

# GRAND DUCHY OF LUXEMBOURG

Rating Analysis - 12/26/18

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

\*EJR CP Rating: A1+

EJR's 7 yr. Default Probability: 0.0%

A multilingual Grand Duchy, Luxembourg, is largely dependent on the banking, steel, and industrial sectors. One of the world's wealthiest countries, it has one of the eurozone's highest current account surpluses as a share of GDP, maintains a healthy budgetary position, and has the region's lowest level of public debt. Economic competitiveness is sustained by the solid institutional foundations of an open-market system. Robust household consumption continues to support economic growth. Exports of financial services helps offset the deficits in goods and non-financial services. Declining unemployment, a high vacancy rate, capacity constraints regarding skilled labour all reflect a tight labour market. Fiscal policy is sound but excessive reliance on the financial sector exposes Luxembourg to increased financial volatility. Ongoing monitoring of such financial institutions, macroeconomic headwinds and the continued diversification of the economy are things to watch out for. Affirming.

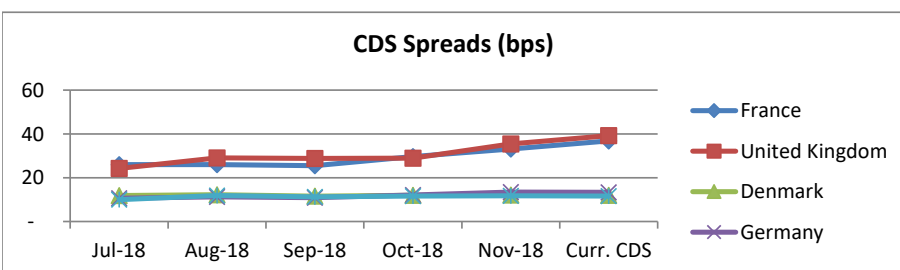
## Annual Ratios (source for past results: IMF)

CREDIT POSITION	2015	2016	2017	P2018	P2019	P2020
Debt/ GDP (%)	22.0	20.8	23.0	19.5	16.3	13.2
Govt. Sur/Def to GDP (%)	2.8	3.4	3.2	3.0	2.8	2.7
Adjusted Debt/GDP (%)	22.0	20.8	23.0	19.5	16.3	13.2
Interest Expense/ Taxes (%)	1.4	1.2	1.3	1.3	1.3	1.3
GDP Growth (%)	3.5	3.3	3.7	2.3	2.3	2.5
Foreign Reserves/Debt (%)	1.5	1.6	1.2	1.4	1.4	1.8
Implied Sen. Rating	AAA	AAA	AAA	AA+	AA+	AAA

## 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

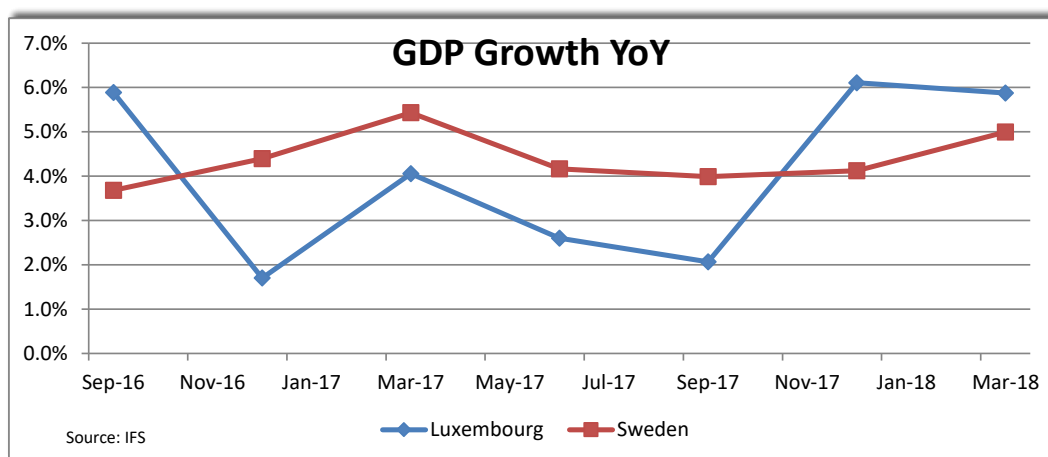
PEER RATIOS	Other NRSRO Sen.	Debt as a % of GDP	Govt. Surp. Def to GDP (%)	Adjusted Debt/ GDP	Interest Expense/ Taxes %	GDP Growth (%)	Ratio-Implied Rating*
Kingdom Of Sweden	AAA	40.6	2.6	40.6	0.9	4.4	AAA
Kingdom Of Denmark	AAA	36.4	1.6	36.4	2.3	3.7	AA+
Federal Republic Of Germany	AAA	64.1	1.0	64.1	4.4	3.7	AA
French Republic	AA	97.0	-2.5	97.0	6.3	2.8	A+
United Kingdom	AA	87.7	-0.7	87.7	9.9	3.8	AA+



