

## J.P. Morgan EM L&G Sovereign ESG (Local Currency) Index

### Index Methodology and Profile

#### Highlights

The J.P. Morgan Emerging Markets L&G Sovereign ESG (Local Currency) Index is designed to track the performance of eligible local currency denominated central government debt issued by emerging markets countries. The index follows the inclusion rules of the [J.P. Morgan GBI-EM Global Diversified Index](#), with the addition of India FAR bonds. It also complies with country [exclusion criteria](#) defined by LGIM. The index caps its country weights at 15%, limiting the weight of countries with larger debt stock and reallocating the weight to smaller countries.

The J.P. Morgan Emerging Markets L&G Sovereign ESG (Local Currency) Index tilts towards countries ranked higher based on [LGIM Sovereign Risk ESG scores and scaling methodology](#). It further diversifies its weights within four wealth bands defined by LGIM. The returns and statistics are available since December 2017.

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#### Index Criteria

<b>Instrument Type</b>	Local Currency denominated fixed coupon instruments
<b>Remaining Maturity</b>	<b>Entry:</b> Bonds must have at least 2.5 years remaining maturity on rebalance date to be considered for inclusion <b>Exit:</b> Bonds with less than 6 months to maturity are removed from the indices at rebalance date
<b>Amount Outstanding</b>	Local issues with a current face amount outstanding of \$1 billion or more, as well as Global issues with \$500 million or more are considered for inclusion
<b>Currency</b>	All eligible currencies are available within the set of eligible countries
<b>Country Eligibility</b>	All countries included in the GBI-EM Global Diversified index, plus India FAR bonds, excluding an LGIM defined list of countries.

#### Index Characteristics and Methodology

<b>Pricing</b>	Mid prices are taken from a third-party pricing source <sup>2</sup>
<b>Aggregate Return</b>	Index/Country level total return is calculated as a weighted average of bond returns using mid prices
<b>Rebalancing</b>	Rebalances on the last weekday of the month. If FX rates from WM Refinitiv are unavailable on the last weekday of the month (e.g., Good Friday), indices are rebalanced on the previous business day
<b>Coupon Treatment</b>	All coupons received are immediately reinvested into the index
<b>FX Rates</b>	All FX rates used for hedged/unhedged returns are as of 4pm London time provided by WM/Refinitiv
<b>Price Timing</b>	As of local market close
<b>Weighting</b>	Standard market capitalization diversification with a 15% upper threshold Tilt derived from LGIM Sovereign Risk ESG scores Further diversification within four defined wealth bands defined by LGIM
<b>Holiday Calendar</b>	Local market calendar

See page 5 for analyst certification and important disclosures.



## Eligible countries

The J.P. Morgan Emerging Markets L&G Sovereign ESG (Local Currency) Index includes liquid, bullet, fixed-rate local debt issued by emerging market governments as defined in the J.P. Morgan GBI-EM Global Diversified Index, plus India FAR bonds.

A list of countries to be excluded from the J.P. Morgan Emerging Markets L&G Sovereign ESG (Local Currency) Index is updated quarterly and effective from the start of the next rebalance period. Detailed exclusion rules and methodology can be referred [here](#). When a country exits the index, it will not qualify for inclusion for a period of 12 months.

In the event of default, market disruption or sanction, the J.P. Morgan Emerging Markets L&G Sovereign ESG (Local Currency) Index will follow the procedures of the J.P. Morgan GBI-EM Global Diversified Index.

## Liquidity

While the notion of liquidity differs from market to market, J.P. Morgan indices include only securities subject to several considerations including but not limited to:

- *Pricing*: Bonds must trade with enough frequency to prevent stale price quotations
- *Availability*: Bonds must be regularly traded in size at acceptable bid-offer spreads and readily redeemable for cash. A reasonable two-way market must exist for the instrument to be included in the index portfolio.
- *Replication costs*: Investors should be able to replicate the index without incurring excessive transaction costs.

## Wealth Bands

Global countries are divided into 4 wealth bands: Wealth band 1 contains countries in the highest income groups, while wealth band 4 contains countries of lower income. Income groups are based upon annual GNI per capita and revaluated annually. Wealth band information and exclusion can be referred [here](#).

## ESG Scores

Global countries are assigned LGIM Sovereign Risk ESG scores quarterly. The new scores become effective from the next rebalance period. Detailed scoring methodology can be referred [here](#).

## Appendix

### Index Diversification and Tilting Methodology

The J.P. Morgan Emerging Markets L&G Sovereign ESG (Local Currency) Index leverages the J.P. Morgan's proprietary index diversification methodology which anchors on the average size (debt stock) of countries in the index and the debt stock of

the largest country in the index. The diversification methodology aims towards the more evenly distribution of weights among the countries in the index. It limits the weights of those countries with larger debt stock and redistributes those weights to the countries with smaller debt stock.

To calculate the diversified (adjusted) face amount for each country, we define:

$$\text{Index Country Average (ICA)} = \frac{\sum(\text{Country Face Amount})}{\text{No. of Countries in the Index}}$$

Based on the ICA, the diversified face amount for any country in the index is derived according to the following rules:

1. The largest country based on face amount will be capped at double the average country debt stock in the index (ICA\*2). This is the maximum threshold and sets the scale to determine the diversified face amounts of other countries in the index.
2. If a county's debt stock is below the index country average (ICA), the entire amount will be eligible for inclusion.
3. Countries whose debt stock falls between the index country average (ICA) and double the average (ICA \* 2) will be linearly interpolated. The below formula summarizes the calculation of diversified country face amount:

The below formula summarizes the calculation of diversified country face amount:

$$\text{Diversified Country face Amount} = \begin{cases} \text{ICA} * 2 & , \text{if } \text{FA}_{\text{max}} \\ \text{ICA} + \frac{\text{ICA}}{\text{FA}_{\text{max}} - \text{ICA}} * (\text{Country FA} - \text{ICA}) & , \text{if } \text{Country FA} > \text{ICA} \\ \text{Country FA} & , \text{if } \text{Country FA} \leq \text{ICA} \end{cases}$$

, where Country FA represents the non-diversified country face amount and  $\text{FA}_{\text{max}}$  represents the face amount of the largest country.

Subsequently, the diversified (adjusted) face amount determined using the above step is then converted to a market value (based on dirty price), which is then converted to an index weight percentage based on the proportion of the total index market capitalization that the country represents. In addition, country weights will be capped at 15%. Any excess weight above the cap will be redistributed to smaller countries that are below the cap to limit concentration risk.

A second iteration of diversification applies the LGIM Sovereign Risk ESG score-tilted factor, derived from the formula:

$$W_i^{adj} = (c \times \text{Score})^N \times W_i^{MV}$$

where  $W_i^{adj}$  = Adjusted market cap

Score = ESG Score

N = Tilting strength

MV = Market Value

c = Scaling factor

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Based on market capitalization diversified weights, the process redistributes excess weight to available smaller countries within the same wealth band and maintains a 15% cap constraint for component countries when applicable.

Instrument level weights are then determined by pro rata allocation of diversified country weights according to the market capitalization of each instrument within the country.

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