



FIXED - INCOME

INDEX

GROUP

JANUARY 17, 2012

Index Guide

GLOBAL

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Citigroup Global Fixed-Income Index Catalog — 2012 Edition

- **World Broad Investment-Grade Bond Index**
- **World Government Bond Index**
- **World Inflation-Linked Securities Index**
- **Asian Government Bond Index**
- **CEEMEA Government Bond Index**
- **LATAM Government Bond Index**
- **US Broad Investment-Grade Bond Index**
- **Euro Broad Investment-Grade Bond Index**
- **Australian Broad Investment-Grade Bond Index**
- **Asian Broad Bond Index**
- **Middle East and North Africa Broad Bond Index**
- **Dim Sum (Offshore CNY) Bond Index**
- **Global Emerging Market Sovereign Bond Index**
- **US High-Yield Market Index**
- **World Money Market Index**



JANUARY 17, 2012

Citigroup Global Fixed-Income Index Catalog — 2012 Edition

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Introduction

Market performance indexes have gained importance over time. Accordingly, it is critical for investment managers to understand the rules by which indexes are created. In the Citigroup Global Fixed-Income Index Catalog, we review the general philosophy for building our indexes and the specific rules by which each index is constructed. One major goal of our index construction is to create relevant benchmarks that clearly measure investment opportunities. From time to time, the indexes undergo composition or calculation changes. When this occurs, a publication or announcement is posted on the index website (www.yieldbook.com) outlining the changes.

Access to index publications, sector-level and basic issue-level data is available to the buy side community at no cost. To register for index access, go to www.yieldbook.com.

Citigroup Indexes are also available in The Yield Book[®], our fixed-income analytical software, which offers premier analytics such as return attribution, optimization, scenario analysis, tracking error, and benchmark comparisons.

Citigroup Indexes are designed, calculated and published by Citigroup Index LLC and may be licensed for use as underlying indexes for OTC or exchange-traded structured products, including ETFs, swaps, warrants and certificates. For additional information, contact us at fi.index@citi.com.

Highlights of Index Changes since February 2011

Chinese Government Bond Index, Sri Lanka Government Bond Index, Asian Government Extended Bond Index and Asia Pacific Government Bond Index

- These indexes were introduced in March 2011. It expands our sovereign bond markets coverage in Asia.

Dim Sum (Offshore CNY) Bond Index

- This index was introduced in April 2011. It measures the performance of Chinese yuan-denominated “Dim Sum” bonds issued and settled outside Mainland China.

CEEMEA Government Bond Index

- This index was introduced in September 2011. It measures the performance of the sovereign bond markets of the Czech Republic, Hungary, Poland, Turkey, Israel and South Africa.

LATAM Government Bond Index

- This index was introduced in September 2011. It measures the performance of the sovereign bond markets of Brazil, Chile, Colombia, Mexico and Peru.

High-Yield Market Capped Index

- The issuer cap was raised to US\$10 billion effective with the October 2011 index profile.

Asian Government Bond Index (AGBI)

- Modified entry and exit criteria effective as of January 1, 2012.

Additional details of changes are noted in the applicable section for each index.

Characteristics of a Good Benchmark

The Citigroup indexes are designed to provide relatively stable and easily replicable benchmarks. We achieve this goal by adhering to the following guidelines:

Relevance: An index should be relevant to investors. At a minimum, it should track those markets and market segments of most interest to investors.

Comprehensiveness: An index should include all opportunities that are realistically available to market participants under normal market conditions while measuring the performance of new investments and existing holdings.

Replicability: The total returns reported for an index should be replicable by market participants. It must be fair to investment managers who are measured against it and to sponsors who pay fees or award management assignments based on performance relative to it. Furthermore, over time, an index must represent a realistic baseline strategy that a passive investor could follow. Accordingly, information about index composition and historical returns should be readily available.

Stability: An index should not change composition often, and all changes should be easily understood and highly predictable. It should not be subject to opinions about which bonds to include on any particular day. However, index composition must change occasionally to ensure that it accurately reflects the structure of the market. A key virtue of an index is to provide a passive benchmark; investors should not be forced to execute a significant number of transactions just to keep pace.

Barriers to entry: The markets or market segments included in an index should not contain significant barriers to entry. This guideline is especially applicable to an international index in which an included country may discourage foreign ownership of its bonds or participation in its equity market.

Expenses: In the normal course of investing, expenses related to withholding tax, safekeeping, and transactions are incurred. For a market or market segment to be included, these ancillary expenses should be well understood by market participants and should not be excessive. For example, if expenses are unpredictable or inconsistently applied, an index cannot hope to measure market performance fairly.

Simple and objective selection criteria: A clear set of rules should govern the inclusion of bonds or markets in an index, and investors should be able to forecast and agree on changes in composition.

This list of desirable characteristics may not be exhaustive, and different investors may place a different emphasis on each. In constructing indexes, some desirable characteristics may have to be sacrificed to ensure that others are met. However, it is critical that an index follows objective rules that are well defined so that all interested parties can understand how to apply the information to their particular situation.

Historical Summary of Index Introductions

Figure 1. Historical Summary of Index Introductions

Year Introduced	Index	Base Date
1978	US Treasury-Bill and Certificate-of-Deposit Indexes	December 31, 1977
1981	World Bond Index ^a	December 31, 1977
1981	World Money Market Index ^b	December 31, 1977
1985	US Broad Investment-Grade (USBIG) Bond Index	December 31, 1979
1985	US Treasury Benchmark (On-the-Run) Indexes	December 31, 1979
1986	World Government Bond Index (WGBI)	December 31, 1984
1986	US Large Pension Fund (LPF) Baseline Bond Index	December 31, 1979
1986	Long-Term High-Yield Index	December 31, 1979
1987	Targeted Index Matrix Series (TIMS) ^c	December 31, 1983
1988	Currency-Hedged World Government Bond Index	December 31, 1984
1988	High-Yield 7+ Year Index (Formerly the High-Yield Composite Index)	December 31, 1984
1988	Core [®] 3 and Core [®] 5 Indexes	December 31, 1979
1988	US Treasury Yield Curve Average Indexes	December 31, 1986
1990	US High-Yield Market Index	December 31, 1988
1991	Extended High-Yield Market Index ^d	December 31, 1990
1991	Brady Bond Index ^e	March 31, 1990
1992	Group-of-Seven (G-7) Government Bond Index	December 31, 1984
1992	Group-of-Five (G-5) Government Bond Index	December 31, 1984
1992	Global Government Composite Bond Index ^f	September 30, 1992
1994	Eurodollar Bond Index	June 30, 1993
1994	US (New) Large Pension Fund Baseline Bond Index ^g	December 31, 1979
1994	Emerging Markets Mutual Fund (EMMF) Debt Index ^h	December 31, 1993
1995	Euro-Deutschemark, Eurosterling, and Euroyen Bond Indexes ⁱ	December 31, 1994
1996	ECU Bond Index ⁱ	December 31, 1995
1996	Government and Eurobond Composite Index (GECI) ^j	December 31, 1995
1997	US Inflation-Linked Securities Index (ILSI)	February 28, 1997
1997	Jumbo Pfandbrief Index	June 30, 1997
1998	US Treasury STRIPS Index	December 31, 1991
1998	EMU Government Bond Index (EGBI)	December 31, 1998
1998	Euro Broad Investment-Grade (EuroBIG) Bond Index	December 31, 1998
1999	Mortgage Float-Adjusted Index	June 30, 1999
2000	World Broad Investment-Grade (WorldBIG) Bond Index	December 31, 1998
2000	Australian Broad Investment-Grade (AusBIG) Bond Index	June 30, 2000
2000	US Agency Zero 10+ Index	July 31, 2000
2002	Global Emerging Market Sovereign Bond Index (ESBI)	December 31, 1995
2002	US High-Yield Market Capped Index	December 31, 2001
2003	Polish Government Bond Index	December 31, 1999
2003	Singapore Government Bond Index	December 31, 1999
2005	Asian Government Bond Indexes	December 31, 2004
2005	Japanese Inflation-Linked Securities Index	June 30, 2004
2006	Dow Jones Citigroup [®] Sukuk Index	September 30, 2005
2007	World Government Bond Index – Japanese Investment Trust (WGBI-JIT)	December 31, 1996
2008	Asian Government Bond Index (AGBI)	December 31, 2007
2008	World Inflation-Linked Securities Index (WorldILSI)	April 30, 2007
2008	Mexican Government Bond Index	December 31, 2003
2010	Asian Broad Bond Index (ABBI)	September 30, 2008
2011	Middle East and North Africa Broad Bond Index (MENABBI)	December 31, 2010
2011	Chinese Government Bond Index	February 28, 2009
2011	Sri Lankan Government Bond Index	June 30, 2010
2011	Asian Government Extended Bond Index (AGBI – Extended)	February 28, 2009
2011	Asia Pacific Government Bond Index (APGBI)	December 31, 2007
2011	Dim Sum (Offshore CNY) Bond Index	December 31, 2010

Figure 1. Historical Summary of Index Introductions (Continued)

Year Introduced	Index	Base Date
2011	CEEMEA Government Bond Index (CEEMEAGBI)	March 31, 2011
2011	LATAM Government Bond Index (LATAMGBI)	March 31, 2011

^a Discontinued as of December 31, 1995. ^b Redefined as of January 1999, with history dating to January 1998. ^c Discontinued as of March 31, 2005. ^d Discontinued as of December 31, 1998. ^e Market coverage of Brady bonds was migrated to the ESBI Index. Brady bond performance and characteristics will be available via the Brady bond sector of the ESBI family of indexes. ^f Discontinued August 31, 2006. ^g Refined as of May 1994, with history dating back to 1980. Replaced the old LPF Index in July 1995. ^h Discontinued as of June 30, 2003. An alternative to the EMMF Index is our ESBI-Capped Index, which limits exposure to any one country by placing a ceiling on the par value contribution of each country. ⁱ The Euro-Deutschemark Bond and ECU Bond indexes were discontinued as of December 31, 1998. Most members of these indexes are now included in the EuroBIG Index. ^j Discontinued as of December 31, 2001. Source: Citigroup Index LLC.

Where to Find the Citigroup Fixed-Income Indexes

Our indexes are widely followed and broadly published. We employ many methods of distribution to allow for easy access to our indexes. The main vehicles that we use to distribute index information are the Citigroup Fixed-Income Index Website (www.yieldbook.com) and The Yield Book. One can also get extensive information from many independent sources. The level of data carried by these services varies from monthly sector level returns to details on the individual security holdings of each index and the level of detail and coverage is solely at the discretion of each representative vendor.

Figure 2. Where to Find the Citigroup Fixed-Income Indexes

Citigroup	
Citigroup Index Website (http://www.yieldbook.com/)	Total Rate-of-Return Indexes (Monthly Index publication)
The Yield Book®	International Market Indexes (Monthly Index publication)
Citi Velocity(http://www.citivelocity.com/)	
Financial News Organizations	
Bloomberg SBI<GO>; SBBI<GO> (Downloadable)	Global Money Management (Biweekly)
Reuters pages SOLR-Z	Global Finance (Monthly)
The Economist (Weekly)	Greek Financial Press
Financial Times (Daily)	International Financing Review (IFR) (Weekly)
Borsen Zeitung (Daily)	Latin Finance (Monthly)
Il Sole-24 Ore (Daily)	
Data and Analytic Vendors	
ABIC	Mercer Investment Consulting
Admiral Administration	Mitsubishi Asset Brains Co., Ltd.
Albridge Solutions	Mitsui Asset Trust & Banking Co., Ltd.
Bank of New York Mellon Corporation	Mizuho Research Institute Ltd.
Barclays Capital – POINT	MoneyMate
BlackRock Financial Management, Inc.	Morningstar, Inc.
BNP Paribas Fund Services Australasia Pty Ltd	MSCI Inc.
BNP Paribas Securities Services	Nikko Financial Intelligence Inc.
Callan Associates Inc.	Nikko Global Wrap Ltd.
Capital Mgmt Sciences (CMS)	Nomura Funds Research & Technologies Co., Ltd.
Citco Fund Services	Nomura Holdings Inc.
Citibank GTS	Nomura Research Institute, Ltd.
Complementa Investment – Controlling AG	Northern Trust Custody Services
Confluence Technologies Inc.	PNC Global
Daiwa Fund Consulting Co., Ltd.	QUICK Corporation
DPG	Rating & Investments Information, Inc.
eVestment Alliance	RBC Dexia Investor Services Trust
FactSet Research Systems	Reuters Ltd
FinAnalytica Inc.	RIMES Technologies Corporation
Financial Express	Rockit Solutions LLC
FirstRate	SGSS Deutschland KAG mbH
Fiserv Solutions, Inc.	SIX Telekurs USA Inc.
GreenHill & Co., Inc.	SMBC Nikko Securities Inc.
Haver Analytics	StatPro Group PLC
HSBC Bank PLC	Strategic Financial Solutions Inc.
Imagineer Co., Ltd.	Sumitomo Trust and Banking Co., Ltd.
Informa Investment Solutions, Inc.	Sungard Frontier Analytics
Interactive Data Corporation	Sungard Shaw Data Services Inc.
Investment Metrics, LLC	Tokio Marine & Nichido Ashin Company
Investor Force, Inc.	Towers Watson K.K.
Istituto Centrale Banche Popolari Italiane (ICBPI)	Trust & Custody Services Bank, Ltd.
Japan Pension Navigator	vwd group Belgium NV
Japan Trustee Services Bank, Ltd.	Wells Fargo Advisors, LLC
Jiji Press Ltd.	Wilshire Associates Inc.
JP Morgan Chase Bank	Windham Capital Management LLC
Kas Bank	Zephyr Associates, Inc.

Source: Citigroup Index LLC.

General Methodology — Fixed-Income Indexes

All Citigroup indexes follow the general methodology outlined in this section. When necessary, we elaborate on the explanations or provide more detailed information in a separate section on each index.

Index Profile

With the growing importance of global indexes to fund managers throughout the world, it is important for us to communicate the new index preliminary profile on a timetable that will provide sufficient time for fund managers to respond to changes in their benchmarks within their own time zone.

The profile fixing enables us to disseminate index information ahead of the month-end date so that investors have time to prepare rebalancing transactions.

Generally, we publish a schedule of fixing dates on our Citigroup Fixed-Income Index Website and in our monthly publications. These dates are determined by the rule that there must be, at minimum, four (4) business days after the fixing date and before the calendar end of the month in all of the following business regions: the United States, Japan, the United Kingdom, EMU (specifically Germany), and Australia.

For an issue to be eligible for inclusion in an index, all information on the issue must be publicly available on or before the fixing date, and the first settlement and interest accrual date of the issue must be on or before the end of the month. Although Treasury auctions may be announced prior to the fixing date, the results must be final by the fixing date in order to be considered for inclusion.

At the same time, bonds that no longer meet the maturity (that is, an average life of less than one year from the last calendar day of the month), amount outstanding, or rating criteria are removed. Any buyback or reverse auction occurring on or before fixing may cause the bond to be removed from the index.

After the release of the preliminary profile and prior to the end of the month, we will continue to track market activities and will remove any issues that are called, tendered, or defaulted. We also may revise the preliminary profile for corrections.

The index constituents remain the same for the calendar month, and all interim returns are calculated based on its composition. Reconstitution on a monthly basis, together with the large number of bonds in the indexes, provides a reasonable compromise between stability and comprehensiveness.

Maturity and Issue Size

The Citigroup fixed-income indexes measure the total rate of return performance for bond markets with a remaining maturity of at least one year. In addition, each market has a minimum size criterion designed to include only those bonds that are “reasonably available” for institutional investors under normal market circumstances. The specific size criterion will be discussed in the individual index sections.

Money market indexes measure the performance of instruments with maturities of 12 months or less.

Pricing

Source

Citi traders' evaluations are the primary pricing source for our indexes. Prices from third-party pricing sources, transaction-related information and our proprietary pricing models are supplemented to ensure completeness in pricing our indexes.

