Luxembourg experienced a rise in its unemployment rate, increasing to 5.2% from 5% the previous month. This resulted in nearly 1,700 more residents registering as jobseekers, while job openings saw a sharp decline. The recent data comes just a month after the country's unemployment rate slightly rose to 5%, marking the first time it had reached this level in almost 18 months.

Unemployment (%)

	2021	2022
Luxembourg	5.43	4.50
Sweden	8.80	7.47
Denmark	5.10	4.46
Germany	3.58	3.07
France	7.88	7.32
United Kingd	4.00	3.70

Source: Intl. Finance Statistics

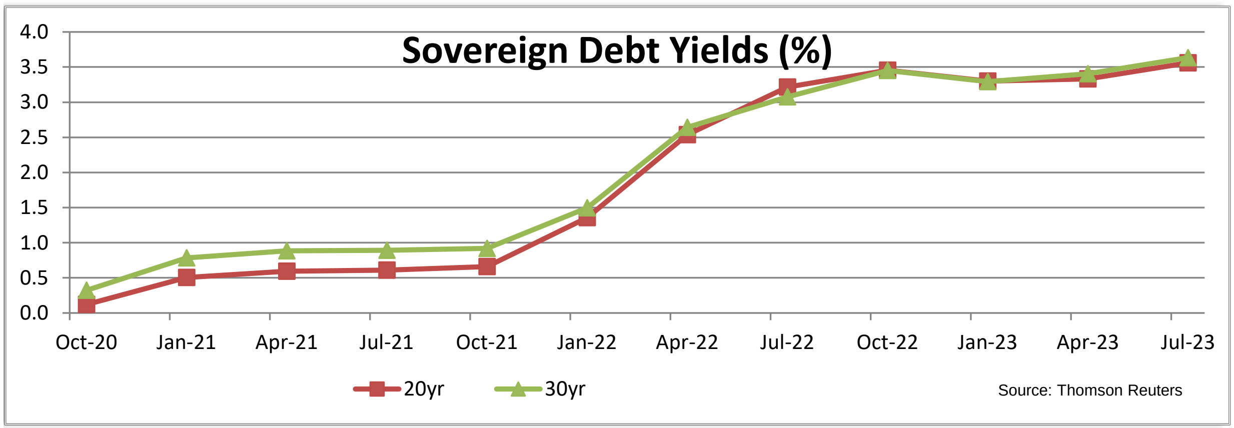
Banking Sector

Based on preliminary data from the Banque centrale du Luxembourg, credit institutions' aggregated balance sheet recorded €940,845 million on May 31, 2023, compared to €958,007 million on April 30, 2023, marking a decrease of 1.79%. This decline is attributed to reduced loans towards the banking sector on the asset side and a decrease in deposits from the non- bank sector on the liabilities side.

Bank Assets (billions of local currency)	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		78.1

Funding Costs

In Luxembourg, the variable interest rate on mortgage loans granted to households rose by 27 bps, reaching 4.38% in May 2023, compared to 4.11% in April 2023. Concurrently, the volume of newly granted loans increased by €53M, totaling €216M in May, as opposed to €163M euros in April. However, on a yearly basis, the interest rate saw a significant increase of 302 bps, while the volume of newly granted loans declined by €91M.



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.

The World Bank's Doing Business Survey*	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 78.4 for Economic Freedom with 100 being best.

Heritage Foundation 2023 Index of Economic Freedom
World Rank 78.4*

	2023 Rank**	2022 Rank	Change in Rank	World Avg.
Property Rights	96.8	97.4	-0.6	53.3
Government Integrity	89.7	89.5	0.2	44.4
Judical Effectiveness	96.5	96.4	0.1	48.3
Tax Burden	64.8	64.1	0.7	78.1
Gov't Spending	41.6	41.5	0.1	64.3
Fiscal Health	80.0	98.7	-18.7	54.5
Business Freedom	85.5	89.3	-3.8	59.8
Labor Freedom	56.8	56.3	0.5	55.5
Monetary Freedom	75.1	80.1	-5.0	72.1
Trade Freedom	78.6	79.2	-0.6	69.6

