

J.P. Morgan ESG EMBI Global Diversified IG Index

Methodology and Factsheet

Highlights

The J.P. Morgan ESG EMBI Global Diversified Investment Grade Index (JESG EMBI IG) tracks liquid, US Dollar emerging market fixed and floating-rate debt instruments issued by sovereign and quasi-sovereign entities¹. The index applies an ESG scoring and screening methodology to tilt toward issuers ranked higher on ESG criteria and green bond issues, and to underweight and remove issuers that rank lower. The JESG EMBI IG is based on the established flagship J.P. Morgan EMBI Global Diversified Index. The index tracks instruments that are classified as investment grade (IG). The returns and statistics are available since December 2012.

Index Criteria

Instrument Type:	Includes both fixed and floating rate securities along with capitalizing/amortizing bonds. Excludes convertibles, inflation-linked instruments ² .
Issuer Type:	Only those bonds issued by sovereign and quasi-sovereign entities are eligible for the index.
Remaining Maturity:	Only those instruments with at least 2.5 years until maturity are considered for inclusion. At each month-end, instruments that fall below 12 months to maturity during the upcoming month, will be excluded from the Index.
Amount Outstanding:	Only issues with a current face amount outstanding of \$0.5 billion or more are considered for inclusion ³ .
Currency:	Only USD denominated bonds are included. Instruments where the amount of coupon or redemption payment is linked to an exchange rate are not eligible for inclusion.
Country:	Inclusion is limited to countries that satisfy the GNI per capita-based Index Income Ceiling (IIC) criterion or the PPP-based Index PPP Ratio (IPR) criterion.
Credit Rating:	Only investment grade instruments are eligible. An instrument is classified as investment grade when the middle rating from S&P, Moody's, and Fitch is investment grade (i.e. BBB- equivalent or above). When a rating from only two agencies is available, the lower has to be investment grade; and when only one agency rates a bond, that single rating has to be investment grade.
Exclusions:	Quasi-sovereign issuers associated to Thermal Coal, Tobacco, and Weapons industries; UN Global Compact non-compliance (sourced from RepRisk and Sustainalytics); issuers with JESG score below 20. Excluded issuers are not eligible for re-inclusion for 12 months.

Index Characteristics and Methodology

Pricing:	Bid and Ask prices are taken from a third party pricing source ⁴ .
Aggregate Return:	Index/Country level total return is calculated as a market-weighted average of bond returns using bid prices.
Rebalancing:	Rebalances on the last US business day of the month.
Coupon Treatment:	All coupons received are immediately reinvested into the index.
FX Rates:	All FX rates used for hedged/unhedged returns are as of 4pm London time provided by WM/Reuters.
Hedging Strategy:	Assume a 1-month currency forward position that begins on rebalance day and ends on next rebalance day.
Weighting:	Diversified, with 10% (cap) per country applied for the baseline index, renormalized for IG composition.
Holiday Calendar:	Follows US bond market calendar set by Emerging Markets Trader Association (EMTA).
Bloomberg Ticker:	JPEIESGI Index

Source: JPMorgan Chase & Co.

1 – Quasi-sovereign entities are defined as being 100% guaranteed or 100% owned by the national government. 2 – Bonds with embedded options and warrants are eligible for inclusion if the options/warrants are attached to the instruments that would otherwise be included in the index and the prices are quoted cum options or warrants. 3 – A bond is removed from the index when its current outstanding amount falls below \$0.5 billion. 4 – Vendor is currently an independent source, PricingDirect Inc.

Appendix

Defining the universe of eligible countries

For sovereign and quasi-sovereign entities, following the 2018 Index Governance Review, a country will be eligible for the EM sovereign suite of indices if it either meets the GNI per capita-based Index Income Ceiling (IIC) criterion or the PPP-based Index PPP Ratio (IPR) criterion. J.P. Morgan defines the Index Income Ceiling (IIC) as the GNI per capita level that is adjusted every year by the growth rate of the World GNI per capita, Atlas method (current US\$), provided by the World Bank annually. An existing country may be considered for removal from the index if its GNI per capita is above the Index Income Ceiling (IIC) for three consecutive years and the country's long term foreign currency sovereign credit rating (the available ratings from all three agencies: S&P, Moody's & Fitch) is A- /A3/A- (inclusive) or above for three consecutive years. The 2020 IIC level is \$20,127.

For the IPR, it is calculated, as below, from the one-year lagged GDP data available in IMF's World Economic Outlook publication. The EM IPR threshold is an indexed number which mimics the changes to the World IPR. $IPR = \text{GDP (current prices, USD)} / \text{GDP (current prices, PPP dollars)} * 100$. IPR criterion states that a country's IPR should be below the EM threshold for three consecutive years, to be eligible. The 2020 IPR level is 59.5.