Timing

Prices in our indexes are bid-side prices, except for the Dim Sum (Offshore CNY) bonds. Conforming to local convention, mid-prices are also used for the Japanese, Mexican and South African government bonds. Figure 3 shows the local market times used for the pricing of our indexes. The closing time for our US domestic indexes and Canadian Government Bond Index is that of the futures market. In the event of an early close of the cash or futures markets, we use the futures' market close to time our pricing.

Figure 3. Local Market Times Used for Pricing

North America		Asia Pacific	
Canada	3:00 p.m. (New York)	Australia	4:30 p.m. (Sydney)
United States	3:00 p.m. (New York)	New Zealand	4:30 p.m. (Wellington)
		China	4:30 p.m. (Shanghai)
		China (Offshore)	6:00 p.m. (Hong Kong)
		Indonesia	4:30 p.m. (Jakarta)
		Japan	3:00 p.m. (Tokyo)
		Malaysia	5:00 p.m. (Kuala Lumpur)
		Philippines	4:00 p.m. (Makati City)
		Singapore	4:30 p.m. (Singapore)
		South Korea	3:00 p.m. (Seoul)
		Sri Lanka	2:30 p.m. (Colombo)
		Taiwan	1:30 p.m. (Taipei)
		Thailand	4:30 p.m. (Bangkok)
Europe		Latin America	
EMU Bloc	4:15 p.m. (London)	Brazil	5:00 p.m. (New York)
Scandinavia	4:15 p.m. (London)	Chile	1:30 p.m. (Santiago)
Czech Republic	5:00 p.m. (Prague)	Colombia	2:00 p.m. (New York)
Hungary	5:00 p.m. (Budapest)	Mexico	2:00 p.m. (Mexico City)
Poland	5:00 p.m. (Warsaw)	Peru	2:30 p.m. (New York)
Turkey	5:00 p.m. (Istanbul)		
Switzerland	5:00 p.m. (Zurich)		
United Kingdom	4:15 p.m. (London)		
Middle East			
Israel	4:30 p.m. (Tel Aviv)		
Africa			
South Africa	4:30 p.m. (Johannesburg)		

Source: Citigroup Index LLC.

Verification

Reliable pricing of each security in our indexes is necessary to ensure reliable index values and returns, thus third-party pricing sources and statistical techniques are used to identify pricing anomalies.

Prices used in the Citigroup indexes are provided as **indications only**. Inquiries challenging the accuracy of a price are reviewed by the Citigroup Index team, and we may adjust the price and update the pricing models for future valuations.

Settlement

For daily calculations, we assume that indexes settle on a same-day basis except on the last business day of the month, when settlement is the last calendar day. Monthly holding periods, therefore, are exactly one calendar month. For example, the January return period would run from the close on December 31 to the close on January 31, regardless

of the last business day. However, the last business day in each local market is used for pricing.

Maturity Sector

In addition to the broad categories we publish, we provide subsector breakdowns for many of our indexes. One such subdivision is based on the remaining maturity of the underlying securities. We define our maturity sector buckets by including all underlying issues with a remaining average life at least equal to the lower bound, but less than the upper bound of the particular category. For example, the one- to three-year sector of the WGBI includes all securities in the WGBI with a remaining average life of at least one year, but less than three years. We then hold the set of bonds constant for the calculation month, even though the average life declines. The only exception to this rule is the mortgage sector, which we include in its entirety in the one- to ten-year sector.

Country of Issuer Classification

We use the nationality of an issuer as another method of subdividing the index. In general, the country of issuer is based on the domicile of the parent company. With global consolidation becoming an everyday part of business, the country of issuer classification can become somewhat obscure. For this classification, we have adopted the following approach.

An overseas operating subsidiary assumes the nationality of its parent if it is guaranteed by its parent; otherwise, it retains its own nationality. For example, Toyota Motor Credit Corporation, an operating subsidiary of Toyota Motor Company (registered in Japan), assumes its own nationality of the United States.

A special purpose, offshore, debt-issuing subsidiary typically assumes the nationality of its parent, whether or not guaranteed by the parent. For example, Diageo Finance BV (a financing vehicle registered in the Netherlands) assumes the nationality of its ultimate parent, Diageo PLC (registered in the United Kingdom).

If any ambiguity exists, the Citigroup Index team will evaluate and determine the appropriate classification.

Index Quality

An index quality is assigned to each index bond as of profile fixing. The quality is first mapped to the S&P rating. If a bond is not rated by S&P but it is rated by Moody's, we assign the S&P equivalent of the Moody's rating to the index quality. If a bond is split-rated (an investment-grade rating by one rating agency and high-yield by the other), we assign the S&P equivalent of the investment-grade rating to the index quality. These ratings remain unchanged for the entire performance month.

Defaults

When an issuer defaults, or expects to default on an interest payment, or enters into Chapter 7 or Chapter 11 bankruptcy protection, its bonds remain in the index until the end of the month and adjustments are made to the index returns. After the announcement by the company, we adjust the returns for the company's bonds to reflect the loss of coupon payments or accrued interest, where applicable. Returns for bankrupt securities only incorporate the gain or loss on principal, except in unique situations when bankrupt

bonds trade with accrued interest. In addition, we exclude bankrupt bonds when calculating the average profile statistics of the indexes.

We remove the bankrupt securities from the index at the end of the month and place them in the Bankrupt/Default Index, when applicable, beginning with the next month's index. Any bond that is assigned a D rating by S&P, regardless of whether that issuer has filed for bankruptcy protection, will be placed into the Bankrupt/Default Index for the next month's index. A bond exits the Bankrupt/Default Index when reorganization is completed or exchanged for other securities, or upon liquidation, or when neither S&P nor Moody's rate the bonds.

Exchange Rates

The Citigroup family of global bond indexes uses the WM/Reuters closing spot and forward rates.¹ The WM Company takes several snapshots at regular intervals centered on the fixing time of 4:00 p.m. London time and selects the median rate for each currency. All rates are mid-market quotations and appear on Reuters (see WMRSPOT01).

Return Computation

Total returns are computed on the assumption that each security is purchased at the beginning of the period and sold at the end of the period. Bid-side valuations are used, except for the Japanese, Mexican and South African government bond markets and the Dim Sum (Offshore CNY) bonds where mid-prices are used. An issue's total rate of return is the percentage change in its total value over the measurement period (see Figure 4).

The components of total return are price change, principal payments, coupon payments, accrued interest, and reinvestment income on intra-month cash flows. In the case of multicurrency or nonbase indexes, the total return also includes currency movement. The total returns are market-capitalization weighted using the security's beginning-of-period market value.

Figure 4. Total Rate-of-Return Calculation Methodology

Beginning-of-Period Value	=	(Beginning Price + Beginning Accrued) x Beginning Par Amount Outstanding
End-of-Period Value	=	[(Ending Price + Ending Accrued) x (Beginning Par Amt. Outstanding - Principal Payments)] + Coupon Payments + Principal Payments + Reinvestment Income
Total Rate of Return (%)	=	[(End-of-Period Value/Beginning-of-Period Value)-1] x 100

A note on precision: Returns are computed to at least six decimal places but reported to a maximum of five. In addition, owing to rounding errors inherent in computer floating-point arithmetic, the last digit in any reported value may sometimes be off by one from its true value. Source: Citigroup Index LLC.

Return Computation — Base Currency Returns, Unhedged

We calculate returns in a base currency in the following way:

Figure 5. Total Rate-of-Return Calculation Methodology (Unhedged)

Total Rate of Return (%)	=	((1+ (Local Currency Return/100)) x (End-of-Month Spot Rate/Beginning-of-Month Spot Rate)-1) x 100
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Source: Citigroup Index LLC.

¹ The World Government Bond Index – Japanese Investment Trust (WGBI-JIT) uses the telegraphic transfer middle (TTM) exchange rates provided by Bank of Tokyo-Mitsubishi UFJ.

This equation holds true only if the spot rates are quoted as base currency per unit of foreign currency.

Return Computation — Base Currency Returns, Currency Hedged

We compute the monthly currency-hedged return by using a rolling one-month forward exchange contract as a hedging instrument. The face value of the contract is equal to the estimated end-of-month full market value. To calculate this value, we assume that the bond's yield is unchanged from the beginning of the month. We then account for any known cash flows, such as coupon or principal payments, and add in interest expected to accrue for the period. This strategy leaves the intra-month changes in bond prices from yield movements unhedged. Any principal movement resulting from yield change is then settled at end-of-month spot exchange rates. We give an example of the calculation formula from the point of view of a US investor in Figure 6.

Figure 6. Currency-Hedged Monthly Return Calculation Methodology

Beginning-of-Period Value	$[(\text{Beginning Price} + \text{Beginning Accrued}) \times (\text{Beginning Par Outstanding})] \times [\text{Beginning-of-Period Spot Exchange Rate (US Dollar/Local Currency)}]$
End-of-Period Value	$[(\text{End-of-Period Local Currency Value, Assuming Unchanged Yield} + \text{Known Intra-month Cash Flows and Interest Expected to Accrue}) \times \text{Beginning-of-Period One-Month Forward Exchange Rate (US Dollar/Local Currency)}] + [\text{Change in Market Value of Principal Amount Due to Yield Change} \times \text{End-of-Period Spot Exchange Rate (US Dollar/Local Currency)}]$
Total Rate of Return (%)	$[(\text{End-of-Period Value}/\text{Beginning-of-Period Value}) - 1] \times 100$

Source: Citigroup Index LLC.

Index Data Delivery

For the World Government Bond Index (WGBI), World Government Bond Index – Japanese Investment Trust (WGBI-JIT), Asian Government Bond Index (AGBI), and Australian Broad Investment Grade (AusBIG) Bond Index:

- Daily returns reports: 6:00 p.m. EST, same day.

For the World Government Bond Index (WGBI), World Government Bond Index – Japanese Investment Trust (WGBI-JIT), and Asian Government Bond Index (AGBI):

- Last business day final daily and monthly issue-level and sector-level data: 11:45 p.m. EST, same day.

For all other indexes:

- Daily profiles and returns: 11:45 p.m. EST, same day.
- Last business day estimated daily sector-level data: 11:45 p.m. EST, same day.
- Last business day final daily profile and returns: 9:00 p.m. EST, first business day using US calendar.
- Monthly profile and returns: 9:00 p.m. EST, first business day using US calendar.

Under extenuating circumstances, index production may be delayed. Production delays are posted on our index website (www.yieldbook.com). Additionally, revisions to the data delivery schedule due to US holidays are also posted in advance on the index website. By subscribing to Index Production News, website subscribers will automatically receive notifications relating to the data delivery schedule via email.

Data Correction Policy

We strive to produce error-free indexes; however, there are occasions when erroneous data is published. These circumstances may be caused by, but not limited to, calculation or pricing errors, missing data, or incorrect indicative data. On rare occasions and only in extreme cases, the Citigroup Index team may conclude that recalculation and restatement are required. When determining if restatement is necessary, we consider the magnitude of the error, the overall impact on the data, the sector affected, and whether the error affects daily and/or monthly results.

If the Citigroup Index team finds it necessary to restate, an announcement will be posted on our index Website (www.yieldbook.com), and the data will be redistributed. By subscribing to Index Production News, Website subscribers will automatically receive any correction notifications via email.

World Broad Investment-Grade (WorldBIG) Bond Index

In constructing the World Broad Investment-Grade (WorldBIG) Bond Index, we use the World Government Bond Index (WGBI) as the core and include sectors from our broad family of indexes that are targeted to global investors and are of most interest to them.

Because the WorldBIG Index has the WGBI as its core, markets will be subject to the same entry criteria already established for the WGBI, as outlined in Figure 10. We include credit market coverage for the four largest currency sectors, namely the US dollar, euro, Japanese yen, and UK sterling. We may add other credit sectors as we expand our market coverage, but we will use our market expertise to determine their eligibility. Some domestic credit markets are truly targeted to domestic investors and, therefore, are not an appropriate fit for this global benchmark. Furthermore, we believe that it is important to consider the higher liquidity needs and higher transaction costs facing a global investor. Therefore, we impose larger minimum issue sizes to help satisfy this need. We believe that this results in an index that is truly focused on the large issuers that are of most interest to the traditional institutional investor base.

Figure 7 describes the major indexes that make up the WorldBIG Index.

Figure 7. World Broad Investment Grade (WorldBIG) Bond Index — Composition Comparison With Stand-Alone Indexes

Index	Composition as Stand-Alone Index	Composition in WorldBIG
WGBI	Entire index	Entire index
USBIG	Minimum issue size for corporate/asset backed: US\$250 million. Non-US Sovereign & Provincial: US\$500 million.	Minimum issue size for credit/asset-backed: US\$500 million. No zero-coupon bonds.
EuroBIG	Entire index	Entire index
Euroyen	Entire index	Entire index
Eurodollar	Minimum issue size: Corporate/financial/asset-backed: US\$250 million.	Minimum issue size: Corporate/financial/asset-backed: US\$500 million. No zero-coupon bonds.
Eurosterling	Minimum issue size: £200million.	Minimum issue size: £300 million.

Source: Citigroup Index LLC.

Figure 8 provides a more detailed description of the design criteria and calculation assumptions of the WorldBIG Index.

Figure 8. World Broad Investment-Grade (WorldBIG) Bond Index — Design Criteria and Calculation Assumptions

Stated Coupon	Fixed Rate, No Zero-Coupon Bonds Except for Domestic Sovereign Bonds (WGBI)
Minimum Maturity	One year
Minimum Issue Size by Currency	
US Dollar	Domestic Sovereign: US\$5 billion public amount outstanding (excludes Federal Reserve purchases) US agency/supranational: US\$1 billion Credit/asset-backed: US\$500 million Mortgage Coupon: US\$5 billion (Origination year minimum: US\$1 billion) Global: US\$500 million Eurodollar: US agency and supranationals at US\$1 billion, Other: US\$500 million
Japanese Yen	Domestic Sovereign: ¥500 billion, 20- and 30-year bonds: ¥450 billion (excludes Bank of Japan and Ministry of Finance Holdings) Euroyen: ¥50 billion
Euro	EMU Sovereigns: €2.5 billion or the equivalent for nonredenominated bonds Other: €500 million or the equivalent for nonredenominated bonds
UK Sterling	Domestic Sovereign: £2 billion (exclude perpetuals and Bank of England purchases) Eurosterling: £300 million
Australian Dollar	Domestic Sovereign: A\$750 million
Canadian Dollar	Domestic Sovereign: C\$2.5 billion (excludes Bank of Canada Cash Management Bond Buybacks)
Danish Krone	Domestic Sovereign: DKr20 billion
Malaysian Ringgit	Domestic Sovereign: RM4 billion
Mexican Peso	Domestic Sovereign: MXN10 billion
Norwegian Krone	Domestic Sovereign: NOK20 billion
Polish Zloty	Domestic Sovereign: PLN5 billion
Singapore Dollar	Domestic Sovereign: S\$1.5 billion
Swedish Krona	Domestic Sovereign: SEK25 billion
Swiss Franc	Domestic Sovereign: Sfr4 billion
Minimum Quality	BBB-/Baa3 by either S&P or Moody's
Weighting	Market capitalization
Rebalancing	Once a month at the end of the month
Redemption Features	Bullet, sinking fund, puttable, extendable, or callable
Calculation Frequency	Daily
Settlement Date	Monthly: Last calendar day Daily: Same day except last business day of month, when settlement is last calendar day
Reinvestment of Cash Flow	At daily average of local currency one-month Eurodeposit rate, except Australia. Australia: Australia dollar bank bill swap reference rate (BBSW). Calculated from actual scheduled payment date of cash flow through end of reporting period.
Pricing	See Pricing in the General Methodology section (Page 11).
Price Adjustments	Mortgages: Carry-adjusted to reflect the difference between index settlement dates and standard PSA settlement dates
Volatility	US Nonmortgages: 10% single volatility. US Mortgages: Market-implied volatility (two-factor skew model)
Base Date	December 31, 1998

Source: Citigroup Index LLC.

