The Bloomberg Currency Indices offer the Bloomberg Dollar Spot Index, the Bloomberg British Pound Index and the Bloomberg Euro Index. Each of these tracks the performance of the underlying currency versus a basket of leading global currencies.

INDEX MEMBERSHIP AND WEIGHTINGS

At each annual rebalance, the following steps are taken to arrive at the constituent currencies and their weights:

1. Identify the top 20 currencies in terms of trading activity versus the underlying currency. For U.S. dollar, this is as defined by the Federal Reserve in its Broad Index of the Foreign Exchange Value of the Dollar (Release H.10). For the British Pound and Euro, this is as defined by the International Monetary Fund (IMF) in its yearly total trade (ECTR <Go> on the Bloomberg Professional service).

2. Identify the top 20 currencies from the Triennial Central Bank Survey of Foreign Exchange and Derivatives Market Activity (Table: Currency Distribution of Global Foreign Exchange Market Turnover).

3. Build the union of sets of top 10 currencies of both lists, after removing currencies pegged to the underlying currency. For example, currencies pegged to the U.S. Dollar (such as Hong Kong dollar or Saudi riyal) are removed for the Bloomberg Dollar Spot Index.

4. The preliminary index weights are driven by assigning averaging trade weights and liquidity weights to the combined set of currencies.

5. The final index weights are derived by:
   a. Capping the exposure of Chinese renminbi, which is heavily managed, at 3% and distributing its weight to other currencies in proportion to the average weight determined in step 4, above.
   b. Removing smaller currency positions, defined as any position that has a weight of less than 2%, and distributing its weight to other currencies in proportion to the average weight determined in step 5.a., above.

For the U.S Dollar Index, the annual rebalanced target weights are applied after the close of the last U.S trading day in December using applicable trade data from the Federal Reserve as of the third Friday of such month.

For the Euro and Pound indices, the rebalanced target weights are applied after the close of the last trading day in June using applicable trade data made available by the IMF (typically by the end of April). This allows for the reflection of a full year’s worth of trade data (January to December).
INDEX CALCULATIONS

If PR\(_t\) and TR\(_t\) are price return and total return of the index on any day \(t\)

\[
PR\(_t\) = \sum W_{i,Y} * (1 - S_{i,t-1} / S_{i,t})
\]

\[
TR\(_t\) = PR\(_t\) + \frac{2}{360} * UD_{t-1} - \sum W_{i,Y} * D_{i,t-1}/A_i
\]

Where

- \(S_{i,t}\) = Spot for currency \(i\) on day \(t\), expressed in foreign currency per underlying currency terms
- \(D_{i,t}\) = Forward implied yield for currency \(i\) on day \(t\)
- \(UD_{t}\) = Funds rate for underlying currency on day \(t\)
- \(W_{i,Y}\) = Weight of currency \(i\) in year \(Y\)
- \(A_i\) = Annual day count convention for currency \(i\)

The price return index level (IndexPR) on any day \(t\) are calculated as

\[
\text{IndexPR}_t = \text{IndexPR}_{t-1} * (1+ PR_t)
\]

Similarly, the total return index level (IndexTR) on any day \(t\) is calculated as

\[
\text{IndexTR}_t = \text{IndexTR}_{t-1} * (1+ TR_t)
\]

The total return index has an inverse counterpart that seeks to track a position that is short the underlying currency, and its daily total return (ITR) and index level (IndexIR) on any day are calculated as follows:

\[
\text{ITR}_t = (-1) * PR_t + \sum W_{i,Y} * D_{i,t-1}/A_i
\]

\[
\text{IndexIR}_t = \text{IndexIR}_{t-1} * (1+ ITR_t)
\]

The base level for Bloomberg currency indices is set at 1000 on December 31, 2004.

DATA

The price return indices are generated in real-time, while the total & inverse indices are generated end-of-day.

