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J.P. Morgan EMBI Global Diversified 1Bn Country

Index Methodology and Profile

Highlights

The J.P. Morgan Emerging Markets Bond Index Global Diversified 1Bn Country (EMBIG Div 1Bn Country) tracks liquid, US Dollar denominated emerging market fixed and floating rate debt instruments issued by sovereign and quasi-sovereign[1] entities. The index mirrors the well-established flagship J.P. Morgan EMBI Global Diversified and adheres to the same methodology, with the sole distinction of limiting the universe of eligible countries to those with a minimum notional amount outstanding of $1 billion. A diversification methodology is applied to limit the weights of the larger index countries by only including a specified portion of those countries' eligible current face amounts of debt outstanding, thus providing a more even distribution of weights across the countries in the index. The returns and statistics are available from Dec 2017.

Index Criteria

Instrument Type	Includes both fixed and floating rate securities along with capitalizing/amortizing bonds. Excludes convertibles and inflation-linked instruments[2]
Issuer Type	Only bonds issued by sovereign and 100% government owned/guaranteed quasi-sovereign entities are eligible for inclusion.
Remaining Maturity	**Inclusion:** Greater than 2.5 years remaining maturity on rebalance date **Exclusion:** Less than 6 months remaining maturity on rebalance date
Amount Outstanding	**Instrument:** Only issues with a current face amount outstanding of $500 million or more are considered for inclusion[3]. **Country**: Only countries with a total current face amount outstanding of $1 billion or more are considered for inclusion
Currency Denomination	Only USD-denominated bonds are included. Bonds where the amount of coupon or redemption payment is linked to an exchange rate are not eligible for inclusion.
Country	**Eligibility criteria:** A country is eligible for the index if either: a. The GNI per capita of the country's economy is below the Index Income Ceiling (IIC) threshold for three consecutive years, or b. The nation's cost of living (purchasing power) is below the EM IPR[4] threshold for three consecutive years. **Exclusion criteria ("3 for 3" rule):** An existing country in the index will no longer be eligible for the index if ALL of the following three criteria are met for three consecutive years: 1. GNI per capita should be above the IIC threshold, 2. Cost of living of the country, as defined by IPR (relative to that of the US), should be above the EM threshold, and 3. Sovereign credit rating should be at or above A3/A-/A-.

[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 $500 million
[4] Index PPP Ratio - an indexed number which mimics the changes to the World IPR, calculated from the one-year lagged Gross Domestic Product (GDP) figures published in USD (current) and purchasing power parity (PPP) for each economy (source: IMF's World Economic Outlook publication)

Index Characteristics and Methodology

Pricing	Bid and Ask prices are taken from a third party pricing source, PricingDirect[5]
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 Reinvestment	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 to the index
Holiday Calendar	Follows US bond market calendar set by Emerging Markets Trader Association (EMTA)
Bloomberg Ticker	JPEIBNTR

Appendix

Defining the universe of eligible countries

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.

The Index PPP Ratio (IPR) was introduced with the 2018 Index Governance Review as a complimentary metric to determine the eligibility of a country in the EM sovereign index suite. The IPR of a country represents the cost-of-living for a given economy relative to that of the United States.

A country is eligible for inclusion to the index if either:

a. The GNI per capita of the country's economy is below the Index Income Ceiling (IIC) for three consecutive years, or
b. The nation's cost of living (purchasing power) is below the Index PPP Ratio (IPR) for three consecutive years.

An existing country in the index will no longer be eligible if ALL the following three criteria are met for three consecutive years:

1. GNI per capita is above the IIC threshold,
2. Cost of living of the country (relative to that of the US) is above the EM threshold, and
3. Sovereign credit rating is at or above A3/A-/A-.

The 2024 IIC and IPR levels are $23,287 and 58.0, respectively.

Instrument type

EMBIG Div 1Bn Country 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

EMBIG Div 1Bn Country 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,

[5] Vendor is currently an independent source, PricingDirect Inc.

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.

Weighting Methodology

The 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 EMBIG Div 1Bn Country 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 index instrument allocation changes, investors can replicate the performance of the index.

The underlying 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) = Σ(Ctry Face Amount) / (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.

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.

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

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

where Ctry FA represents the non-diversified country face amount and FAmax represents the face amount outstanding of the largest country.

Global Index Research

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Disclosures

General

integrity of the ESG data sourced from third parties is limited by the ability of those providers to source accurate data on the ESG performance of certain corporate structures, such as parent versus subsidiary, including SPVs, holding company versus operating company and the activities of any affiliated entities and derived structures. Further, ESG data pertaining to sovereign issuers is limited to the sourcing of ESG performance data at the level of the relevant country. The current data integrity landscape means it is not possible to screen all issuers for exclusion (e.g. issuers other than corporate and quasi-sovereign issuers). Issuers in respect of whom ESG data is limited may still be included in the index.

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