Sector Classifications

Most portfolio strategies involve a separate risk-reward analysis of each asset class. In aggregating the sectors from the various indexes to form the WorldBIG Index, it is important to ensure consistency in terms of the definitions of the various asset class sectors across countries and currencies. This clearly delineates risks for the global investor and assists risk-reward analysis in assessing portfolio strategies. We have divided the overall index into three main asset classes, as outlined in Figure 9:

(1) government/government-sponsored; (2) collateralized; and (3) corporate. In addition, we embraced the terminology of covered bonds for all Pfandbrief and Pfandbrief-like securities predominant in the euro region. This classification scheme differs from that used in most existing stand-alone indexes.

Figure 9. World Broad Investment Grade (WorldBIG) Bond Index — Sector Classification

Sovereign/Sovereign-Guaranteed	Collateralized	Corporate — Utility
Domestic Sovereign (WGBI)	Mortgage-Backed Securities	Electric
Foreign Sovereign	Covered	Gas
Sovereign-Guaranteed	<ul style="list-style-type: none"> ▪ Jumbo Pfandbrief ▪ Other Covered Asset-Backed Securities	Telecommunication Other Utility
Government-Sponsored/ Regional Government	Corporate — Industrial	Corporate — Finance
Agency	Consumer	Banks
Supranational	Energy	Independent Finance
Other Sovereign-Sponsored	Manufacturing	Insurance
Regional Government	Service	Other Finance
Regional Government-Guaranteed	Transportation	
Regional Government-Sponsored	Other Industrial	

Source: Citigroup Index LLC.

World Government Bond Index (WGBI)

The World Government Bond Index (WGBI) includes the 23 government bond markets of Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Malaysia, Mexico, the Netherlands, Norway, Poland, Portugal², Singapore, Spain, Sweden, Switzerland, the United Kingdom, and the United States.

To join WGBI, the market must satisfy market size, credit, and barriers-to-entry requirements. Once a market has met all three requirements, we will make the announcement that it is eligible for WGBI inclusion. If it continues to meet all three requirements for three consecutive months, the market will go into the WGBI at the end of the following quarter.

Entry Criteria

Market Size: The outstanding amount of a market's eligible issues (see Figures 10 and 11) must total at least US\$50 billion, €40 billion, and ¥5 trillion for the market to be considered eligible for inclusion.

Credit: The minimum credit quality of A-/A3 by either S&P or Moody's for all issuers.

Barriers to Entry: A market being considered for inclusion should actively encourage foreign investor participation and show a commitment to its own policies.

Exit Criteria

Market Size: When the outstanding amount of a market's eligible issues falls below half of all the entry-level market-size criteria, namely, US\$25 billion, €20 billion, and ¥2.5 trillion, for three consecutive months, the market will be removed from the next month's profile and moved to the Additional Market Indexes.

Credit: Any market that falls below BBB-/Baa3 by both S&P and Moody's will be removed from the next month's profile and moved to the Additional Market Indexes.

Each month, several days before month end, the upcoming month's index constituents are "fixed" on the "profile fixing date." For the WGBI only, the credit qualifications of the index are treated as provisional. This distinction will allow a country to be removed from the index after the fixing if it becomes rated below investment grade by both S&P and Moody's. This exception window is kept open until 5PM New York time on the second to last business day of the month for removal only. Removal from the index, on or after the fixing date, is not reversible except by qualifying for the index once again, which takes a minimum of six months.

There is no specific rule concerning default or what constitutes default. Conceivably, a country could technically default, but an immediate rescue could leave their existing bonds in the investment grade category. Only a downgrade to below investment-grade would trigger a credit-related expulsion from the index.

Barriers to Entry: Circumstances can change over time and a country may find that revising their policies makes sense for their national welfare. However, it is possible that

² On January 13, 2012, S&P downgraded the credit rating of Portugal from BBB- to BB. With a credit rating of BB/Ba2 by S&P and Moody's, respectively, Portugal no longer meets the minimum credit criteria for the WGBI. If the credit ratings remain below investment grade on January 24, 2012, the fixing date for the February 2012 profile, Portugal will be removed from the WGBI at the end of January 2012.

new policies can have the effect of limiting investors' ability to replicate the returns of that country's portion of the index. In that case, it may be necessary to remove that country from the WGBI.

If barriers to entry were to be identified, an announcement will be made that the particular country has become ineligible and we will state the reason. That country will be removed from the next month's profile and moved to the Additional Market Indexes.

The chronological events affecting the construction or calculation of the WGBI and the Additional Market Indexes is listed in Figure 14.

Figure 10. World Government Bond Index (WGBI) — Design Criteria and Calculation Assumptions

Minimum Maturity	One year
Minimum Market Size	US\$50 billion, €40 billion, ¥5 trillion
Minimum Issue Size	Australia: A\$750 million Canada: C\$2.5 billion (excludes Bank of Canada Cash Management Bond Buybacks) Denmark: DKr20 billion EMU Markets: €2.5 billion Japan: ¥500 billion, 20- and 30-year bonds: ¥450 billion (excludes Bank of Japan and Ministry of Finance holdings) Malaysia: RM4 billion Mexico: MXN10 billion Norway: NOK20 billion Poland: PLN5 billion Singapore: S\$1.5 billion Sweden: SEK25 billion Switzerland: Sfr4 billion United Kingdom: £2 billion (excludes Bank of England purchases) United States: US\$5 billion public amount outstanding (excludes Federal Reserve purchases)
Minimum Quality	Entry: A-/A3 by either S&P or Moody's Exit: Below BBB-/Baa3 by both S&P and Moody's
Weighting	Market capitalization
Rebalancing	Once a month at the end of the month
Composition	Sovereign debt denominated in the domestic currency
Redemption Features	Bullet, sinking fund, puttable, extendable, or callable
Reinvestment of Cash Flow	At daily average of local currency one-month Eurodeposit rate, except Australia. Australia: Australia dollar bank bill swap reference rate (BBSW). Calculated from actual scheduled payment date of cash flow through end of reporting period.
Pricing	Individual Citi trader pricing except Switzerland (provided by Swiss Exchange) and Mexico (provided by Proveedor Integral de Precios S.A. de C.V). All pricing generally taken as of the local market close, see Pricing in the General Methodology section.
Calculation Frequency	Daily
Settlement Date	Monthly: Last calendar day Daily: Same day except for last business day of the month, when settlement is last calendar day
Base Date	WGBI: December 31, 1984

Source: Citigroup Index LLC.

Figure 11. Composition of the World Government Bond Index (WGBI)

WGBI Markets	Securities Included	Securities Excluded
Australia	Fixed-rate noncallable bonds	Inflation index-linked and tax rebate bonds
Austria	Fixed-rate noncallable (Bundesanleihen) and fixed-rate bonds originally issued in any euro-converting currency	Bundesobligationen
Belgium	Fixed-rate noncallable bonds	Retail-directed bonds
Canada	Fixed-rate noncallable bonds	Savings bonds, real-return bonds
Denmark	Fixed-rate noncallable bond and Treasury Notes	Mortgage credit issues
Finland	Bullet bonds and fixed-rate bonds originally issued in any euro-converting currency	Housing Fund and Yield bonds
France	Fixed-rate noncallable — Obligations Assimilables du Trésor (OATs) and Bons du Trésor à Intérêt Annuel Normalisé (BTANs)	Variable-rate securities
Germany	Fixed-rate noncallable bonds (Bundesrepublik, Schatzanweisungen, Bundesobligationen, Unity bonds, Treuhandanstalt, and Treuhandobligationen)	Schuldscheine, Unverzinsliche, Schatzanweisungen, Bundespost, Bundesbahn, European Recovery Program Bonds
Ireland	Fixed-rate noncallable bonds	Variable-rate bonds
Italy	Fixed-rate noncallable (Buoni del Tesoro Poliennale [BTPs]) and fixed-rate bonds originally issued in any euro-converting currency	Floating-rate bonds (Certificati di Credito del Tesoro [CCTs])
Japan	Fixed-rate bonds	Discount bonds, floating-rate bonds, private placements, inflation-indexed bonds, and JGBs for individuals
Malaysia	Fixed-rate noncallable and callable bonds	Government Investment Issues (GII)
Mexico	Fixed-rate bonds	Bonds issued prior to January 1, 2003
Netherlands	Fixed-rate noncallable bonds	Private placements (onderhandse leningen)
Norway	Benchmark bonds	Loans and lottery loans issued before 1991
Poland	Fixed-rate noncallable bonds (including zero-coupon bonds)	Treasury convertible bonds, floating-rate bonds
Portugal	Fixed-rate noncallable bonds (Obrigações do Tesouro [Ots]) and fixed-rate bonds originally issued in any euro-converting currency	Floating-rate debt (FIPs and OCAs)
Singapore	Fixed-rate (including zero-coupon bonds)	Index-linked bonds; callable/puttable bonds
Spain	Fixed-rate noncallable bonds (Bonos and Obligaciones del Estado) and fixed-rate bonds originally issued in any euro-converting currency	Discount bonds (Letras and Pagares del Tesoro)
Sweden	Fixed-rate noncallable bonds (Riksoptioner)	Retail-directed Treasury bonds and inflation-index-linked bonds
Switzerland	Fixed-rate noncallable and callable bonds	Book liabilities and private placements
United Kingdom	Fixed-rate noncallable and callable bonds, partly paid, convertible (into other gilt issues) bonds	Inflation-index-linked bonds; rump gilts, and perpetuals (undated)
United States	Fixed-rate noncallable and callable bonds	Savings bonds, inflation-indexed securities, STRIPS

Source: Citigroup Index LLC.

The Additional Market Indexes include bond markets we track, but do not, at present, qualify for inclusion in the WGBI based on the criteria outlined above. A country may stay in Additional Market Indexes because it discourages foreign ownership, for example, even if it meets the size and credit criteria. Once a market has met all three requirements, we will make the announcement that it is eligible for WGBI inclusion. If it continues to meet all three requirements for three consecutive months, the market will go into the WGBI at the end of the following quarter.

Figure 12 and Figure 13 details the design criteria, calculation assumptions and composition of the Additional Market Indexes.

Figure 12. Additional Market Indexes — Design Criteria and Calculation Assumptions

Minimum Maturity	One year
Minimum Issue Size	New Zealand: NZ\$750 million China: CNY20 billion Indonesia: IDR7.5 trillion Korea: W1 trillion Philippines: PHP45 billion Sri Lanka: LKR50 billion Taiwan: NT\$40 billion Thailand: THB25 billion Greece: €2.5 billion Czech Republic: CZK15 billion Hungary: HUF200 billion Turkey: TRL2 billion Israel: ILS5 billion South Africa: ZAR10 billion Brazil: BRL5 billion Chile: CLP100 billion Colombia: COP2 trillion Peru: PEN2 billion
Minimum Quality	C by either S&P or Moody's , see Defaults in the General Methodology section (Page 12).
Weighting	Market capitalization
Rebalancing	Once a month at the end of the month
Composition	Sovereign debt denominated in the domestic currency
Redemption Features	Bullet, sinking fund, putable, extendable, or callable
Reinvestment of Cash Flow	At daily average of local currency one-month Eurodeposit rate. Calculated from actual scheduled payment date of cash flow through end of reporting period.
Pricing	Individual Citi trader pricing except for Chile (provided by Bank of Chile). All pricing generally taken as of the local market close, see Pricing in the General Methodology section.
Calculation Frequency	Daily
Settlement Date	Monthly: Last calendar day Daily: Same day except for last business day of the month, when settlement is last calendar day

Source: Citigroup Index LLC.

Figure 13. Composition of the Additional Market Indexes

Additional Markets	Securities Included	Securities Excluded
New Zealand	Fixed-rate noncallable bonds	Index-linked bonds
China	Fixed-rate book-entry bonds	Zero-coupon bonds
Indonesia	Fixed-rate bonds	Recapitalization and retail bonds
Korea	Fixed-rate noncallable and callable bonds	Monetary Stabilization Bonds, STRIPS, inflation-indexed securities, 10-Years securities issued prior to January 1, 2003
Philippines	Fixed-rate bonds	Retail and zero-coupon bonds
Sri Lanka	Fixed-rate bonds	Zero-coupon bonds
Taiwan	Fixed-rate noncallable and callable bonds	
Thailand	Fixed-rate bonds	Saving bonds
Greece	Fixed-rate noncallable bonds issued in any euro-converted currency	Variable-rate bonds
Czech Republic	Fixed-rate bonds	Zero-coupon bonds
Hungary	Fixed-rate bonds	
Turkey	Fixed-rate bonds	
Israel	Fixed-rate bonds	Index-linked bonds
South Africa	Fixed-rate bonds	Zero-coupon and index-linked bonds
Brazil	Fixed-rate bonds	LTN and index-linked bonds
Chile	Fixed-rate bonds	Index-linked bonds
Colombia	Fixed-rate bonds	Index-linked bonds
Peru	Fixed-rate bonds	Index-linked bonds

Source: Citigroup Index LLC.

Figure 14. Chronological Summary of World Government Bond Index (WGBI) and Additional Markets Events/Enhancements

Date Introduced	Events/Enhancements
May 1987	Introduction of the After-Tax Indexes
March 1988	Introduction of the Currency-Hedged Indexes
May 1988	Inclusion of BTANs in the French sector
November 1988	Inclusion of Bundesobligationen in the German sector
April 1989	Inclusion of Denmark in the World Government Bond Index as a new country sector Introduction of the Currency-Hedged After-Tax Indexes
July 1991	Minimum size eligibility increased to US\$100 million
October 1992	Inclusion of Belgium, Italy, Spain, and Sweden in the WGBI as new country sectors Exclusion of Switzerland from the World Government Bond Index Introduction of multiple composite indexes Introduction of Additional Market Indexes — Austria, Ireland, and New Zealand Minimum size eligibility changed to a local currency standard
April 1993	Inclusion of Austria in the World Government Bond Index as a new country sector
December 1993	Currency spot exchange rates switched to the WM/Reuters standard
January 1995	Minimum entry increased as follows: <ul style="list-style-type: none"> ▪ United States: US\$1 billion ▪ Spain: ESP100 billion ▪ France: Ffr10 billion Settlement date changed to same day for daily calculations and last calendar day for monthly Issuance cutoff for profile changed to the twenty-fifth day of the calendar month Introduction of Finland, Norway, and Portugal to the Additional Market Indexes
April 1996	Inclusion of Switzerland in the World Government Bond Index
July 1996	Inclusion of Finland in the World Government Bond Index
April 1997	Inclusion of Ireland in the World Government Bond Index Monthly pricing of US and Canada changed to 3:00 p.m. EST time (futures close) from 5:00 p.m.
July 1998	Inclusion of Portugal in the World Government Bond Index
January 1999	WGBI market entry/exit size criteria changed to €15/€7.5 billion from DM30/DM15 billion Country inclusion rule changed to currency-based rule. All domestic fixed-rate bonds larger than the issue size threshold issued by EMU sovereigns will qualify for inclusion Exclusion of German agency debt (moved to the EuroBIG Index)
June 1999	Australian Index amounts net of LCIR holdings
January 2000	Minimum entry size for gilts changed to £400 million. Rump gilts no longer eligible for inclusion
April 2000	Inclusion of Greece as an Additional Market Index Country inclusion rule changed to shorten time to include or exclude a market based on size Addition of a minimum credit rule of BBB-/Baa3 from either S&P or Moody's for market inclusion
July 2000	Inclusion of Greece in the World Government Bond Index Minimum entry increased as follows: <ul style="list-style-type: none"> ▪ Canada: C\$1 billion ▪ Denmark: Dkr10 billion ▪ Japan: ¥500 billion ▪ Norway: NOK20 billion ▪ Sweden: SEK10 billion ▪ Switzerland: Sfr1 billion
January 2001	Greece entered EMU
April 2001	Laddered inclusion rule for Japan Government Bond Index introduced that lowers minimum amount outstanding of 20-year JGB to ¥450 billion from ¥500 billion
August 2001	Minimum entry size for gilts changed to £410 million
October 2002	Inclusion of Poland as an Additional Market Index
May 2003	Inclusion of Poland in the World Government Bond Index Inclusion of Singapore as an Additional Market Index
January 2005	Inclusion of Singapore in the World Government Bond Index
September 2006	Inclusion of Korea, Malaysia, and Taiwan as Additional Market Indexes