<table>
<thead>
<tr>
<th>Index</th>
<th>Bloomberg Index Ticker</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Price Return</td>
</tr>
<tr>
<td>Bloomberg Dollar Spot Index</td>
<td>BBDXY</td>
</tr>
<tr>
<td>Bloomberg British Pound Index</td>
<td>POUND</td>
</tr>
<tr>
<td>Bloomberg Euro Index</td>
<td>EURO</td>
</tr>
</tbody>
</table>

For end-of-day spot price levels, the New York 4:00 pm BFIX is used to arrive at the closing values. “BFIX” refers to Bloomberg’s family of daily currency fixing rates generated throughout the trading day at fixed, half-hourly intervals. The BFIX rates are created by taking a Time-Weighted Average Price (TWAP) of the geometric mid-rates of Bloomberg Generic (BGN) prices leading up to and following the fixing time. The BGN is a sophisticated pricing algorithm that produces accurate indications of bid and ask quotes that are derived from hundreds of quality sources, including indicative and executable price quotes from money-centre and regional banks, broker-dealers, inter-dealer brokers, and trading platforms. The BGN price represents Bloomberg’s highest-quality FX rate.


For the total return index, one month forward implied yields are used for each currency. The “implied yield” is the predicted yield based on the premise that the yield curve on a particular day is a strong indication of the future state. Where unavailable for historical time periods, monthly local currency deposit rates are used.

The tickers for end-of-day spot, real-time spot, implied yield, deposit rates and day counts are in the table below. For the Dollar Spot Index, effective as of the end of May 2013, the currency for China was replaced from the domestic spot (CNY) to the offshore spot (CNH) in view of the increasing liquidity of the CNH market and its greater ease of access to foreign market participants. For the British Pound Index, the switch from CNY to CNH was effective as of the end of March 2014.

The intraday price levels for the Bloomberg Currency Indices are determined primarily by using the BGN. More information regarding the BGN, including its inputs and algorithms, is available in the BFIX methodology document linked above. Where necessary (as described below), the CMFN is used as an alternative to the BGN. The CMFN is the Bloomberg Composite Rate (CMP) determined at 4 pm New York time. For additional information please refer to QFX <GO> on the Bloomberg Professional service.
## Currency

<table>
<thead>
<tr>
<th>Currency</th>
<th>1 Month Implied Yield</th>
<th>1 Month Deposit Rate</th>
<th>Intraday Spot</th>
<th>Closing Spot</th>
<th>Day Count</th>
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</thead>
<tbody>
<tr>
<td>AUD</td>
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<td>BBSW1M</td>
<td>AUD BGN</td>
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</table>

## Index

<table>
<thead>
<tr>
<th>Index</th>
<th>Fund Rate</th>
<th>Ticker</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bloomberg Dollar Total Return Index</td>
<td>Fed Funds Rate</td>
<td>FEDL01 Index</td>
</tr>
</tbody>
</table>

## Holiday Schedule

Effective January 3, 2017, Bloomberg Currency Indices will now follow a holiday schedule which excludes Christmas Day (and observed), New Year’s Day (and observed), and Good Friday as business days.

## Data Hierarchy, Data Input Review and Stress Events

For end-of-day pricing levels, if the BFIX is unavailable during market holidays or unforeseen events, currencies in the Bloomberg Currency Indices will be priced by using the prior day’s values. On each day prior to publication of such end-of-day pricing levels, Index Managers with knowledge of currency instruments review inputs to the index calculations such as pricing, and outputs (including error reports), before they are disseminated to clients. This ensures the quality of the indices and provides a final sign-off of all data by an Index Manager before it reaches our clients.

For intraday pricing levels, if the BGN is unavailable for a particular currency, currencies in the Bloomberg Currency Indices will be priced using CMFN.

## Benchmark Oversight and Governance

**Benchmark Governance, Audit and Review Structure**

Bloomberg has established a robust governance and audit structure in order to monitor, manage and/or improve the objectivity, reliability, consistency, transparency and management and implementation of the benchmark rules, including those applicable to Bloomberg Currency Indices. The Benchmark Oversight Committee (BOC) is the uppermost governance body and consists of senior representatives from various Bloomberg business units. Voting members of the BOC do not directly participate in the index business. The BOC meets on a quarterly basis to review matters such as material risks, conflicts of interest, industry developments, client complaints and material index errors and restatements. To assist in its oversight, the BOC has constituted the Index Operating Subcommittee (IOS). The IOS is composed of
senior benchmark and strategy index managers designated by the BOC. The IOS meets on a regular basis to address matters such as new index approvals, periodic review of existing indices, index pricing, management of errors and restatements, identification and management of actual and potential conflicts of interest, approvals of changes to indices and approvals of cessation of indices.