Instrument type

The J.P. Morgan JESG EMBI IG Index includes both fixed and floating rate instruments, as well as capitalizing/amortizing bonds. Bonds with embedded options and warrants are eligible for inclusion if a) the options/warrants are attached to instruments that would otherwise be included in the index and b) the quotation convention—as recommended by the Emerging Markets Traders Association (EMTA)—is for instrument prices to be quoted cumulative options or warrants. Convertible bonds are not eligible for inclusion into the index.

Issuer type

The J.P. Morgan JESG EMBI IG Index contains only those bonds issued by sovereign and quasi-sovereign entities from index-eligible countries. Historically, any quasi-sovereign issue was considered eligible for inclusion. As of May 31, 2002, we strengthened our definition of “quasi-sovereign” as an entity that is 100% guaranteed or 100% owned by the national government, and resides in the index eligible country.

ESG Methodology

The J.P. Morgan JESG EMBI IG Index applies J.P. Morgan ESG (JESG) issuer scores to adjust the market value of index constituents from the baseline J.P. Morgan EMBI Global Diversified Index. JESG issuer scores are a 0-100 percentile rank calculated based on normalized raw ESG scores from third-party research providers Sustainalytics and RepRisk. An issuer's finalized JESG score incorporates a 3-month rolling average. Quasi-Sovereign issuers with no coverage from either third-party research provider default to their sovereign JESG score. The JESG scores are divided into five bands that are used to scale each issue's baseline index market value, with the band rebalance occurring with a one-month lag.

JESG Score Bands	Scalar
Band 1: Score > 80	1.00
Band 2: 60 < Score <= 80	0.80
Band 3: 40 < Score <= 60	0.60
Band 4: 20 < Score <= 40	0.40
Band 5: Score <= 20	0.00

Issuers in Band 5 will be excluded from the index and will not be eligible for twelve months. If an instrument is categorized as a “green bond” by the Climate Bonds Initiative, the security will receive a one-band upgrade. Green bonds by issuers already in Band 1 will not receive any further upgrades.

Weighting Methodology

The J.P. Morgan JESG EMBI IG Index limits the weights of those index countries with larger debt stocks by only including a specified portion of these countries' eligible current face amounts of debt outstanding. The index is geared toward managers who want maximum diversification or those who face limitations on the amount of portfolio exposure they can take to individual issuers. Once these instrument allocations are derived for each country, the current settlement price for each instrument is applied to its index allocation to calculate the market capitalization of each issue in the index. The weight of each instrument in

the index is then determined by dividing its market capitalization by the total market capitalization for all of the index's instrument allocations. The result represents the weight of each issue expressed as a percentage of the index. By allocating their portfolios according to these exact instrument weights, and accounting for coupon reinvestments and instrument allocation changes, investors can replicate the performance of the J.P. Morgan JESG EMBI IG Index.

The underlying J.P. Morgan JESG EMBI IG Index diversification methodology anchors on the average size of the countries in the index and the debt stock size of the largest country in the index.

We define **Index Country Average (ICA)** = $\Sigma(\text{Ctry Face Amount}) / (\text{No. of Countries in the index})$

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 country'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.

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. Any excess weight above the cap will be redistributed to smaller countries that are below the cap to limit concentration risk.

Diversified Country Face Amount=

$$\begin{cases} ICA * 2 & , \text{if } FA_{max} \\ ICA + \frac{ICA}{FA_{max} - ICA} * (\text{Ctry FA} - ICA) & , \text{if } \text{Ctry FA} > ICA \\ \text{Ctry FA} & , \text{if } \text{Ctry FA} \leq ICA \end{cases}$$

where Ctry FA represents the non-diversified country face amount and FA_{max} represent the Face Amount of the Largest Country.

New Issue Timing

A new issue that meets the J.P. Morgan JESG EMBI IG Index admission requirements is added to the index on the first month-end business date after its issuance, provided its settlement date falls before the 15th of the month. A new issue whose settlement date falls on or after the 15th of the month is added to the index on the last business day of the next month.

The first exception applies to a new issue that is released as part of a debt exchange program. For example, assume a country exchanges a portion of its outstanding debt for a new issue after the 15th of the month. At the month-end rebalancing date immediately following this event, the amount of debt retired in this exchange would be removed from the index, and the new issue would be added to the index (provided official exchange results are made available in a timely manner AND the issue settles by month end).

The second exception concerns Reg S securities. An instrument that is issued purely in reliance on Regulation S of the US Securities Act of 1933 and not pursuant to Rule 144A will be ineligible for inclusion in the index until it is seasoned (that is, until the expiration of the relevant Regulation S restricted period). The date at which the seasoning restriction is lifted will effectively be the new "issue" date, at which point the 15th of the month rule will apply.

If an announcement is made for a bond to be called, it is removed the month-end prior to its call date. If an announcement is not made in time for the bond to be removed the prior month-end, it will be removed the first month-end following the announcement.

For any questions or for additional information, please contact index.research@jpmorgan.com

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