Figure 14. Chronological Summary of World Government Bond Index (WGBI) and Additional Markets Events/Enhancements (Continued)

Date Introduced	Events/Enhancements
April 2007	Minimum entry increased as follows: <ul style="list-style-type: none"> ▪ EMU: €2.5 billion ▪ United Kingdom: £2 billion (exclude perpetuals) ▪ United States: \$US5 billion ▪ Japan: Exclude Bank of Japan holdings
July 2007	Inclusion of Malaysia in the World Government Bond Index Minimum entry increased as follows: <ul style="list-style-type: none"> ▪ Australia: A\$750 million (net of LCIR amounts) ▪ Canada: C\$2.5 billion ▪ Denmark: Dkr20 billion ▪ New Zealand: NZ\$750 million ▪ Poland: PLN5 billion ▪ Sweden: SEK25 billion ▪ Switzerland: Sfr4 billion
May 2008	Inclusion of Indonesia, Philippines, Thailand and Mexico as Additional Market Indexes
March 2009	The outstanding amount of U.S. Treasury and U.K. Gilts excludes the purchases made by the Federal Reserve and the Bank of England, respectively.
December 2009	Individual EMU government debt markets are subject to the market-size criteria. The outstanding amount of the JGBs excludes also the repurchases made by the Ministry of Finance.
January 2010	The outstanding amount of Canadian Government bonds excludes the purchases made via the Government of Canada Cash-Management Bond Buyback Program.
March 2010	Exclusion of the 10-year Korean Treasury Bonds issued prior to January 2003 from the Korean Government Bond Index.
April 2010	A country will be removed from the index after the fixing date if it becomes rated below investment grade by both S&P and Moody's. We keep this exception window open until 5PM New York time on the second to last business day of the month for removal only.
July 2010	Exclusion of Greece from the World Government Bond Index due to credit downgrade. Inclusion of Greece as Additional Market Indexes.
October 2010	Inclusion of Mexico in the World Government Bond Index and removed from the Additional Market Indexes.
November 2010	WGBI Entry Criteria: The outstanding amount of a market's eligible issues must total at least US\$50 billion, €40 billion and ¥5 trillion. The minimum credit quality is raised to A-/A3 by both S&P and Moody's. WGBI Exit Criteria: The market will be removed if the outstanding amount of a market's eligible issues falls below half of all the entry-level market size criteria for three consecutive months. The new market size for exit is US\$25 billion, €20 billion and ¥2.5 trillion.
April 2011	Inclusion of China and Sri Lanka as Additional Market Indexes
October 2011	Inclusion of Czech Republic, Hungary, Turkey, Israel, South Africa, Brazil, Chile, Colombia Peru as Additional Market Indexes

Source: Citigroup Index LLC.

Related Benchmarks**Citigroup EMU Government Bond Index (EGBI)**

The EGBI consists of the EMU-participating countries that meet the index criteria. Current EMU-participating countries include: Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, the Netherlands, Portugal, Slovakia, Slovenia, and Spain. Individual EMU-participating country must satisfy the WGBI criteria for market inclusion.

Citigroup Nonbase Currency Government Bond Indexes

The indexes of nonbase currency sectors exclude respective base currency bond markets from the calculation and, in turn, are stated in terms of the base currency. For example, the non-US Dollar WGBI includes all WGBI countries except the United States and is stated in US dollar terms. As with all of our indexes, we can state returns in any base currency.

Citigroup European World Government Bond Index

The European WGBI consists of those 16 sectors of the WGBI that are geographically located in Europe, namely Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Norway, Poland, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

Citigroup Group-of-Five (G5) Index

The G5 Index includes France, Germany, Japan, the United Kingdom, and the United States. This index is designed to provide broad international exposure using a small number of markets. It covers approximately 79% of the market value of the WGBI.

Citigroup Group-of-Seven (G7) Index

The G7 Index includes Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States. This index covers approximately 87% of the market value of the WGBI.

Citigroup After-Tax Bond Indexes

After-tax returns are computed from the point of view of a US pension account and attempt to approximate the effect on the total rate of return of withholding tax on coupon income.

Figure 15. Withholding Tax Assumptions for the After-Tax Indexes

Market	Tax Rate	Calculation Assumption
Switzerland	35.00	5% nonrefundable, 30% refundable three months following the January 1 or July 1 after the coupon payment date

Effective July 1, 1997, all Italian bonds accrue and pay interest on a gross basis. Effective April 6, 1998, all UK gilt securities accrue and pay interest on a gross basis. Although for the index we assume Australian government bonds pay interest on a gross basis, under certain circumstances, some US pension funds may be subject to withholding tax on these investments. Effective April 1, 2010, all JGBs accrue and pay interest on a gross basis. Source: Citigroup Index LLC.

World Government Bond Index — Japanese Investment Trust (WGBI-JIT)

The World Government Bond Index – Japanese Investment Trust (WGBI-JIT) is designed to serve as a benchmark for performance evaluation of Japanese investment trusts. The calculation methodology is based on the evaluation standard of the Investment Trusts Association of Japan.

The World Government Bond Index (WGBI), designed for global investors, adheres to the general methodology used in all Citigroup fixed-income indexes and is calculated using the daily local market prices for each security and WM/Reuters exchange rates. However, Japanese domestic investment trusts generally calculate the performance of their foreign bonds based on previous day's prices and use the telegraphic transfer middle (TTM) exchange rates provided by Bank of Tokyo-Mitsubishi UFJ. As a result, Japanese domestic investment trusts have had to calculate a modified WGBI benchmark return to compensate for the differences in the calculation assumptions. The WGBI-JIT eliminates this need by adopting the pricing and calculation methodology of the domestic funds, enabling Japanese domestic investors to compare the benchmark and fund performance directly without further adjustments.

WGBI-JIT Calculation Methodology and Assumptions

The methodology used for the WGBI-JIT differs from that of the WGBI in two key areas: timing of security pricing and foreign exchange rates.

The WGBI return calculation is based on the current day's prices, and uses the spot exchange rates provided by WM/Reuters for the calculation of unhedged base currency returns. In contrast, WGBI-JIT uses the previous business day's prices for all markets, except Japan, and the current day's prices for Japan. In compliance with the Investment Trusts Association of Japan, for currency exchange rates, the WGBI-JIT is calculated using Bank of Tokyo-Mitsubishi UFJ TTM rates as quoted at 10:00 a.m. Tokyo time.

When the TTM rates are not available, the Business Management Committee of Investment Trusts Association stipulates that an alternate rate should consistently be from the same source company. For the WGBI-JIT, if the TTM rates are not available, WM/Reuters rates are used.

In rare occasions, the Japanese Ministry of Finance has intervened in the foreign exchange market. Given that the Ministry of Finance's intervention is a significant market event, if it occurs on the last business day after the 10:00 a.m. cutoff time and Bank of Tokyo-Mitsubishi UFJ officially revised the TTM rates for 10:00 a.m., we will restate the last business day WGBI-JIT returns and the associated monthly returns if the WGBI-JIT returns calculated using the revised exchange rates are significantly differently from the originally published returns.

Figure 16 details the differences in the calculation assumptions for WGBI and WGBI-JIT.

Figure 16. Comparison of Calculation Assumptions for WGBI-JIT and WGBI

	WGBI-JIT	WGBI
Exchange Rate	Bank of Tokyo-Mitsubishi UFJ telegraphic transfer spot middle rate (TTM) as quoted at 10:00 a.m. Tokyo time. ^a	WM/Reuters — Median rate based on snapshots taken at regular intervals centered on fixing time of 4:00 p.m. London time.
Pricing	Japan: Same day market close. Other markets: previous trading day's local market close.	All markets: Same day local market close.
Settlement Date	Monthly: Last calendar day. Daily: Same day except for last business day of the month, when settlement is last calendar day.	Monthly: Last calendar day. Daily: Same day except for last business day of the month, when settlement is last calendar day.
Base date	December 31, 1996	December 31, 1984

^a WM/Reuters quotes are used for currencies during periods in which a Bank of Tokyo-Mitsubishi UFJ quotes are not available. Historically, WM/Reuters rates were used for Greek drachma, April–December 2000; Polish zloty, prior to December 2003; Malaysian Ringgit and Taiwanese Dollar, prior to January 2007. Source: Citigroup Index LLC.

Calculation Methodology

This section details the market value and return calculations for non-yen sectors of the WGBI-JIT. Japanese yen sectors are calculated using current WGBI methodology. The following notations are used in the formulas. WGBI and WJIT refer to the non-yen component of the index.

Notation

<i>t</i> :	Today
<i>m</i> :	Current Month
<i>e</i> :	Last business day of Previous Month
WGBI_MODDUR:	WGBI Modified Duration
WGBI_RORP:	WGBI Daily Principal Return
WGBI_MTDROP:	WGBI Month-to-Date Principal Return
WGBI_MTDROI:	WGBI Month-to-Date Income Return
WJIT_RORP:	WGBI-JIT Daily Principal Return
WJIT_MTDROP:	WGBI-JIT Month-to-Date Principal Return
WJIT_MTDROI:	WGBI-JIT Month-to-Date Income Return
WJIT_MTDROT:	WGBI-JIT Month-to-Date Total Return

Market Value Computation

For the WGBI, the current month's index profile market value is calculated using the prices of the last business day of the previous month for all its constituents. For the WGBI-JIT, the market value is adjusted by the principal returns and the modified duration.

$$WJIT_MKV(m) = \frac{WGBI_MKV(m)}{\left\{ 1 + \left[\frac{WGBI_RORP(e)}{100} \times \frac{WGBI_MODDUR(m)}{WGBI_MODDUR(e)} \right] \right\}}$$

Return Computation

The returns are computed by modifying the previous day's principal return as well as the current day's income return.

Month-to-Date Returns in Local Currency Terms

Step 1: Calculate the First Business Day Principal Return

The first business day principal return is calculated based on the last business day principal return of the previous month. The last business day principal return is adjusted by a duration ratio to account for the change in portfolio.^{3,4}

$$WJIT_RORP(1) = WGBI_RORP(e) \times \left(\frac{WGBI_MODDUR(m)}{WGBI_MODDUR(e)} \right)$$

Step 2: Calculate the Month-to-Date Principal Return

The month-to-date principal return is calculated by compounding the previous day's WGBI_MTDROP and the first business day's WJIT_RORP. This is equivalent to shifting the prices of all securities by one day.

$$WJIT_MTDRORP(t) =$$

$$WJIT_RORP(1) + WGBI_MTDRORP(t-1) \times \left\{ 1 + \left(\frac{WJIT_RORP(1)}{100} \right) \right\}$$

Step 3: Calculate the Month-to-Date Income Return

The month-to-date income return is calculated based on the current month's market value at the beginning of the month. It is adjusted by the first business day principal return.

$$WJIT_MTDRORI(t) = WGBI_MTDRORI(t) \times \left\{ 1 + \left(\frac{WJIT_RORP(1)}{100} \right) \right\}$$

Step 4: Calculate the Month-to-Date Total Return

The total return is the sum of the month-to-date WGBI-JIT principal and income returns.

$$WJIT_MTDRORT(t) = WJIT_MTDRORP(t) + WJIT_MTDRORI(t)$$

Month-to-Date Total Return in JPY Terms

The WGBI-JIT uses the same standard calculation to convert the local currency returns to base currency returns. The exchange rates used are the telegraphic transfer middle (TTM) rates provided by Bank of Tokyo–Mitsubishi UFJ. If the TTM rates are not available, the WM/Reuters rates are used.

$$WJIT_MTDRORT(t)_{JPY} = \left\{ \left[1 + \left(\frac{WJIT_MTDRORT(t)_{LCL}}{100} \right) \right] \times \left[1 + \left(\frac{CRCY_RTN(t)_{TTM}}{100} \right) \right] - 1 \right\} * 100$$

³ Prior to January 1999, we do not have WGBI_MODDUR(e), therefore the default ratio is set to 1.

⁴ If WGBI_RORP(e) is not available, WJIT_RORP(1) is set to 0.0. For example, the *initial* principal returns for PL_TSY and MY_TSY is set to 0.0 because these sectors start after the WGBI-JIT inception date of December 31 1996.

Daily Total Return in Local Currency Terms

Daily total return is calculated using today's and the previous day's month-to-date returns.

$$WJIT_RORT(t) = \left\{ \frac{1 + \frac{WJIT_MTDRORT(t)}{100}}{1 + \frac{WJITMRTDRORT(t-1)}{100}} - 1 \right\} * 100$$

Estimate Daily Return of the Non-Yen WGBI-JIT — Calculation Methodology

The Non-Yen WGBI-JIT estimate daily return is calculated based on the previous day's WGBI Month-to-Date Total Return and today's TTM exchange rates, provided by the Bank of Tokyo-Mitsubishi UFJ at 10a.m. JST.

For the first business day estimate daily return calculation, the previous day's return is simply the WGBI principal return of the last business day of the previous month. For subsequent days, the previous day's return is the WGBI principal return of the last business day of the previous month plus the previous day's WGBI Month-to-Date Total Return.

Step 1: Calculate the Currency Return Using 10a.m. JST TTM Rates

$$\text{Currency_Return}_{\text{Today, LCL:Base}} = \left(\frac{\text{TTM}_{\text{Today}} - \text{TTM}_{\text{BOM}}}{\text{TTM}_{\text{BOM}}} \right) * 100$$

where

TTM_{BOM} = TTM rate as of the Beginning of Month

TTM_{Today} = TTM rate as of 10a.m JST today

Step 2: Estimate Month-to-Date Total Return in JPY Terms

For the first business day:

EST_MTD_RORT_{Today, JPY, WJIT} =

$$\left(\left(\left(1 + \frac{\text{RORP}_{\text{EOM, LCL, WGBI}}}{100} \right) * \left(1 + \frac{\text{CRCY_RTN}_{\text{Today, LCL:Base}}}{100} \right) \right) - 1 \right) * 100$$

From second business day onward:

EST_MTD_RORT_{Today, JPY, WJIT} =

$$\left(\left(\left(1 + \frac{(\text{RORP}_{\text{EOM, LCL, WGBI}} + \text{MTD_RORT}_{\text{PrevDay, LCL, WGBI}})}{100} \right) * \left(1 + \frac{\text{CRCY_RTN}_{\text{Today, LCL:Base}}}{100} \right) \right) - 1 \right) * 100$$

where

RORP_{EOM, LCL, WGBI} = WGBI Previous Month's last day Principal Return in local currency terms

MTD_RORT_{PrevDay, LCL, WGBI} = WGBI Previous Day's Month-to-Date Total
Return in local currency terms

CRCY_RTN_{Today, LCL:Base} = from step 1

Step 3: Estimate Daily Return in JPY Terms

EST_DAILY_RORT_{Today, JPY, WJIT} =

$$\left(\frac{\left(1 + \frac{\text{EST_MTD_RORT}_{\text{Today, JPY, WJIT}}}{100} \right)}{\left(1 + \frac{\text{MTD_RORT}_{\text{PrevDay, JPY, WJIT}}}{100} \right)} - 1 \right) * 100$$

where

EST_MTD_RORT_{Today, JPY, WJIT} = from step 2

MTD_RORT_{PrevDay, JPY, WJIT} = WGBI-JIT Previous Day's Month-to-Date Total
Return in JPY terms

Step 4: Estimate Month-to-Date Return for the Non-Yen WGBI-JIT in JPY Terms

EST_MTD_RORT_{Today, JPY, WJIT} =

$$\frac{\left(\sum_{i=1}^N \text{EST_MTD_RORT}(i)_{\text{Today, JPY, WJIT}} * \text{MKV}(i)_{\text{BOM}} \right)}{\sum_{i=1}^N \text{MKV}(i)_{\text{BOM}}}$$

where

i = each country in the Non-Yen WGBI-JIT

MKV(i)_{BOM} = Beginning-of-Month Market Value of each country

World Inflation-Linked Securities Index (WorldILSI)

The World Inflation-Linked Securities Index (WorldILSI) includes France, Germany, Italy, Japan, Sweden, the United Kingdom, and the United States. It measures the returns of the inflation-linked bonds with fixed-rate coupon payments that are linked to an inflation index. The price of each issue in the WorldILSI is adjusted by using an index ratio. The index ratio is determined by dividing the current inflation index level⁵ by the inflation index level at the time of issue of the security. The inflation index is published on a monthly basis, and the intra-month index ratio is calculated using linear interpolation.

