

## J.P. Morgan Emerging Markets Bond Index Global Core JPY Hedged JIT Index

### Methodology and Factsheet

#### Highlights

The J.P. Morgan Emerging Markets Bond Index Global Core (EMBIG CORE) tracks liquid, US dollar emerging market fixed and floating-rate debt instruments issued by sovereign and quasi sovereign entities<sup>1</sup>. The EMBIG CORE is based on the long established flagship JPMorgan EMBI Global and follows its methodology closely, while offering a more liquid subset of the index by removing the instruments with smaller face amounts outstanding and the instruments that are closer to maturity. The diversification methodology limits 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 J.P.Morgan EMBI Global Core Index JPY hedged JIT (Japan Investment Trust) Index provides a return on the J.P. Morgan EMBI Global Core Index, whilst hedging currency exposures in accordance with the J.P. Morgan hedging methodology.

#### Index Criteria

<b>Instrument Type:</b>	Includes both fixed and floating rate securities along with capitalizing/amortizing bonds or loans. Excludes convertibles and inflation-linked instruments <sup>2</sup> .
<b>Issuer Type:</b>	Only those bonds or loans issued by sovereign and quasi sovereign entities are eligible in the index.
<b>Remaining Maturity:</b>	Only those instruments with at least 2.5 years until maturity are considered for inclusion. Once added, an instrument may remain in the index until 24 months before it matures.
<b>Amount Outstanding:</b>	Only issues with a current face amount outstanding of \$1 billion or more are considered for inclusion <sup>3</sup> .
<b>Currency:</b>	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.
<b>Country:</b>	Country's GNI per capita must be below the Index Income Ceiling (IIC) for 3 consecutive years or Index PPP ratio (IPR) is below the EM threshold for 3 consecutive years

#### Index Characteristics and Methodology

<b>Pricing:</b>	Bid and Ask prices are taken from a third party pricing source <sup>4</sup> .
<b>Aggregate Return:</b>	Index/Country level total return is calculated as a market-weighted average of bond returns using bid side prices.
<b>Rebalancing:</b>	Rebalances on the last US business day of the month.
<b>Coupon Treatment:</b>	All coupons received are immediately reinvested into the index.
<b>FX Rates:</b>	USDJPY rates used for hedged/unhedged returns are as of 4pm London time provided by WM/Reuters until further notice. After that, FX rates are as of T+1 10am Tokyo time provided by WM/Reuters
<b>Hedging Strategy:</b>	Assume a 1-month currency forward position that begins on rebalance day and ends on next rebalance day.
<b>Weighting:</b>	Market capitalization based weighting.

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 \$1 billion. 4 – Vendor is currently an independent source, PricingDirect Inc.

**Holiday Calendar:** Follows US bond market calendar set by Emerging Markets Trader Association (EMTA).

Source: JPMorgan Chase & Co.

## 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 EMBIG CORE includes both fixed and floating rate instruments, as well as capitalizing/amortizing bonds or loans. Bonds or loans 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 EMBIG CORE contains only those bonds or loans 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.

### Weighting Methodology

The EMBIG CORE 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 EMBIG CORE 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 CORE's allocation to calculate the market capitalization of each issue in the index. The weight of each instrument in the EMBIG CORE is then determined by dividing its market capitalization by the total market capitalization for all of the EMBIG CORE's instrument allocations. The result represents the weight of each issue expressed as a percentage of the EMBIG CORE. 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 EMBIG CORE.

The underlying EMBIG CORE 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.

### Hedging Methodology

JPY hedging component comprises rolling a one-month forward contract that are reset at the beginning of each month hedging the entire market value of the index, plus accruals. No adjustment is made to the hedge during the month to account for price movements of constituent securities of the Benchmark Index, corporate events affecting such securities, additions, deletions or any other changes to the Benchmark Index. The foreign currency hedging component is based on the J. P. Morgan hedging methodology in place at the date of this Prospectus.

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=**

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

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

Finally, a threshold (a maximum cap of 10%) is applied at the country level to improve diversification; i.e. sum of all the issuer weights within the country must be equal to or less than the maximum cap/threshold. Excess weight is re-distributed to other countries below the threshold. The maximum cap/threshold will be reviewed on a periodic basis and adjusted accordingly.

### **New Issue Timing**

A new issue that meets the EMBIG CORE 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 on the basis of having less than 24 months remaining until maturity. 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.