Country	CDS
France	37
United Kingdom	39
Denmark	12
Germany	13
Sweden	12

**Economic Growth**

Growth is projected to remain steady on the back of resilient domestic and external demand, at 2.9% in 2019 and 3.2% in 2020 according to OECD. Reductions in personal and corporate income taxes are expected to maintain domestic demand growth. Global trade tensions as well as heightened financial volatility are the main downside risks and could weigh on external demand. On the upside, financial companies have announced the reallocation of some of their activities in Luxembourg after Brexit, which is a sure sign of its strong established financial sector. In the long run, ageing and continued resident inflows may put pressure on the pension system, which is currently in surplus. Affirming.



**Fiscal Policy**

Gross public debt, at 23% of GDP, is among the lowest in the OECD. Net public debt is positive due to significant assets held by the social security administration. The general government budget is in surplus and projected to stay so in the short run, in spite of falling revenues due to the corporate income tax cuts and a loss of e-commerce VAT in 2019. Over the past three years, government spending has amounted to 41.4% of total output, and budget surpluses have averaged 1.6% of GDP.

	Surplus-to-GDP (%)	Debt-to-GDP (%)	5 Yr. CDS Spreads
Luxembourg	3.17	23.00	0.00
Sweden	2.62	40.60	11.68
Denmark	1.59	36.40	11.95
Germany	1.02	64.10	13.35
France	-2.54	97.00	36.81
United Kingdc	-0.73	87.70	39.20

Sources: Thomson Reuters and IFS

**Unemployment**

Luxembourg is consistently ranked as one of the world's most open and transparent economies. Employment opportunities are numerous for industrial and service employees, known as "cross-border" workers, who come to work in Luxembourg on a daily basis from neighboring countries. Structural challenges include work disincentives embedded in the tax-benefit system, which are obstacle to further reduction in unemployment and inactivity traps. Moreover, in the long run, ageing and continued resident inflows may put pressure on the pension system.

Unemployment (%)	2016		2017	
	2016	2017	2016	2017
Luxembourg	6.34	5.72	6.34	5.72
Sweden	6.95	6.68	6.95	6.68
Denmark	6.19	5.72	6.19	5.72
Germany	4.13	3.76	4.13	3.76
France	10.07	9.43	10.07	9.43
United Kingd	4.91	4.40	4.91	4.40