Figure 17 details the design criteria and calculation assumptions for the WorldILSI and Figure 18 reviews the chronological summary of events/enhancements.

Figure 17. World Inflation-Linked Securities Index (WorldILSI) — Design Criteria and Calculation Assumptions

Stated Coupon	Fixed Rate
Minimum Maturity	One year
Minimum Issue Size	US: US\$5 billion Japan: ¥250 billion (excludes Bank of Japan and Ministry of Finance holdings) EMU Markets: €2.5 billion Sweden: SEK10 billion UK: £2 billion
Minimum Quality	BBB-/Baa3 by either S&P or Moody's
Weighting	Market capitalization
Rebalancing	Once a month at the end of the month
Calculation Frequency	Daily
Settlement Date	Monthly: Last calendar day Daily: Same day except last business day of month, when settlement is last calendar day
Reinvestment of Cash Flow	At daily average of one-month Eurodeposit rate, calculated from actual scheduled payment date of cash flow through end of reporting period
Pricing	Individual Citigroup trader pricing generally taken as of the local market close, see Pricing in the General Methodology section (Page 11).
Base Date	April 30, 2007

Source: Citigroup Index LLC.

Figure 18. Chronological Summary of World Inflation-Linked Securities Index (WorldILSI) Events/Enhancements

Date Introduced	Events/Enhancements
April 2010	The outstanding amount of the Japanese Inflation-Linked Securities Index excludes the Ministry of Finance buybacks and Bank of Japan holdings.
July 2010	Exclusion of Greece from the World Inflation-Linked Securities Index due to credit downgrade.

Source: Citigroup Index LLC.

⁵ The current inflation index level is lagged; the “look-back” period is specified at the time of issuance for each individual bond.

Figure 19 shows the type of inflation-linked securities in the WorldILSI and the corresponding inflation index.

Figure 19. Types of Inflation-Linked Securities and Inflation Indexes

Country	Inflation-Linked Securities	Inflation Index
United States	Treasury Inflation-Protected Securities (TIPS)	Consumer Price Index (CPI)
Japan	Inflation-Indexed Bonds (JGBi)	CPI
France	OATi, OAT€ _i , BTAN€ _i	OATi: CPI ex-tobacco; OAT€ _i and BTAN€ _i : EU Harmonized Index of Consumer Prices (HICP) ex-tobacco
Germany	BUND€ _i , BOBL€ _i	EU HICP ex-tobacco
Greece	GGB€ _i	EU HICP ex-tobacco
Italy	BTP€ _i	EU HICP ex-tobacco
Sweden	Inflation-linked bond	CPI
United Kingdom	Index-Linked GILT (ILG)	Retail Price Index (RPI)

Source: Citigroup Index, LLC.

Asian Government Bond Index (AGBI)

The Asian Government Bond Index (AGBI)⁶ includes the six Asian government bond markets of Indonesia, Korea, Malaysia, Philippines, Singapore, and Thailand. It provides investors with a benchmark for the performance measurement of the local Asian markets, and because the rules and methodologies are consistent with the World Government Bond Index (WGBI), investors can compare its performance to other sovereign debt markets.

Figure 20 details the design criteria and calculation assumptions for the AGBI and Figure 21 reviews the chronological summary of events/enhancements.

Figure 20. Asian Government Bond Index (AGBI) — Design Criteria and Calculation Assumptions

Geography	Asia (excluding Japan)
Accessibility	Limited to bonds and markets that are fully accessible to foreign investors
Stated Coupon	Fixed Rate
Minimum Maturity	One year
Minimum Market Size	US\$5 billion
Minimum Issue Size	
AGBI:	Indonesia: IDR7.5 trillion (excludes recapitalization and retail bonds) Korea: W1 trillion (excludes monetary stabilization bonds, STRIPS, inflation-indexes securities, 10-Year securities issued prior to January 1, 2003) Malaysia: RM4 billion (excludes Government Investment Issue) Philippines: PHP45 billion (excludes retail and zero-coupon bonds) Singapore: S\$1.5 billion (excludes callable/putable) Thailand: THB25 billion (excludes saving bonds)
AGBI-Extended:	China: CNY20 billion Sri Lanka: LKR50 billion Taiwan: NT\$40 billion
Minimum Quality	C by either S&P or Moody's, see Defaults in the General Methodology section (Page 12).
Weighting	Market capitalization
Rebalancing	Once a month at the end of the month
Calculation Frequency	Daily
Settlement Date	Monthly: Last calendar day Daily: Same day except last business day of month, when settlement is last calendar day
Reinvestment of Cash Flow	At daily average of one-month Eurodeposit rate, calculated from actual scheduled payment date of cash flow through end of reporting period
Pricing	Individual Citi trader pricing generally taken as of the local market close, see Pricing in the General Methodology section (Page 11).
Base Date	December 31, 2007

Source: Citigroup Index LLC.

Figure 21. Chronological Summary of Asian Government Bond Index (AGBI) Events/Enhancements

Date Introduced	Events/Enhancements
March 2010	Exclusion of the 10-year Korean Treasury Bonds issued prior to January 2003.
January 2012	Entry Criteria: The outstanding amount of a market's eligible issues must total at least US\$5 billion and each market must be fully accessible to foreign investors. Exit Criteria: The market will be removed if the outstanding amount of a market's eligible issues falls below US\$2.5 billion, half of the entry-level market size criteria, for three consecutive months or the market is no longer fully accessible to foreign investors.

Source: Citigroup Index LLC.

⁶ The new entry/exit criteria takes effect as of January 1, 2012 and will be applied starting with the February 2012 index profile.

Related Benchmarks**Citigroup Asian Government Extended Bond Index (AGBI-Extended)**

The Asian Government Extended Bond Index (AGBI-Extended) includes the AGBI markets – Indonesia, Korea, Malaysia, Philippines, Singapore and Thailand – and China, Taiwan, and Sri Lanka. (Base date: February 28, 2009.)

Citigroup Asia Pacific Government Bond Index (APGBI)

The Asia Pacific Government Bond Index (APGBI) includes the AGBI markets – Indonesia, Korea, Malaysia, Philippines, Singapore and Thailand – and Australia and New Zealand. (Base date: December 31, 2007.)

CEEMEA Government Bond Index

The CEEMEA Government Bond Index tracks the performance of the sovereign bond markets in Central and Eastern Europe, Middle East and Africa. The index includes the Czech Republic, Hungary, Poland, Turkey, Israel⁷ and South Africa.

Figure 22 details the design criteria and calculation assumptions for the CEEMEA Government Bond Index.

Figure 22. CEEMEA Government Bond Index — Design Criteria and Calculation Assumptions

Geography	Central and Eastern Europe, Middle East and Africa
Stated Coupon	Fixed Rate
Minimum Maturity	One year (see note below for South Africa)
Minimum Issue Size	Czech Republic: CZK15 billion (excludes zero-coupon bonds) Hungary: HUF200 billion Poland: PLN5 billion Turkey: TRY2 billion Israel: ILS5 billion South Africa: ZAR10 billion (excludes zero-coupon bonds)
Minimum Quality	C by either S&P or Moody's, see Defaults in the General Methodology section (Page 12).
Weighting	Market capitalization
Rebalancing	Once a month at the end of the month
Calculation Frequency	Daily
Settlement Date	Monthly: Last calendar day Daily: Same day except last business day of month, when settlement is last calendar day
Reinvestment of Cash Flow	At daily average of one-month Eurodeposit rate, calculated from actual scheduled payment date of cash flow through end of reporting period
Pricing	Individual Citi trader pricing is generally taken as of the local market close, see Pricing in the General Methodology section (Page 11).
Base Date	March 31, 2011

Note: Due to the structure of the three-legged instruments, the minimum maturity for R157 (13.5%, 09/15/2015) and R186 (10.5%, 12/21/2015) is one year based on the first maturity date and the 3 legs from the split of R157 and R186 will not be eligible for index inclusion. By convention, the stated maturity date of a three-legged bond is the middle maturity date. Source: Citigroup Index LLC.

⁷ Trading calendar for Israel is Sunday-Thursday. Since index performance is calculated based on a Monday-Friday calendar, Friday pricing will be rolled from Thursday's closes. If Israel's last trading day of the month is a Sunday, the end-of-month pricing will be rolled from Thursday's closes.

LATAM Government Bond Index

The LATAM Government Bond Index tracks the performance of the sovereign bond markets in Latin America. The index includes Brazil, Chile, Colombia, Mexico and Peru.

Figure 23 details the design criteria and calculation assumptions for the LATAM Government Bond Index.

Figure 23. LATAM Government Bond Index — Design Criteria and Calculation Assumptions

Geography	Latin America
Stated Coupon	Fixed Rate
Minimum Maturity	One year
Minimum Issue Size	Brazil: BRL5 billion (excludes LTN) Chile: CLP100 billion Colombia: COP2 trillion Mexico: MXN10 billion Peru: PEN2 billion
Minimum Quality	C by either S&P or Moody's, see Defaults in the General Methodology section (Page 12).
Weighting	Market capitalization
Rebalancing	Once a month at the end of the month
Calculation Frequency	Daily
Settlement Date	Monthly: Last calendar day Daily: Same day except last business day of month, when settlement is last calendar day
Reinvestment of Cash Flow	At daily average of one-month Eurodeposit rate, calculated from actual scheduled payment date of cash flow through end of reporting period
Pricing	Individual Citi trader pricing except for Chile (provided by Bank of Chile) and Mexico (provided by Proveedor Integral de Precios S.A. de C.V). All pricing generally taken as of the local market close, see Pricing in the General Methodology section (Page 11).
Base Date	March 31, 2011

Source: Citigroup Index LLC.

US Broad Investment-Grade (USBIG) Bond Index

The US Broad Investment Grade (USBIG) Bond Index is designed to track the performance of US dollar-denominated bonds issued in the US investment-grade bond market. The USBIG Index includes institutionally traded US Treasury, government-sponsored (US agency and supranational), mortgage, asset-backed, and investment-grade securities. It provides a reliable and fair benchmark for an investment-grade portfolio manager.

Figure 24 details the design criteria and calculation assumptions and Figure 25 reviews the chronological summary of events/enhancements.

Figure 24. US Broad Investment-Grade (USBIG) Bond Index — Design Criteria and Calculation Assumptions

Stated Coupon	Fixed Rate
Minimum Maturity	One year
Minimum Issue Size	US Treasuries: US\$5 billion public amount outstanding US agencies and supranationals: US\$1 billion Corporate and asset-backed: US\$250 million Non-US Sovereign & Provincial: US\$500 million Mortgage: <i>Entry</i> : US\$1 billion minimum amount outstanding per origination year generic when the coupon has a minimum amount outstanding of US\$5 billion. <i>Exit</i> : An origination year generic will exit when its amount outstanding falls below US\$1 billion. If the amount outstanding for the coupon falls below US\$2.5 billion, all corresponding origination year generics will be removed from the index.
Minimum Denomination	Par Value: US\$1,000
Minimum Quality	BBB-/Baa3 by either S&P or Moody's
Weighting	Market capitalization
Rebalancing	Once a month at the end of the month
Composition	Treasuries (excluding inflation-indexed securities and STRIPS); agencies (excluding callable zeros and bonds callable less than one year from issue date); mortgage pass-throughs; asset-backed; supranationals; credit (excluding bonds callable less than one year from issue date); Yankees, globals, and corporate securities issued under Rule 144A with registration rights
Redemption Features	Bullet, sinking fund, puttable, extendable, or callable
Interest	Fully taxable (federal)
Yield Curve	Citigroup Treasury Model (off-the-run) Curve
Reinvestment of Cash Flow	Continuous at the daily average of the one-month Eurodeposit rate for the calculation period
Calculation Frequency	Daily
Pricing	See Pricing in the General Methodology section (Page 11).
Price Adjustments	Mortgages: Carry-adjusted to reflect the difference between the index settlement dates and standard PSA settlement dates
Volatility	Nonmortgages: 10% single volatility Mortgages: Market-implied volatility (two-factor skew model)
Settlement Date	Monthly: Last calendar day Daily: Same day except last business day of the month when settlement is last calendar day.
Base Date	December 31, 1979

Source: Citigroup Index LLC.

Figure 25. Chronological Summary of US Broad Investment-Grade (USBIG) Bond Index Events/Enhancements

Date Introduced	Events/Enhancements
January 1983	Inclusion of 30-year FNMA's
January 1984	Effective (option-adjusted) values calculated at 16% volatility
January 1986	Inclusion of 15-year mortgages
September 1987	Expanded 30-year mortgage seasoning to include new and seasoned
January 1988	Investment-grade ratings by S&P or Moody's Increase minimum outstanding from US\$25 million to US\$50 million Inclusion of Yankees other than Canadian and World Bank issues
January 1989	Returns reflect transaction costs on new issues
August 1989	Volatility assumption changed from 16% to 13%
January 1990	Government-sponsored sector introduced, including agencies and supranationals
February 1990	Inclusion of credit cards
July 1990	Expanded mortgage seasoning to include moderately seasoned 30-year pass-throughs
July 1991	Inclusion of FHLMC Gold pass-throughs
July 1992	Expanded mortgage seasoning to include moderately seasoned 15-year pass-throughs Minimum entry/exit size for mortgage securities increased to US\$200 million
July 1993	Inclusion of FHLMC and FNMA balloons
January 1994	Expanded corporate industry sectors
January 1995	Minimum entry/exit increased as follows: <ul style="list-style-type: none"> ■ US Treasuries: US\$1/US\$1 billion public amount outstanding ■ Corporates and Government-Sponsored: US\$100/US\$75 million ■ Mortgages: US\$1/US\$1 billion Settlement date became same day for daily calculations and last calendar day for monthly calc. Issuance cutoff for profile changed to the twenty-fifth day of the calendar month Price adjustment for mortgages implemented Multifamily project loans eliminated from the Mortgage Index
September 1995	Use the Citigroup Treasury Model (off-the-run) Curve to compute option-adjusted values Incorporate a new mortgage prepayment model and compute option-adjusted values using a two-factor model with fixed historical volatilities Reduce volatility assumptions on nonmortgages from 13% to 10%
July 1996	Switched to origination year-based pricing for mortgages Reclassified Mortgage Index to include a "superseasoned" category Minimum size per seasoning category reduced from US\$500 million to US\$250 million
December 1996	Added minimum denomination and fully taxable (federal) interest as inclusion criteria to include certain preferred security structures (for example, Trust Pass-Through Securities, or TRUPS)
April 1997	All security pricing switched to 3:00 p.m. EST (US Treasury futures close) from 5:00 p.m.
November 1997	Origination-year generics replace seasoning categories for Mortgage Index Minimum size per origination-year generic set at US\$100 million
January 1998	Exit amount for Corporate and Government-Sponsored increased from US\$75 million to US\$100 million Returns no longer reflect transaction costs for new issues
July 1998	Incorporate a new mortgage prepayment model and compute option-adjusted values using a two-factor model with market-implied volatilities
July 1999	Minimum entry size for a mortgage coupon increased to US\$5 billion and origination year minimum increased to US\$250 million GNMA-IIs added to the Mortgage Index Callable zeroes removed from the Agency Index
April 2001	Minimum entry size increased as follows: <ul style="list-style-type: none"> ■ Agency, supranational, corporate, and asset-backed bonds from US\$100 million to US\$200 million ■ Mortgage Origination-year generics from US\$250 million to US\$500 million Bonds with call dates less than one year from issue date no longer included Rule 144A securities with registration rights added to the Credit sector Sector classifications changed to Treasury/Government-Sponsored, Collateralized, and Credit
July 2001	Issuance cut-off for profile changed to four (4) global business days before month-end
November 2001	Reclassified the stranded asset sector from utility sector to collateralized asset-backed sector
May 2003	Incorporated a new mortgage prepayment model and compute option-adjusted values using a two-factor model with market-implied volatilities

Figure 25. Chronological Summary of US Broad Investment-Grade (USBIG) Bond Index Events/Enhancements (Continued)

Date Introduced	Events/Enhancements
July 2004	Minimum entry size increased as follows: <ul style="list-style-type: none"> ■ Agency and supranational from US\$200 million to US\$1 billion ■ Credit and asset-backed bonds from US\$200 to US\$250 million ■ Mortgage: Entry: US\$1 billion minimum amount outstanding per origination year generic when the coupon has a minimum amount outstanding of US\$5 billion. Mortgage: <i>Exit</i> : An origination year generic will exit when its amount outstanding falls below US\$1 billion. If the amount outstanding for the coupon falls below US\$2.5 billion, all corresponding origination year generics will be removed from the index. US\$500 million.
April 2007	Minimum entry size increased as follows: <ul style="list-style-type: none"> ■ US Treasuries from US\$1 billion to US\$5 billion ■ Non-US Sovereign & Provincial from US\$250 million to US\$500 million
April 2010	For Mortgage securities, the calculation for carry adjustment prices will use short term prepayment estimate provided by Citigroup Mortgage Research instead of the former approach that used the most recent one-month speeds. If the short term estimate is not available for a particular vintage, the most recently published one-month speed will be used .