The IOS reports to the BOC at least quarterly on all matters delegated to it.

**Internal and External Reviews**

Index administration is subject to Bloomberg’s internal compliance function which periodically reviews various aspects of Bloomberg’s businesses in order to determine whether such businesses are adhering to applicable firm-wide policies and procedures, and assess whether applicable internal controls are functioning properly. In addition to the compliance function, Bloomberg may from time to time appoint an independent external auditor with appropriate experience and capability to periodically review and report on its adherence to the IOSCO Principles for Financial Benchmarks. The frequency of such external reviews will depend on the size and complexity of the operations and the breadth and depth of the index use by Stakeholders.

**STAKEHOLDER ENGAGEMENT**

Bloomberg is in constant and ongoing engagement with its users through various channels, including via help desks, sales personnel and direct communication with product personnel. To help ensure the Bloomberg Currency Indices remain an accurate representation of the currency markets, it endeavors to meaningfully incorporate these engagements into improvements in processes and service. Prior to any material change that might meaningfully impact users, Bloomberg Indices consults more broadly with stakeholders, where appropriate, before a recommendation is presented to the BOC for approval. This concept of shared ownership enables Bloomberg to produce the most relevant indices and helps ensure responsiveness to user needs.

**EXPERT JUDGMENT**

Bloomberg may use expert judgment with regards to the following:

» Index restatements
» Extraordinary circumstances during a market emergency
» Pricing or other data interruptions, issues, and closures

When expert judgment is required, Bloomberg undertakes to be consistent in its application, with recourse to written procedures outlined in this methodology and internal procedures manuals. These procedures detail the steps in decision making and the hierarchy of data to be used. Material exercises of expert judgment are reviewed by senior members of the Bloomberg index and compliance teams. Bloomberg also maintains and enforces a code of ethics to prevent conflicts of interest from inappropriately influencing index construction, production, and distribution, including the use of expert judgment.

**RESTATEMENT POLICY**

If a material error in index values is uncovered following its publication and dissemination, a notification will be sent to index clients with the details of the error and the expected date of any revised publication justified under the totality of the circumstances. Revisions will be promptly published to the market and disseminated to all clients.

**RISKS ASSOCIATED WITH THE BLOOMBERG CURRENCY INDICES**

The following is a summary of certain risks associated with the Bloomberg Currency Indices but is not meant to be an exhaustive list of all risks associated with using these indices. Though the indices are designed to be representative of the markets they measure, they may not be representative of every use case. There is also inherent, though transparent, judgment in their construction, as outlined in this methodology. They are also designed for general applicability and not to address the individual needs of users. Bloomberg does not advise as to the usefulness of Bloomberg Currency Indices to a particular circumstance, and users are therefore encouraged to seek their own counsel for such matters. This methodology is subject to change, which may impact its usefulness to users. Though efforts will be made to alert users of this change, not every individual user may be aware of them. Such changes may also significantly impact the usefulness of Bloomberg Currency Indices. Bloomberg may also determine to cease publication of Bloomberg Currency Indices or a particular index provided by Bloomberg. Bloomberg maintains internal policies regarding user transitions, but there is no guarantee an adequate alternative is available generally or for a particular use case. Markets for currencies, as with all markets, can be volatile. As Bloomberg Currency Indices are designed to measure those markets, its indices could be materially impacted by market movements, thus significantly impacting the use or usefulness of the fixings for some or all users. Also, certain currency markets are less liquid than others, and even the most liquid markets may suffer periods of illiquidity. Illiquidity can have an impact on the quality or amount of
data available to Bloomberg Indices for calculation, and may cause Bloomberg Currency Indices to produce unpredictable results.