Source: Intl. Finance Statistics

**Banking Sector**

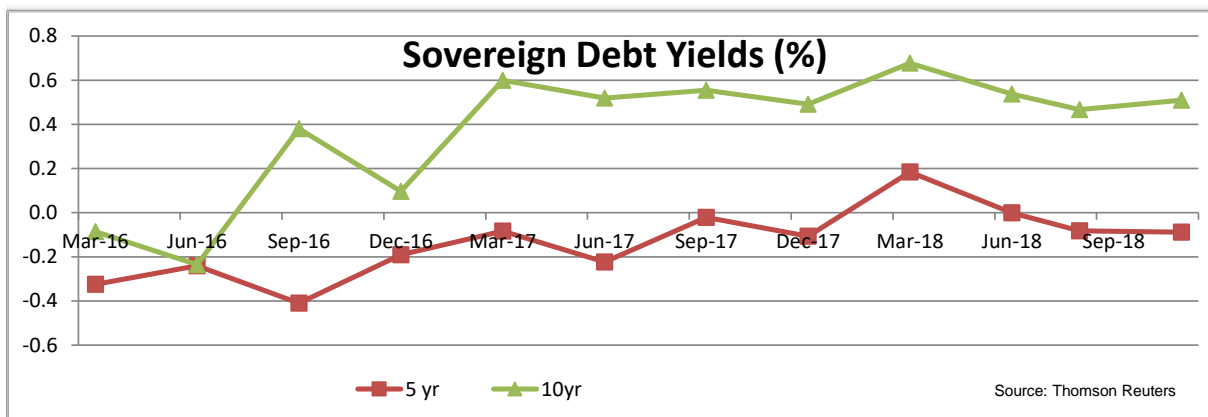
Luxembourg remains the world's largest fund market after the US and its swift adoption of EU laws and rules for so-called passporting fund administration and other services have swelled assets under management at its banks.

Passporting is a massive draw post-Brexit because it allows foreign firms authorised there to do business in the rest of the soon-to-be 27-nation bloc.

Bank Assets (billions of local currency)		
	Assets	Mkt Cap/ Assets %
DEXIA SA	180.94	0.96
ACKERMANS & VAN	13.47	33.49
KBC GROEP	292.34	8.80
FORTIS	103.34	7.62
<b>Total</b>	<b>590.1</b>	
EJR's est. of cap shortfall at		
10% of assets less market cap		19.2
Luxembourg's GDP		55.3

**Funding Costs**

Bank Lending Rate in Luxembourg increased to 1.70% in October from 1.63% in September of 2018. Bank Lending Rate in Luxembourg averaged 3.09% from 2003 until 2018, reaching an all time high of 6.24% in October of 2008 and a record low of 1.53% in October of 2015.



**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 63 (1 is best, 189 worst) is above average.

The World Bank's Doing Business Survey*			
	2018	2017	Change in
	Rank	Rank	Rank
<b>Overall Country Rank:</b>	<b>63</b>	<b>59</b>	<b>-4</b>
<b>Scores:</b>			
Starting a Business	70	67	-3
Construction Permits	7	7	0
Getting Electricity	31	32	1
Registering Property	88	88	0
Getting Credit	173	170	-3
Protecting Investors	119	123	4
Paying Taxes	21	16	-5
Trading Across Borders	1	1	0
Enforcing Contracts	14	15	1
Resolving Insolvency	86	82	-4

\* 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 76.4 for Economic Freedom with 100 being best.

<b>Heritage Foundation 2018 Index of Economic Freedom</b>				
<b>World Rank 76.4*</b>				
	<b>2018</b>	<b>2017</b>	<b>Change in</b>	<b>World</b>
	<b>Rank**</b>	<b>Rank</b>	<b>Rank</b>	<b>Avg.</b>
<b>Property Rights</b>	<b>82.7</b>	<b>85.8</b>	<b>-3.1</b>	<b>51.5</b>
<b>Government Integrity</b>	<b>79.0</b>	<b>78.3</b>	<b>0.7</b>	<b>42.1</b>
<b>Judicial Effectiveness</b>	<b>77.9</b>	<b>77.0</b>	<b>0.9</b>	<b>46.9</b>
<b>Tax Burden</b>	<b>65.1</b>	<b>64.5</b>	<b>0.6</b>	<b>76.7</b>
<b>Gov't Spending</b>	<b>48.5</b>	<b>46.0</b>	<b>2.5</b>	<b>63.5</b>
<b>Fiscal Health</b>	<b>99.0</b>	<b>99.0</b>	<b>0.0</b>	<b>66.3</b>
<b>Business Freedom</b>	<b>69.2</b>	<b>68.6</b>	<b>0.6</b>	<b>64.8</b>
<b>Labor Freedom</b>	<b>46.2</b>	<b>43.8</b>	<b>2.4</b>	<b>58.9</b>
<b>Monetary Freedom</b>	<b>87.6</b>	<b>86.2</b>	<b>1.4</b>	<b>76.0</b>
<b>Trade Freedom</b>	<b>86.9</b>	<b>87.0</b>	<b>-0.1</b>	<b>75.9</b>