Source: Citigroup Index LLC.

USBIG Mortgage Index Profile

The Mortgage Index comprises 30- and 15-year GNMA, FNMA, and FHLMC securities, and FNMA and FHLMC balloon mortgages and is reconstituted each month to reflect new issuance and principal paydowns. All mortgage pools are aggregated by coupon within agency and product type. In addition, each coupon sector may be further divided into distinct origination-year generics provided that each of these origination-year generics meets a minimum amount outstanding criterion.

Each month, Citi receives a set of computerized “factor” tapes that individually list relevant information for all outstanding agency-guaranteed mortgage pools. This information is supplied by GNMA, FNMA, and FHLMC for all of their respective pools and represents the most current information available in the market place. Each mortgage pool has a factor that represents the fraction of the original pool still outstanding. The outstanding amounts are aggregated, and their difference is used to calculate the paydown for a coupon sector. To calculate monthly paydowns, the latest factor for the pool is subtracted from the appropriate factor from the prior tape.

USBIG Mortgage Index Pricing

Each day, mortgage TBAs receive a trader price quoted for standard PSA settlement dates, which occur on a variety of dates throughout the month, depending on the type of security. Because the index uses cash settlement, it is necessary to adjust the prices for carry. With a positively sloped yield curve, the actual market price for end-of-month settlement would be higher than the PSA settlement price to account for the difference between the current yield on the mortgage security and the money market rate over the time between settlement dates (the cost of carry). The price adjustment also accounts for the effect of principal paydowns on the mortgage security’s current yield. We use the short term prepayment estimate provided by Citigroup Mortgage Research and the one-month LIBOR rate when calculating the carry-adjusted price.

Since July 1996, the pricing of mortgage securities has reflected the origination year of the loans. We use the WALA (weighted average loan age) provided by GNMA, FHLMC, and FNMA to calculate the origination year. For any particular coupon, Citi traders provide the TBA price plus additional pricing points for specific origination years. Prices for origination

⁸ See MBS: Change in Calculation Methodology for Carry Adjustment Prices, April 8, 2010 on www.yieldbook.com.

years with relatively lower amounts outstanding are interpolated. This pricing methodology ensures that the index return more fairly represents the results of a realistic baseline strategy that a passive investor could have followed.

USBIG Mortgage Index Return Methodology

The principal payment component of the total rate of return computation for the Mortgage Index includes both scheduled principal amortization and unscheduled principal prepayment. The Mortgage Index accounts for all mortgage payments (principal plus interest) at the end of each month to reflect the monthly cash flow characteristics inherent in the instruments.

For example, during the January measurement period, most mortgage securities generate cash flow (principal and interest). The index assumes that cash flow is reinvested at the monthly average of the daily one-month Eurodeposit rate. For the January returns, information on the January paydown, applicable to a December 31–January 31 holding period is available by the third week of January. The return computation for mortgage securities is given in Figure 26.

Figure 26. Return Calculation for Mortgage Securities

$$\text{Total Return (\%)} = \frac{[(C+X) \times (1+(Rm/200)N/180) + (EP+EA)(1-(X/100))]/(BP+BA)-1}{1} \times 100$$

BP Beginning price. EP Ending price. BA Beginning accrued interest. EA Ending accrued interest. X Principal payment as percent of beginning balance. C Coupon rate/12. Rm Reinvestment rate on intra-month payment (average of daily one-month Eurodeposit rate). N Number of days between date of receipt of coupon and principal payment and calendar month-end.

Source: Citigroup Index LLC.

USBIG Credit Index — Corporate Industry Sector Classification

Figure 27. US Broad Investment-Grade (USBIG) Credit Index — Corporate Industry Sector Classification

Industrial — Manufacturing	Industrial — Service	Industrial — Other
Aerospace/Defense	Cable/Media	Industrial – Other
Auto Manufacturers	Gaming/Lodging/Leisure	
Building Products	Healthcare Supply	Utility
Chemicals	Pharmaceuticals	Electric
Conglomerate/Diversified Mfg.	Publishing	Power
Electronics	Restaurants	Telecommunications
Information/Data Technology	Retail – Food/Drugs	Gas – Local Distribution
Machinery	Retail Stores – Other	Utility – Other
Metals/Mining	Service – Other	
Paper/Forest Products		Finance
Textiles/Apparel/Shoes	Industrial — Transportation	Banking
Vehicle Parts	Airlines	Independent Finance
Manufacturing – Other	Railroads	Life Insurance
	Transportation – Other	Mortgage Banking
Industrial — Energy		Property & Casualty
Gas – Pipelines	Industrial — Consumer	REITs
Oil & Gas	Beverage/Bottling	Securities
Oilfield Machinery & Services	Consumer Products	Finance – Other
	Food Processors	
	Tobacco	

Source: Citigroup Index LLC.

Related Benchmarks

Citigroup USBIG Credit Index

This index includes US and non-US corporate securities, US Government Guaranteed securities, and non-US sovereign and provincial securities.

Citigroup USBIG High-Grade Credit Index

This index includes those issues from the Credit Index that have at least ten years to maturity (long-term) and a minimum credit rating of AA-/Aa3.

Citigroup USBIG Corporate Index

This index includes US and non-US corporate securities (excludes US Government Guaranteed and non-US sovereign and provincial securities).

Citigroup USBIG Collateralized Index

This index includes mortgage pass-throughs and asset-backed securities.

Citigroup USBIG Mortgage Index

This index measures the mortgage component of the USBIG Index, comprising 30- and 15-year GNMA, FNMA, and FHLMC pass-throughs and FNMA and FHLMC balloon mortgages.

Citigroup Mortgage Float-Adjusted Index

This index measures the mortgage component of the USBIG Index excluding all pass-throughs currently backed by CMOs.

Citigroup Core + 5 Index

This index is the USBIG Index excluding both Treasury and government-sponsored securities with less than five years to maturity.

Citigroup Core + 3 Index

This index is the USBIG Index excluding both Treasury and government-sponsored securities with less than three years to maturity.

Citigroup US Treasury Benchmark (On-the-Run) Indexes

These indexes measure total returns for the current two-, three-, five-, seven-, ten-, and 30 year on-the-run Treasuries that settle by the end of the calendar month. As a result of the reduced auction schedule for one-year Treasury bills, as of May 2000, we select an existing coupon bond with approximately one year to maturity to use as the one-year benchmark. In most cases, this is an old two-year security.

Citigroup US Treasury Benchmark Yield Curve Average Indexes

These indexes measure total returns for the current two-, three-, five-, seven-, and ten-year on-the-run Treasuries that settle by the end of the calendar month and the two shorter and two longer issues in the Treasury Index nearest each respective benchmark maturity. The 30-year US Treasury Benchmark Yield Curve Average Index measures total returns for the 30-year on-the-run Treasury that has been in existence for the entire month and the four shorter issues in the Treasury Index. Callable bonds are excluded from these indexes.

Citigroup US Treasury Bill Indexes

These indexes measure return equivalents of yield averages that are not marked to market. For example, the US Six-Month Treasury-Bill Index is an average of the last six six-month Treasury bill month-end rates. Similarly, the US One-Month and Three-Month Treasury Bill Indexes consist of the last one one-month and three three-month Treasury

bill month-end rates, respectively. Returns for these indexes are calculated on a monthly basis only.

Sample Return Computation of a Three-Month Treasury Bill

Step 1: Obtain discount yields for the three previous month-end dates.

Step 2: Convert the discount rates to bond-equivalent yields.

Step 3: Compute the simple average of the bond-equivalent yields.

Step 4. Decomound to a monthly frequency using the actual number of days in the month and a 365-day year.

Figure 28. Sample Return Computation: US Treasury Bill Assumed Conventions and Data

Conventions	Data
Month for Which Returns Are Being Computed	July 2007
Quote Convention	Discount yield converted to a bond equivalent yield
Day-Count Basis	ACT/365
Bond Equivalent Yield	April 30 4.8596%
	May 31 4.7194%
	June 29 4.8024%
Simple Average of Bond Equivalent Yields	Average 4.7938%

Source: Citigroup Index LLC.

Decomound to a monthly frequency using the actual number of days in the return month and a 365-day year.

$$R = ((1 + (4.7938 / 200))^{2*(31/365)} - 1) * 100 = 0.4032$$

Citigroup Certificate-of-Deposit Indexes

These indexes measure the monthly return equivalents of yield averages that are not marked to market. The CD rate is a rotating sample (collected by the New York Federal Reserve Bank) of five banks and dealers surveyed daily about secondary-market dealer offer rates for jumbo certificates of deposit. Returns for these indexes are calculated on a monthly basis only.

Example of Calculation Methodology for Six-Month Certificate-of-Deposit Index

Step 1: Obtain CD-equivalent yields for six previous month-end dates. For example, the January return requires the rates at the end of December, November, October, September, August, and July.

Step 2: Convert the CD rates to bond-equivalent yields.

Step 3: Compute the simple average of the bond-equivalent yields.

Step 4: Decomound to a monthly frequency using the actual number of days in the month and a 365-day year.

Citigroup US Benchmark STRIPS Indexes

These indexes measure the total returns of the current one-, two-, three-, five-, seven-, ten-, 15-, 20-, 25- and 30-year STRIPS. These benchmarks change every three months based on their February, May, August, and November cycles. For example, benchmarks maturing in the February cycle will be used for January, February, and March returns. Owing to liquidity constraints, long-term benchmark STRIPS may not change every three months.

US Large Pension Fund (USLPF) Baseline Bond Index

The US Large Pension Fund (USLPF) Baseline Bond Index provides an appropriate benchmark for pension funds seeking to establish long-term core portfolios that more closely match the longer duration of their nominal dollar liabilities. These portfolios might normally be benchmarked to the USBIG Index, but the USLPF Index improves on that structure by using fixed sector weights and a minimum maturity of seven years for nonmortgage issues. These design characteristics satisfy the longer duration goal of pension fund portfolios, while emphasizing the traditionally higher yielding longer-term securities.

The USLPF Index employs the calculation assumptions previously outlined for the USBIG Index in Figure 24. Figure 29 details the design criteria for this index.

Figure 29. US Large Pension Fund (USLPF) Baseline Bond Index — Design Criteria

Stated Coupon	Fixed Rate
Minimum Maturity	Nonmortgage: Seven years Mortgage: One year
Minimum Issue Size	US Treasuries: US\$5 billion public amount outstanding US agencies and supranationals: US\$1 billion Corporate and asset-backed: US\$250 million Non-US Sovereign & Provincial: US\$500 million Mortgage: <i>Entry</i> : US\$1 billion minimum amount outstanding per origination year generic when the coupon has a minimum amount outstanding of US\$5 billion. <i>Exit</i> : An origination year generic will exit when its amount outstanding falls below US\$1 billion. If the amount outstanding for the coupon falls below US\$2.5 billion, all corresponding origination year generics will be removed from the index.
Minimum Denomination	Par Value: US\$1,000
Minimum Quality	BBB-/Baa3 by either S&P or Moody's
Weighting	Issues: Market capitalization Sectors: Fixed weight as follows: <ul style="list-style-type: none"> ▪ Treasury/Government-Sponsored: 40% ▪ Collateralized: 30% ▪ Credit: 30%
Rebalancing	Once a month at the end of the month
Composition	Treasuries (excluding inflation-indexed securities); agencies (excluding callable zeros and bonds callable less than one year from issue date); mortgage pass-throughs; asset-backed; supranationals; credit (excluding bonds callable less than one year from issue date); Yankees, globals, and securities issued under Rule 144A with registration rights
Redemption Features	Bullet, sinking fund, putable, extendable, or callable
Interest	Fully taxable (federal)
Base Date	December 31, 1979

Source: Citigroup Index LLC.

US Treasury STRIPS Index

The US Treasury STRIPS Index represents a comprehensive selection of long-duration market sectors and thereby improves on the customization possibilities otherwise available. The STRIPS Index offers a wider range of duration choices and can also be combined with a range of USBIG Index sectors if a core spread product exposure is desired. It has been increasingly difficult to construct long-duration benchmarks using a core that combines the Credit and Collateralized Indexes, since the effective duration of the Mortgage Index is significantly shorter than that of the Credit Index. The greater choice of long-duration sectors allows investors to opt for any core holding and combines it with the appropriate STRIPS sector to reach their target durations.

Figure 30 summarizes the design criteria and calculation assumptions for this index.

Figure 30. US Treasury STRIPS Index — Design Criteria and Calculation Assumptions	
Minimum Maturity	None, but derived from bonds with a remaining maturity of at least one year
Minimum Issue Size	None, but derived from bonds with at least US\$5 billion amount outstanding
Weighting	Market capitalization
Rebalancing	Once a month at the end of the month
Cycles	We include only those STRIPS derived from bonds within the Feb–Aug 15 or May–Nov 15 cycles
Reinvestment of Cash Flow	Maturing interest STRIPS are reinvested at the daily average one-month Eurodeposit rate from the date of the cash flow through the end of the calculation period
Calculation Frequency	Daily
Pricing	Individual Citi trader pricing generally taken as of the local market close, see Pricing in the General Methodology section (Page 11).
Settlement Date	Monthly: Last calendar day Daily: Same day except last business day of the month, when settlement is last calendar day
Base Date	December 31, 1991

Source: Citigroup Index LLC.

Bond Inclusion Criteria

We include STRIPS derived only from bonds in our US Treasury Index. We also include the coupon STRIPS with less than one year remaining to maturity that have been derived from this set of Treasury bonds. (The Treasury Index tracks those issues with at least US\$5 billion public amount outstanding and a remaining maturity of at least one year.) In addition, only those STRIPS from Treasury bonds maturing in the February, May, August, and November 15 cycles are included. The bond stripping of eligible monthly Treasury auctions, along with the stripping of Treasury Inflation Protected Securities, has not created a deep enough market to ensure availability to institutional investors; therefore, we have chosen to exclude these STRIPS from the index.

Maturity and Issue Size

We impose neither an amount outstanding cutoff nor a minimum maturity screen on the STRIPS Index. Our goal is to maintain a relatively stable universe that accommodates the broadest measure of available securities. By including coupon STRIPS with less than one year remaining to maturity, the full STRIPS Index cash flows can be replicated closely by using bonds in the Treasury Index.

Index Profile

The index is rebalanced each month. The first week of each month, the Bureau of Public Debt makes available the Treasury market debt outstanding held in stripped form as of the previous month-end. We use these figures along with the current Treasury Index profile to arrive at our amounts outstanding for the following month's STRIPS Index. For example, during the first week of January, the Bureau of Public Debt announced the amounts held in stripped form as of December 31. We applied these amounts to the February Index profile fixing and they are then fixed for the calendar month, and all interim returns are calculated based on its composition.