### **Index Total Return**

The total return on day t,  $TR_t$ , is the arithmetically weighted average of each instrument's return from the period t-1 to t. The weights are market-capitalization weights from the prior business day, t-1:

$$TR_t = \sum_{i \in L(t')} m_{i,t',t-1} \times tr_{i,t}$$

In this equation, the "ith" bond's dirty market-capitalization weight on day t-1 is defined by:

$$m_{i,t',t-1} = \frac{N_{i,t'} \times ESV_{i,s(t-1)}}{\sum_{i \in L(t')} N_{i,t'} \times ESV_{i,s(t-1)}}$$

where:

$$\sum_{i \in L(t')} m_{i,t',t-1} = 1$$

$L(t')$	Instrument list on day $t'$
$t'$	Last rebalancing day
$N_{i,t'}$	Number of bonds (see above); usually equal to the amount outstanding, except for capitalizing or amortizing bonds

Each term in the summation measures the percentage contribution of an instrument to the change in the index portfolio's value between day  $t-1$  and day  $t$ . Once the aggregate daily total return of the EMBIG Core is known, it is then applied to the index's prior day closing level to arrive at the current day's closing value:

$$I_t = I_{t-1} \times (1 + TR_t)$$

Where:

$I_{t-1}$	The closing cumulative total return index level for the EMBIG Core as of the prior business day (where December 31, 1997 = 100)
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## Index Composition

Index composition and monthly changes can be found under Exchange Traded Funds > EMBI Global Core

<https://www.jpmorgan.com/country/US/en/jpmorgan/investbk/solutions/research/indices/composition>

## Inclusion Criteria Comparison

Index Criteria	EMBIG CORE JIT	EMBIG CORE	EMBIG Diversified
Inception Date	Dec-97	Dec-97	Dec-93
Launch Date	Aug-20	Dec-07	Jul-99
Rebalance Date	Last US business day of the month	Last US business day of the month	Last US business day of the month
Currency	US\$	US\$	US\$
Holiday	Follows US bond market calendar set by Emerging Markets Trader Association (EMTA)	Follows US bond market calendar set by Emerging Markets Trader Association (EMTA)	Follows US bond market calendar set by Emerging Markets Trader Association (EMTA)
Pricing Source	Bid and Ask prices are taken from a third party pricing source	Bid and Ask prices are taken from a third party pricing source	Bid and Ask prices are taken from a third party pricing source
FX Spot / Forward Rate	WM/Reuters 4pm London rate until further notice and switch to WM/Reuters 10am Tokyo rate	WM/Reuters 4pm London rate	WM/Reuters 4pm London rate
Coupon Reinvestment	All coupons received are immediately reinvested into the index	All coupons received are immediately reinvested into the index	All coupons received are immediately reinvested into the index
Hedging Strategy	Assume a 1-month currency forward position that begins on rebalance day and ends on next rebalance day	Assume a 1-month currency forward position that begins on rebalance day and ends on next rebalance day	Assume a 1-month currency forward position that begins on rebalance day and ends on next rebalance day
Country	GNI per capita must be below the Index Income Ceiling (IIC) for 3 consecutive years OR Index PPP ratio (IPR) is below the EM threshold for 3 consecutive years	GNI per capita must be below the Index Income Ceiling (IIC) for 3 consecutive years OR Index PPP ratio (IPR) is below the EM threshold for 3 consecutive years	GNI per capita must be below the Index Income Ceiling (IIC) for 3 consecutive years OR Index PPP ratio (IPR) is below the EM threshold for 3 consecutive years
Instrument Type	All fixed, floaters, amortizers, and capitalizers	All fixed, floaters, amortizers, and capitalizers	All fixed, floaters, amortizers, and capitalizers
Min Face Amt	US\$1 billion	US\$1 billion	US\$500 million
Maturity required for initial inclusion	At least 2.5 years till maturity	At least 2.5 years till maturity	At least 2.5 years till maturity
Maturity required to maintain	At least 2 years till maturity	At least 2 years till maturity	At least 1 year till maturity
Includes quasi-sovereign?	✓	✓	✓

Face Amt Diversification?	✓	✓	✓
Bloomberg Ticker	JPEIHJPT	JPEICORE	JPGCCOMP

For any questions or for additional information, please contact [index.research@jpmorgan.com](mailto:index.research@jpmorgan.com)

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