\*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 5.5% per annum in the last fiscal year which is more than the average for its peers. We expect tax revenues will grow approximately 1.5% per annum over the next couple of years and 1.9% 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 2.5% 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%	4.6	5.5	1.5	1.9
Social Contributions Growth %	4.7	7.0	7.0	7.0
Grant Revenue Growth %	0.0	NMF		
Other Revenue Growth %	0.0	NMF		
Other Operating Income Growth%	0.0	5.3	3.0	3.0
Total Revenue Growth%	4.1	5.9	2.5	2.3
Compensation of Employees Growth%	0.0	0.0		
Use of Goods & Services Growth%	0.3	2.9	2.9	2.9
Social Benefits Growth%	2.1	6.4	6.4	6.4
Subsidies Growth%	3.1	4.8		
Other Expenses Growth%	0.0			
Interest Expense	1.8	1.5	1.5	
Currency and Deposits (asset) Growth%	0.0	0.0		
Securities other than Shares LT (asset) Growth%	0.0	0.0		
Loans (asset) Growth%	(0.7)	(3.5)	(3.5)	(3.5)
Shares and Other Equity (asset) Growth%	0.0	0.0		
Insurance Technical Reserves (asset) Growth%	0.0	0.0		
Financial Derivatives (asset) Growth%	0.0	(485.7)	(10.0)	(10.0)
Other Accounts Receivable LT Growth%	0.0	2.3	1.5	1.5
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%	0.0			
Currency & Deposits (liability) Growth%	0.0	0.0		
Securities Other than Shares (liability) Growth%	0.0	0.0		
Loans (liability) Growth%	(2.0)	(7.5)	0.5	0.5
Insurance Technical Reserves (liability) Growth%	0.0	0.0		
Financial Derivatives (liability) Growth%	0.0	0.0		
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.

	<b>ANNUAL REVENUE AND EXPENSE STATEMENT</b>					
	<b>(MILLIONS EUR)</b>					
	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>P2018</b>	<b>P2019</b>
<b>Taxes</b>	<b>13,420</b>	<b>13,736</b>	<b>14,450</b>	<b>15,238</b>	<b>15,467</b>	<b>15,699</b>
<b>Social Contributions</b>	<b>5,940</b>	<b>6,231</b>	<b>6,461</b>	<b>6,916</b>	<b>7,400</b>	<b>7,918</b>
<b>Grant Revenue</b>						
<b>Other Revenue</b>						
<b>Other Operating Income</b>	<b>2,205</b>	<b>2,362</b>	<b>2,312</b>	<b>2,434</b>	<b>2,434</b>	<b>2,434</b>
<b>Total Revenue</b>	<b>21,565</b>	<b>22,329</b>	<b>23,223</b>	<b>24,588</b>	<b>25,301</b>	<b>26,051</b>
<b>Compensation of Employees</b>						
<b>Use of Goods &amp; Services</b>	<b>1,764</b>	<b>1,906</b>	<b>1,999</b>	<b>2,056</b>	<b>2,115</b>	<b>2,175</b>
<b>Social Benefits</b>	<b>10,123</b>	<b>10,307</b>	<b>10,498</b>	<b>11,169</b>	<b>11,883</b>	<b>12,642</b>
<b>Subsidies</b>	<b>721</b>	<b>731</b>	<b>684</b>	<b>717</b>	<b>717</b>	<b>717</b>
<b>Other Expenses</b>				<b>7,402</b>	<b>7,402</b>	<b>7,402</b>
<b>Grant Expense</b>						
<b>Depreciation</b>	<b>1,121</b>	<b>1,173</b>	<b>1,229</b>	<b>1,300</b>	<b>1,300</b>	<b>1,300</b>
<b>Total Expenses excluding interest</b>	<b>19,951</b>	<b>20,675</b>	<b>21,227</b>	<b>22,644</b>	<b>23,417</b>	<b>24,236</b>
<b>Operating Surplus/Shortfall</b>	<b>1,614</b>	<b>1,654</b>	<b>1,996</b>	<b>1,944</b>	<b>1,884</b>	<b>1,814</b>
<b>Interest Expense</b>	<b><u>211</u></b>	<b><u>188</u></b>	<b><u>176</u></b>	<b><u>192</u></b>	<b><u>195</u></b>	<b><u>198</u></b>
<b>Net Operating Balance</b>	<b>1,404</b>	<b>1,466</b>	<b>1,820</b>	<b>1,751</b>	<b>1,689</b>	<b>1,616</b>