US Agency Zero 10+ Index

The US Agency Zero 10+ Index was constructed to allow better customization for investors seeking long-duration benchmarks. The Agency Zero 10+ Index provides investors with a higher-yielding benchmark alternative to Treasury STRIPS, while enabling investors to maintain a high-quality benchmark. Combining the Agency Zero 10+ Index with a range of STRIPS Index sectors, we offer investors a wider variety of long-duration benchmark choices.

Figure 31 summarizes the design criteria and calculation assumptions for this index.

Figure 31. US Agency Zero 10+ Index — Design Criteria and Calculation Assumptions

Stated Coupon	Zero
Minimum Maturity	Ten years
Minimum Issue Size	Original-issue zero-coupon bonds and principal pieces of stripped coupon bonds: US\$200 million Interest pieces of stripped bonds and zero-coupon bonds issued as serial zeros: US\$40 million
Weighting	Market capitalization
Rebalancing	Once a month at the end of the month
Composition	Noncallable securities only
Yield Curve	Citigroup Treasury Model (off-the-run) Curve
Calculation Frequency	Daily
Pricing	Individual Citi trader pricing generally taken as of the local market close, see Pricing in the General Methodology section (Page 11).
Settlement Date	Monthly: Last calendar day Daily: Same day except last business day of the month, when settlement is last calendar day
Base Date	July 31, 2000

Source: Citigroup Index LLC.

Bond Inclusion Criteria

The US Agency Zero 10+ Index includes noncallable zero-coupon bonds issued by US agencies. Currently, this includes zero-coupon bonds issued by Fannie Mae and Freddie Mac, as well as interest and principal pieces created from stripping the Fannie Mae Benchmark and Freddie Mac Reference bonds. The zeros created by stripping Financing Corp (FICO) and Resolution Funding Corp (REFCORP) issues are also included. In addition, we include bonds issued as serial zeros, such as those issued through the Agency of International Development — Israel (AID).

Index Profile

The index is rebalanced each month. The information detailing stripping activity on coupon bonds is obtained from the relevant agencies and used to calculate and update the amount outstanding. Because the frequency and timing of available data may vary from agency to agency, we will apply publicly available data at profile fixing to create the subsequent index profile.

Euro Broad Investment-Grade (EuroBIG) Bond Index

The Euro Broad Investment-Grade (EuroBIG) Bond Index is designed to provide a benchmark for euro-based fixed-income portfolios. It covers all sectors of the investment-grade fixed-income market that are accessible to institutional investors and accurately measures their performance and risk characteristics.

Figure 32 summarizes the design criteria and calculation assumptions for this index.

Figure 32. Euro Broad Investment-Grade (EuroBIG) Bond Index — Design Criteria and Calculation Assumptions

Stated Coupon	Fixed Rate
Minimum Maturity	One year
Minimum Issue Size	EMU Sovereigns: €2.5 billion or the equivalent for nonredenominated bonds Other: €500 million or the equivalent for nonredenominated bonds
Minimum Quality	Investment-grade: BBB-/Baa3 by either S&P or Moody's
Weighting	Market capitalization
Rebalancing	Once a month at the end of the month
Composition	Issues denominated in EUR, ECU, or NCU, and Euro medium-term notes
Redemption Features	Bullet, sinking fund, puttable, extendable, or callable
Seasoning	Unseasoned bonds are included
Reinvestment of Cash Flow	At daily average of the one-month Eurodeposit rate, calculated from the actual scheduled payment date of cash flow through the end of the reporting period
Calculation Frequency	Daily
Pricing	See Pricing in the General Methodology section (Page 11).
Settlement Date	Monthly: Last calendar day Daily: Same day except for last business day of month, when settlement is last calendar day
Base Date	December 31, 1998

Source: Citigroup Index LLC.

Sector Classification

The asset classification of the EuroBIG Index reflects the current structure of the market and is in line with the structure of the WorldBIG Index. Figure 33 details the sector classification of the EuroBIG Index.

Figure 33. Euro Broad Investment-Grade (EuroBIG) Index — Sector Classification

Sovereign/Sovereign-Guaranteed	Collateralized	Corporate — Utility
Domestic Sovereign (EGBI)	Jumbo Pfandbrief	Electric
Foreign Sovereign	Other Covered	Gas
Sovereign-Guaranteed	Asset Backed	Telecommunication Other Utility
Government-Sponsored/ Regional Government	Corporate — Industrial	Corporate — Finance
Agency	Consumer	Banks
Supranational	Energy	Independent Finance
Other Sovereign-Sponsored	Manufacturing	Insurance
Regional Government	Service	Other Finance
Regional Government-Guaranteed	Transportation	
Regional Government-Sponsored	Other Industrial	

Source: Citigroup Index LLC.

Related Benchmarks

Citigroup EMU Government Bond Index

The EMU sovereign sector of the EuroBIG Index is the EMU Government Bond Index (EGBI). This index also forms the euro sector of the World Government Bond Index (WGBI). Detailed design and issue selection criteria are provided in the WGBI section of this report.

Citigroup Jumbo Pfandbrief Index

The Jumbo Pfandbrief Index is an integral part of the EuroBIG Index and represents the significant component of the German collateralized bond market. By definition, a Jumbo Pfandbrief is a Pfandbrief with at least €1 billion outstanding, a fixed-rate coupon, and at least five market makers prepared to quote two-way prices during normal trading hours. Owing to their collateralization, these are high-quality securities.

Eurobond Indexes

The Eurobond Indexes provide a comprehensive and relevant measure of performance for Eurodollar, Eurosterling, and Euroyen bonds. All issues are investment-grade and have a remaining average life of at least one year. Sub-indexes are available based on credit, issuer nationality and type, maturity, and asset class.

The Eurodollar Bond Index includes fixed-rate (including zero-coupon) eurodollar, global, Dragon bonds, certain asset-backed, and euro medium-term notes. Rule 144A securities are included only if they have registration rights. Recognizing the implication for certain classes of investors in US-sourced income bonds, we also publish returns on the subset of bonds issued by non-US entities.

The Eurosterling Bond Index includes fixed-rate eurosterling, global, Dragon bonds, and certain asset-backed and euro medium-term notes.

The Euroyen Bond Index includes fixed-rate euroyen, global, Dragon bonds, and certain asset-backed and euro medium-term notes.

Figure 34 details the design criteria and calculation assumptions of these indexes. Figure 35 reviews the chronological summary of events/enhancements.

Figure 34. Eurobond Indexes — Design Criteria and Calculation Assumptions

Stated Coupon	Fixed Rate Zero-coupon bonds are included in the Eurodollar Bond Index only
Minimum Maturity	One year
Minimum Issue Size	Eurodollar: US agency/supranational: US\$1 billion, government/government guaranteed/government sponsored: US\$500 million, corporate/financial/asset-backed: US\$250 million Eurosterling: £200 million Euroyen: ¥50 billion
Denomination Limit	Eurodollar: US\$100,000 Eurosterling: £100,000 Euroyen: ¥10 million
Minimum Quality	Investment-grade: BBB-/Baa3 by either S&P or Moody's
Weighting	Market capitalization
Rebalancing	Once a month at the end of the month
Composition	Eurobonds, Global bonds, Dragon bonds, and euro medium-term notes ^a
Redemption Features	Bullet, sinking fund, puttable, extendable, or callable
Seasoning	Unseasoned bonds are included
Reinvestment of Cash Flow	At daily average of the local one-month Eurodeposit rate. Calculated from actual scheduled payment date of cash flow through end of reporting period
Calculation Frequency	Daily
Pricing	See Pricing in the General Methodology section (Page 11).
Settlement Date	Monthly: Last calendar day Daily: Same day except last business day of the month, when settlement is last calendar day
Base Date	Eurodollar: June 30, 1993 Eurosterling: December 31, 1994 Euroyen: December 31, 1994

^a For a medium-term note to be included, it must meet all other criteria and be publicly announced. For self-led deals, we require the issue to be managed by a syndicate with a minimum of five members; for all other deals, we require a minimum of three syndicate members. For the purposes of determining the amount outstanding of such an issue, all fungible issues will be combined.

Source: Citigroup Index LLC.

Figure 35. Chronological Summary of the Eurobond Indexes Events/Enhancements

Date Introduced	Events/Enhancements
January 1995	Settlement date changed to same day for daily calculations and last calendar day for monthly calculations for the Eurodollar Bond Index Issuance cut-off for profile changed to the twenty-fifth day of the calendar month for the Eurodollar Bond Index Introduction of new Eurosterling, Euroyen, and Euro-Deutschemark Indexes
January 1999	Euro-Deutschemark Index discontinued. Most issues are now included in the EuroBIG Index.
July 2000	Minimum amounts outstanding increased as follows: Eurodollar: US\$250 million Eurosterling: £150 million Euroyen: ¥50 billion
July 2004	Minimum amounts outstanding increased as follows: Eurodollar: US agency/supranational: US\$1 billion, government/government guaranteed/government sponsored: US\$500 million, corporate/financial/asset-backed: US\$250 million Eurosterling: £200 million Euroyen: ¥50 billion
April 2007	Exclude Rule 144A securities without registration rights from the Eurodollar Index Re-classify Pfandbrief and asset-backed securities into the collateralized sector Exclude unrated or shadow-rated bonds

Source: Citigroup Index LLC.

Australian Broad Investment-Grade (AusBIG) Bond Index

The Australian Broad Investment-Grade (AusBIG) Bond Index is designed to represent the Australian fixed-coupon bond market, including government, semi-government, and credit markets. It covers all sectors of the investment-grade, Australian dollar-denominated fixed-income market that are accessible to Australian institutional investors and accurately measures their performance and risk characteristics.

The AusBIG Index includes any fixed-coupon, investment-grade bond issued in the Australian market or Semi-Government bond issued in the global market that meets specific amount-outstanding criteria and matures in more than one year. Figure 36 details the design criteria and calculation assumptions.

Figure 36. Australian Broad Investment-Grade (AusBIG) Bond Index — Design Criteria and Calculation Assumptions

Stated Coupon	Fixed Rate including zero coupon bonds and fixed-to-float bonds
Minimum Maturity	One year; Fixed-to-float bonds are removed one year prior to the fixed-to-float date
Minimum Issue Size	Government: A\$750 million Semi-Government: A\$250 million, including amounts issued under interest-withholding tax-free formats ^a Corporate, supranational, agency, and collateralized securities: A\$100 million
Minimum Quality	Investment-grade: BBB-/Baa3 by either S&P or Moody's or bonds guaranteed by the Commonwealth of Australia
Weighting	Market capitalization
Rebalancing	Once a month at the end of the month
Redemption Features	Bullet, callable, puttable, and extendable
Method of Issuance	Public tender or tap (reverse inquiry bonds included if offered under one of these methods). Includes only bonds issued in the domestic Australian market.
Reinvestment of Cash Flow	At daily average of the one-month Australian dollar bank bill swap reference rate (BBSW). Calculated from actual scheduled payment date of cash flow through end of period
Calculation Frequency	Daily
Pricing	Bid side sourced from Citigroup Fixed-Income Australia as of 4:30 p.m. Sydney time
Settlement Date	Monthly: Last calendar day Daily: Same day except last business day of the month, when settlement is last calendar day.
Base Date	June 30, 2000

^a Such as Queensland Treasury Corporation's Global Bond Program and New South Wales Treasury Corporation's Exchangeable Program. These bonds may be exchanged at any time for ordinary bonds from the issuer.

Source: Citigroup Index LLC.

Asian Broad Bond Index (ABBI)

The Asian Broad Bond Index (ABBI) measures the performance of both investment-grade and high-yield US dollar-denominated debt issued by governments, agencies, and corporations domiciled in Asia (exclude Japan). The ABBI provides a comprehensive measure of the Asian fixed-income market across various asset classes and credit spectra.

The ABBI regional coverage includes China, Hong Kong, India, Indonesia, Macao, Malaysia, Pakistan, Philippines, Singapore, South Korea, Sri Lanka, Taiwan, Thailand and Vietnam.

Figure 37 details the design criteria and calculation assumptions of the ABBI.

Figure 37. Asian Broad Bond Index (ABBI) — Design Criteria and Calculation Assumptions

Stated Coupon	Fixed Rate including fixed-to-float bonds
Minimum Maturity	One year; Fixed-to-float bonds are removed one year prior to the fixed-to-float date
Minimum Issue Outstanding	Government ^a : US\$500 million; Collateralized/Corporate: US\$200 million
Minimum Quality	C by either S&P or Moody's, see Defaults in the General Methodology section (Page 12).
Currency	US\$
Weighting	Market capitalization
Rebalancing	Once a month at the end of the month
Reinvestment of Cash Flow	At daily average of the one-month Eurodeposit rate, calculated from actual scheduled payment date of cash flow through end of period
Calculation Frequency	Daily
Pricing	Citi trader and IDC pricing, see Pricing in the General Methodology section (Page 11)
Settlement Date	Monthly: Last calendar day Daily: Same day except last business day of the month, when settlement is last calendar day
Base Date	September 30, 2008

^a Government includes foreign sovereign, sovereign guaranteed, government sponsored, regional government, regional government guaranteed and regional government sponsored. Source: Citigroup Index LLC.

Middle East and North Africa Broad Bond Index

The Middle East and North Africa (MENA) Broad Bond Index measures the performance of both investment-grade and high-yield US dollar-denominated debt issued by governments, agencies, and corporations domiciled in the Middle East and North Africa.

The MENA Broad Bond Index regional coverage includes Algeria, Bahrain, Djibouti, Egypt, Ethiopia, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Palestinian Territory, Qatar, Saudi Arabia, Tunisia, United Arab Emirates and Yemen.

Figure 38 details the design criteria and calculation assumptions of the MENA Broad Bond Index.

Figure 38. Middle East and North Africa Broad Bond Index — Design Criteria and Calculation Assumptions

Stated Coupon	Fixed Rate (excludes zero coupon)
Minimum Maturity	One year
Minimum Issue Size	US\$250 million (excludes Israel Saving, Income and Jubilee series bonds)
Minimum Quality	C by either S&P or Moody's, see Defaults in the General Methodology section (Page 12).
Currency	US\$
Weighting	Market capitalization
Rebalancing	Once a month at the end of the month
Reinvestment of Cash Flow	At daily average of the one-month Eurodeposit rate, calculated from actual scheduled payment date of cash flow through end of period
Calculation Frequency	Daily
Pricing	See Pricing in the General Methodology section (Page 11)
Settlement Date	Monthly: Last calendar day Daily: Same day except last business day of the month, when settlement is last calendar day
Base Date	December 31, 2010

Source: Citigroup Index LLC.

Dim Sum (Offshore CNY) Bond Index

The Dim Sum Bond Index measures the performance of RMB-denominated “Dim Sum” bonds issued and settled outside Mainland China. This index offers investors exposure to a rapidly growing market segment without facing the challenges often associated with investing in the onshore Chinese bond market. The Dim Sum Bond Index includes fixed-rate securities issued by governments, agencies, supranationals, and corporations.

Figure 39 details the design criteria and calculation assumptions of the Dim Sum (Offshore CNY) Bond Index. We exclude RMB-denominated but non-RMB-settled (typically USD-settled) synthetic securities and convertible bonds from the Dim Sum Bond Index. Retail securities – mainly issued by the Chinese government and financial institutions for retail customers – and certificates of deposits (CDs) – with a limited potential issuer universe and less onerous disclosure requirements – are also excluded from the Dim Sum Bond Index.

Figure 39. Dim Sum (Offshore CNY) Bond Index — Design Criteria and Calculation Assumptions

Stated Coupon	Fixed Rate (excludes zero coupon)
Minimum Maturity	One year
Minimum Issue Size	RMB1 billion
Minimum Quality	No minimum S&P or Moody’s rating requirement, defaulted bonds are excluded. If an individual issue is not rated by S&P or Moody’s but its issuer has an S&P or Moody’s rating, we assign the issuer rating to the issue as its implied rating.
Currency	Denominated and settled in RMB
Weighting	Market capitalization
Rebalancing	Once a month at the end of the month
Composition	RMB-denominated governments, agencies, supranationals and credit securities excluding synthetics, convertible bonds, retail bonds and certificates of deposits.
Reinvestment of Cash Flow	At daily average of the one-month Eurodeposit rate, calculated from actual scheduled payment date of cash flow through end of period
Calculation Frequency	Daily
Pricing	Citi trader and IDC pricing, see Pricing in the General Methodology section (Page 11)
Settlement Date	Monthly: Last calendar day Daily: Same day except last business day of the month, when settlement is last calendar day
Base Date	December 31, 2010

Source: Citigroup Index LLC.