*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 7.6% per annum in the last fiscal year which is more than the average for its peers. We expect tax revenues will grow approximately 7.6% per annum over the next couple of years and 6.8% 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 8.6% 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%	7.5	7.6	**7.6**	**6.8**
Social Contributions Growth %	5.4	7.9	**8.0**	**8.0**
Grant Revenue Growth %	0.0	NMF		
Other Revenue Growth %	0.0	NMF		
Other Operating Income Growth%	0.0	7.1	**7.1**	**7.1**
Total Revenue Growth%	7.2	7.7	**8.6**	**7.7**
Compensation of Employees Growth%	3.2	7.8	**7.8**	**7.8**
Use of Goods & Services Growth%	4.3	11.0	**11.0**	**11.0**
Social Benefits Growth%	3.5	9.9	**9.9**	**9.9**
Subsidies Growth%	(25.8)	30.8		
Other Expenses Growth%	0.0			
Interest Expense	1.8	0.6	**0.6**	
Currency and Deposits (asset) Growth%	(11.4)	0.0		
Securities other than Shares LT (asset) Growth%	(8.8)	0.0		
Loans (asset) Growth%	5.4	(76.7)	**7.6**	**7.6**
Shares and Other Equity (asset) Growth%	(16.7)	(197.5)	**2.0**	**2.0**
Insurance Technical Reserves (asset) Growth%	0.0	0.0		
Financial Derivatives (asset) Growth%	(28.7)	271.8	**7.6**	**7.6**
Other Accounts Receivable LT Growth%	3.5	5.2	**5.2**	**5.2**
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%	2.3	12.3	**5.0**	**5.0**
Currency & Deposits (liability) Growth%	(4.0)	3.0	**3.0**	**3.0**
Securities Other than Shares (liability) Growth%	(19.8)	(5.1)	**(3.6)**	**(3.6)**
Loans (liability) Growth%	0.4	(0.6)	**0.5**	**0.5**
Insurance Technical Reserves (liability) Growth%	0.7	0.0		
Financial Derivatives (liability) Growth%	(18.0)	287.5	**9.9**	**9.9**
Additional ST debt (1st year)(millions EUR)	0.0	0.0		

ANNUAL INCOME 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)

	2019	2020	2021	2022	P2023	P2024
Taxes	17,711	17,336	19,942	21,462	23,093	24,848
Social Contributions	7,723	8,114	8,592	9,274	10,016	10,817
Grant Revenue						
Other Revenue						
Other Operating Income	2,864	2,630	3,014	3,229	3,229	3,229
Total Revenue	28,298	28,080	31,548	33,965	36,338	38,894
Compensation of Employees	6,334	6,940	7,361	7,938	8,560	9,231
Use of Goods & Services	2,664	2,800	3,052	3,388	3,761	4,175
Social Benefits	11,521	13,388	13,222	14,527	15,961	17,536
Subsidies	675	737	721	943	943	943
Other Expenses				3,672	3,672	3,672
Grant Expense						
Depreciation	1,488	1,584	1,752	1,912	1,912	1,912
Total Expenses excluding interest	25,526	28,606	29,617	32,380	34,809	37,470
Operating Surplus/Shortfall	2,772	-526	1,931	1,585	1,529	1,425
Interest Expense	206	146	114	125	126	126
Net Operating Balance	2,566	-671	1,815	1,460	1,403	1,298

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)					
ASSETS	2019	2020	2021	2022	P2023	P2024
Currency and Deposits (asset)	11,416	10,314	11,992	13,048	13,900	13,900
Securities other than Shares LT (asset)	10,209	10,954	12,146	10,449	10,449	10,449
Loans (asset)	85	49	163	38	41	44
Shares and Other Equity (asset)	619	330	-765	746	761	776
Insurance Technical Reserves (asset)					0	0
Financial Derivatives (asset)	53	64	39	145	156	168
Other Accounts Receivable LT	5,548	5,436	5,315	5,591	5,881	6,187
Monetary Gold and SDR's						
Other Assets					28,646	28,646
Additional Assets	24,825	26,146	30,938	28,646		
Total Financial Assets	52,755	53,293	59,828	58,663	59,834	60,169
LIABILITIES						
Other Accounts Payable	4,511	4,480	4,585	5,151	5,409	5,679
Currency & Deposits (liability)	314	320	329	339	339	339
Securities Other than Shares (liability)	10,405	12,520	14,590	13,848	13,355	12,880
Loans (liability)	3,942	3,856	3,213	3,194	1,791	492
Insurance Technical Reserves (liability)		3	8	8	8	8
Financial Derivatives (liability)	5	5	8	31	34	37
Other Liabilities		-1		1	1	1
Liabilities	19,177	21,183	22,733	22,572	22,340	21,377
Net Financial Worth	33,578	32,110	37,095	36,091	37,494	38,793
Total Liabilities & Equity	52,755	53,293	59,828	58,663	59,834	60,169

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 the 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

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+) other than those deep into speculative grade; for CC, C, and D there are no 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 methodology version #16 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 page 3 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 dependant on numerous factors including the reliability, accuracy, and quality of the data relied used in determining the credit rating. The data is sourced from publicly-available 10Q and 10K statements, quarterly reports, 8K filings, earnings reports, and other similar sources. In some cases, the information is limited because of issues such as short operating histories, the lack of reported data, a delay in reporting data, restatements, inaccurate accounting, and other issues. Such shortcomings 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 10Q and 10K statements, quarterly reports, 8K filings, earnings reports, governmental filings and other similar sources for ratings on publicly-traded issuers. In the case of private issuers, EJR relies on information provided mainly by 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 avail.

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%	7.6	11.6	3.6	AA+	AA+	AA+
Social Contributions Growth %	8.0	11.0	5.0	AA+	AA+	AA+
Other Revenue Growth %		3.0	(3.0)	AA+	AA+	AA+
Total Revenue Growth%	8.6	10.6	6.6	AA+	AA+	AA+
Monetary Gold and SDR's Growth %	5.0	7.0	3.0	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**

August 18, 2023

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Subramanian NG
Senior Rating Analyst

Reviewer Signature: **Today's Date**

Steve Zhang

August 18, 2023

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Steve Zhang
Senior Rating Analyst

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.