**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	2014	2015	2016	2017	P2018	P2019
Currency and Deposits (asset)					1,659	1,659
Securities other than Shares LT (asset)	7,952	8,705	9,189	9,271	9,271	9,271
Loans (asset)	1,274	1,180	1,129	1,090	1,052	1,016
Shares and Other Equity (asset)						
Insurance Technical Reserves (asset)					0	0
Financial Derivatives (asset)	-44	16	-7	27	24	22
Other Accounts Receivable LT	4,369	4,728	4,620	4,726	4,797	4,869
Monetary Gold and SDR's						
Other Assets					29,409	29,409
Additional Assets	<u>25,745</u>	<u>26,073</u>	<u>26,961</u>	<u>29,409</u>		
Total Financial Assets	39,296	40,702	41,892	44,523	46,212	46,245
LIABILITIES						
Other Accounts Payable						
Currency & Deposits (liability)					0	0
Securities Other than Shares (liability)						
Loans (liability)	4,820	4,925	4,493	4,157	2,468	851
Insurance Technical Reserves (liability)						
Financial Derivatives (liability)						
Other Liabilities	<u>10,431</u>	<u>10,917</u>	<u>10,828</u>	<u>12,720</u>	<u>12,720</u>	<u>12,720</u>
Liabilities	15,251	15,842	15,321	16,877	16,877	15,294
Net Financial Worth	<u>24,045</u>	<u>24,860</u>	<u>26,571</u>	<u>27,646</u>	<u>29,335</u>	<u>30,952</u>
Total Liabilities & Equity	39,296	40,702	41,892	44,523	46,212	46,245

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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 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 available in our Form NRSRO Exhibit #2 dated Nov 5, 2018 available via [egan-jones.com](http://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 upon 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, 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%	1.5	5.5	(2.5)	AAA	AAA	AAA
Social Contributions Growth %	7.0	10.0	4.0	AAA	AAA	AAA
Other Revenue Growth %		3.0	(3.0)	AAA	AAA	AAA
Total Revenue Growth%	2.5	4.5	0.5	AAA	AAA	AAA
Monetary Gold and SDR's Growth %	5.0	7.0	3.0	AAA	AAA	AAA

**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.

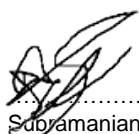
**ATTESTATION FORM**

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**

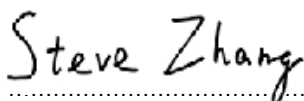


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Subramanian NG  
Senior Rating Analyst

December 26, 2018  
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**Reviewer Signature:**

**Today's Date**



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Steve Zhang  
Senior Rating Analyst

December 26, 2018  
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## **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.*