Global Emerging Market Sovereign Bond Index (ESBI)

The Global Emerging Market Sovereign Bond Index (ESBI) includes Brady bonds and US dollar-denominated emerging market sovereign debt issued in the global, Yankee, and Eurodollar markets, excluding loans. The ESBI offers diversification benefits with respect to the geographical and asset class dimensions. It comprises debt in Africa, Asia, Europe, and Latin America.

We classify an emerging market as a sovereign with a maximum foreign debt rating of BBB+/Baa1 by S&P or Moody's. Brady bonds, restructured in accordance with the Brady Plan, of countries with no foreign debt, or with foreign debt that is not rated by S&P and Moody's, are included in the ESBI. We exclude defaulted issues from the ESBI (the definition for default is provided in the section that follows).

Figure 40 summarizes the design criteria and calculation assumptions for the ESBI.

Figure 41 reviews the chronological summary of events/enhancements.

Figure 40. Global Emerging Market Sovereign Bond Index (ESBI) — Design Criteria and Calculation Assumptions

Stated Coupon	Fixed Rate or step, floating rate (Brady bonds only), no zero-coupon bonds
Minimum Maturity	One year
Minimum Amount Outstanding	US\$500 million amount outstanding
Maximum Quality	BBB+/Baa1 by S&P or Moody's. Brady bonds, restructured in accordance to the Brady Plan, of countries with no foreign debt, or with foreign debt that is not rated by S&P and Moody's, are included in the ESBI.
Minimum Quality	ESBI and ESBI-C: Exclude defaulted issues ESBI-E and ESBI-CE: Include defaulted issues
Weighting	Market capitalization
Rebalancing	Once a month at the end of the month
Redemption Features	Bullet, sinking fund, putable, or callable
Calculation Frequency	Daily
Settlement Date	Monthly: last calendar day Daily: same day except last business day of month when settlement is last calendar day
Reinvestment of Cash Flow	Continuous at the daily average of the one-month Eurodeposit rate for the calculation period
Pricing	See Pricing in the General Methodology section (Page 11).
Volatility	10% single volatility
Yield Curve	Citigroup US Treasury Model (off-the-run)
Base Date	December 31, 1995

Source: Citigroup Index LLC.

Figure 41. Chronological Summary of Global Emerging Market Sovereign Bond Index (ESBI), Brady Bond Index, and Emerging Market Mutual Fund (EMMF) Debt Index Events/Enhancements

Date Introduced^a	Events/Enhancements
March 1990	First Brady Bond Issue — Mexico
June 1990	Inclusion of Costa Rica and Philippines
January 1991	Inclusion of Venezuela
March 1991	Inclusion of Uruguay
February 1992	Inclusion of Nigeria
December 1992	Inclusion of Brazil IDU
January 1993	Two new Philippine Brady bonds issued
March 1993	Final Philippine Brady issued
May 1993	Inclusion of Argentina
November 1993	Final Argentine Brady issued
January 1994	Introduction of the Emerging Market Mutual Fund Debt Index
February 1994	Minimum entry size increased to US\$500 million from US\$200 million Exclusion of Uruguay and Costa Rica
May 1994	Final Brazilian Brady bonds included
August 1994	Inclusion of Bulgaria
November 1994	Inclusion of Poland
January 1995	Settlement date changed to same day for daily calculations and last calendar day for monthly calculations Issuance cutoff for profile changed to the twenty-fifth day of the calendar month
April 1995	Inclusion of Ecuador
May 1995	Inclusion of Ecuador PDI
July 1996	Inclusion of Panama
March 1997	Inclusion of Peru
December 1997	EMMF Index: Russia V-bank loans exchanged for Russia IANs and Prins
August 2000	Brady Bond Index: Ecuador removed as a result of the Ecuador Brady Exchange EMMF Index: Ecuador 2012 and 2030 global bonds replace Bradys; Russia 2010 and 2030 Global bonds replace IANs and Prins as a result of an exchange
September 2000	Exclusion of Ivory Coast from ESBI due to default event
January 2002	Introduction of the Global Emerging Market Sovereign Bond Index (ESBI)
January 2002	Exclusion of Argentina from ESBI due to default event
May 2003	Mexico calls 2008 and 2033 Brady par bonds Mexico sector drops out of Brady Bond Index EMMF Index reweighted to reflect termination of Mexico sector. Argentina and Brazil weights increase to 25% from 15% and 20%, respectively. Mexico weight drops to 0%.
July 2003	Brady Bond Index was migrated to the Global Emerging Market Sovereign Index Discontinued EMMF Index ^b

^a Inception date is April 1990 for Brady Bond Index; January 1994 for EMMF; and January 1996 for the ESBI. ^b An alternative to the EMMF Index is our ESBI-Capped, which limits exposure to any one country by placing a ceiling on the par value contribution of each country. IAN Interest Amortization Notes. IDU Interest due and unpaid. PDI Past-due interest. Prin Restructured Principal Loan. Source: Citigroup Index LLC.

Sector Classification

For the ESBI, we publish the characteristics of the index in maturity, rating, region, and country breakdowns. The country classification is based on the sovereign government issuing the debt.

Credit

We impose a credit rule on the foreign sovereign markets included in the ESBI. We classify an emerging market as a sovereign with a foreign debt rating of BBB+/Baa1 by S&P or Moody's. Split-rated countries with ratings of A-/Baa1 or BBB+/A3 are included in the ESBI. If a country has foreign debt that is rated above BBB+/Baa1 by S&P and Moody's, neither its foreign debt nor its Brady bonds are included. The family of the ESBI can be subdivided into the following credit quality sectors:

Investment-Grade

Recognizing that some investment-grade sovereign bonds resemble emerging market products in valuation and trading, we include the Brady bonds and the sovereign debt with a maximum rating of BBB+/Baa1 by either S&P or Moody's. Split-rated issues (that is, Five Bs, A-/Baa1, BBB+/A3) would be included in this category.

Sub-Investment-Grade

Sub-investment-grade comprises below-investment-grade Brady bonds and sovereign debt with a maximum rating of BB+/Ba1 by S&P and Moody's. This sector excludes defaulted bonds.

Defaults

A country's bonds are placed in the Extended Indexes if the sovereign government meets the following default criteria:

- 1 **Failure to pay:** The sovereign has failed to make a full principal or interest payment by the due date (including any applicable grace period).
- 2 **Repudiation/moratorium:** The sovereign repudiates or challenges the validity of its bonds or declares a moratorium or standstill applicable to the bond payments.
- 3 **Acceleration:** The sovereign bonds become due and payable in full or eligible for acceleration by meeting the conditions of acceleration specified in their terms.
- 4 **Restructuring:** The sovereign, because of a deterioration in financial conditions or creditworthiness, changes the financial terms or causes subordination of its bonds not provided for in its terms and imposes such changes on bondholders.

Sector-Level Spread Computation

With the ESBI Indexes, we introduce a new methodology in computing sector level spread by weighting the spreads with dollar duration as follows:

$$sprd_{sector} = \frac{\sum_{i=1}^n sprd_i \times mkv_i \times spddur_i}{\sum_{j=1}^n mkv_j \times spddur_j}$$

In this equation, n is the number of issues in the sector and for each issue; $sprd$ is the stripped spread; mkv is market value; and $spddur$ is the spread duration. We refer to the product of the market value and the spread duration as the spread-dollar duration.

This methodology will calculate the average spread of a sector according to both the market value and the duration of the underlying issues within the sector. Weighting by spread-dollar duration helps to more accurately reflect changes to the value of the portfolio associated with spread curve movement by assigning a larger weight to securities with larger spread duration. For example, given two bonds of the same market value, the spread of the long-duration bond will have a larger weight in the sector-level spread than the spread of the short-duration bond.

Related Benchmarks

Citigroup Global Emerging Market Sovereign-Capped Bond Index (ESBI-C)

The Global Emerging Market Sovereign-Capped Bond Index (ESBI-C) represents a modified version of the ESBI. It imposes a maximum par amount of US\$15 billion per country, thereby limiting the effect of debt-burdened countries on index characteristics and performance. Large debt markets can be explained by one of two reasons: The countries have large economies with reasonable debt-to-GDP ratios, or they have smaller economies and larger debt-to-GDP ratios. The former are more likely to have stable outstanding amounts and stable or even increasing prices leading to positive returns. The latter might be expected to have unstable outstanding amounts and fluctuating prices resulting in volatile returns. Capping the par size of a country will prevent the latter group from dominating.

Citigroup Global Emerging Market Sovereign-Extended Bond Index (ESBI-E) and Global Emerging Market Sovereign-Capped Extended Bond Index (ESBI-CE)

The ESBI-Extended Bond Index (ESBI-E) and ESBI Capped Extended Bond Index (ESBI-CE) capture the bonds that are excluded from the ESBI and ESBI-Capped because of default by the issuer.

For a country to be moved to the Extended Indexes, at least one foreign currency debt that is a direct obligation of the sovereign government in the ESBI and ESBI-Capped meets the default criteria stated above.

In the event that a country defaults, all of its issues in the ESBI and ESBI-Capped, including its Brady bonds, are moved to the Extended Indexes. We also adjust the returns for the bonds to reflect the loss of coupon payments or accrued interest, where applicable. The adjustment occurs at the month-end following the default of the issuer. The return calculation for the default issues reflects only principal gains or losses.

Additional Definitions

Spread Duration

The spread duration is a measure of relative changes in the full price because of changes in the stripped spread.

Stripped Yield

The Stripped yield is calculated on cash flows reduced by any guaranteed payments of principal and interest and with the price reduced by the present value of the guaranteed payments.

Stripped Spread

The stripped spread (in basis points) over the pricing yield curve for the unguaranteed portion of a security's cash flows, equal to the amount that when added to each of the yield curve's spot rates, makes the present value of the unguaranteed portion of the cash flows equal to the price reduced by the present value of the guaranteed payments.

Blended Yield

The blended yield is obtained from discounting both the sovereign and collateral component of future cash flows.

Blended Spread

The blended spread is the security's blended yield minus the point on the pricing yield curve at the point of the security's weighted average life, in basis points.

Cash Flow Yield

The cash flow yield is indicated by the security's full price, settlement date, and assumed cash flows.

Cash Flow Spread

The cash flow spread is the security's cash flow yield minus the yield of a suitable benchmark security, in basis points.

US High-Yield Market Index

The US High-Yield Market Index captures the performance of below-investment-grade debt issued by corporations domiciled in the United States or Canada. This index is our broadest high-yield market measure and includes cash-pay and deferred-interest securities. All the bonds are publicly placed, have a fixed coupon, and are nonconvertible. Bonds issued under Rule 144A are included in their unregistered form.

Figure 42 details the design criteria of this index and Figure 43 reviews the chronological summary of events/enhancements.

Figure 42. US High-Yield Market Index — Design Criteria and Calculation Assumptions

Stated Coupon	Fixed rate
Minimum Maturity	One year
Minimum Size Outstanding	Entry: US\$100 million minimum outstanding per issue when the issuer has a minimum of US\$400 million total outstanding debt that qualifies for inclusion, or US\$200 million minimum outstanding per issue when the issuer does not meet the US\$400 million minimum. Exit: A bond will exit when its amount outstanding falls below US\$100 million par amount. An issuer that has already satisfied the US\$400 million requirement will remain in the index — even if the total par amount outstanding of its bonds drops below the US\$400 million minimum.
Maximum Quality	BB+/Ba1 by both S&P and Moody's
Minimum Quality	C by S&P or Moody's, see Special Situations section below
Weighting	Market capitalization
Rebalancing	Once a month at the end of the month
Composition	Cash-Pay, Zero-to-Full (ZTF), Pay-in-Kind (PIK), step-coupon bonds, and Rule 144A bonds issued by corporations domiciled in the United States or Canada only
Reinvestment of Cash Flow	Continuous at the daily average of the one-month Eurodeposit rate for the calculation period
Calculation Frequency	Daily
Pricing	Primarily external pricing source, See Pricing in the General Methodology section for additional information (Page 11).
Settlement Date	Monthly: Last calendar day Daily: Same day except last business day of the month, when settlement is last calendar day
Base Date	December 31, 1988

Source: Citigroup Index LLC.

Figure 43. Chronological Summary of US High-Yield Market Index Events/Enhancements

Date Introduced	Events/Enhancements
January 1989	1–7 year sector added to the credit sectors (BB-, B-, and CCC- rated indexes) Prior to this date, these indexes contained those securities with a remaining maturity of at least 7 years.)
January 1991	Deferred-interest securities added to applicable indexes
January 1997	Entry criteria increased to US\$100 million from US\$50 million Exit criteria increased to US\$75 million from US\$50 million
January 1998	Maximum rating changed to speculative-grade by both S&P and Moody's Exit criteria increased to US\$100 million from US\$75 million Changes to industry sectors: Conglomerate/Diversified Manufacturing and Machinery combined to form Capital Goods Electronics/Information/Data Technology name changed to Technology
January 1999	Include Rule 144A bonds at issuance Limit securities to those issued by US- or Canadian-domiciled issuers only Raise minimum quality to C by S&P or Moody's from none Eliminate the Extended High-Yield Market Index (held the same issues as the High-Yield Market Index in addition to bankrupt and/or defaulted securities). Eliminated the Distressed Index
April 2001	Minimum amount outstanding changed as follows: Entry Criteria: US\$100 million minimum size outstanding per issue when the issuer has a minimum of US\$400 million total outstanding debt that qualifies for inclusion in the High-Yield Market Index; or US\$200 million minimum outstanding per issue when the issuer does not meet the US\$400 million requirement. Exit Criteria: A bond will exit the High-Yield Market Index when its amount outstanding falls below US\$100 million par amount. An issuer that has already satisfied the US\$400 million will remain in the index — even if the total par amount outstanding of its bonds drops below the US\$400 million minimum.

Source: Citigroup Index LLC.

Industry Classification**Figure 44. US High-Yield Market Index — Industry Sector Classification**

Industrial — Manufacturing	Industrial — Energy
Aerospace	Secondary Oil & Gas Producers
Auto Manufacturers/Vehicle Parts	Oil Equipment
Building Products	Energy — Other
Home Builders	Industrial — Consumer
Capital Goods	Consumer Products/Tobacco
Chemicals	Food Processors/Beverage/Bottling
Containers	Industrial — Transportation
Metals/Mining	Airlines
Paper/Forest Products	Transportation — Rail & Other
Technology	Industrial — Other
Textiles/Apparel/Shoes	Industrial – Other
Industrial — Service	Utility
Cable	Broadband
Broadcast/Outdoor	Competitive Local Exchange Company (CLEC)
Satellite	Diversified Telecommunications
Publishing	ISP/Data
Gaming	Paging
Leisure	Wireless
Lodging	Electric, Power, Gas, and Other
Healthcare Facilities/Supplies	Finance
Pharmaceuticals	Banking
Restaurants	Finance — Other
Retail Stores — Food & Drugs	
Retail Stores — Other	
Environmental Services	
Tower	
Service — Other	

Source: Citigroup Index LLC.

Index Quality

An index quality is assigned to each index bond as of profile fixing. The quality is first mapped to the S&P rating. If a bond is not rated by S&P but it is rated by Moody's, we assign the S&P equivalent of the Moody's rating to the index quality. If a bond is split-rated (an investment-grade rating by one rating agency and high-yield by the other), we assign the S&P equivalent of the investment-grade rating to the index quality. These ratings remain unchanged for the entire performance month.

For defaulted bonds, please see the Special Situation section that follows.

Average Spread to Worst and Average Treasury Benchmark

The average yield to worst is the lower of the yield to worst call and yield to maturity. The spread to worst is the difference between the yield to worst and the yield to maturity at the average life point on the interpolated Treasury model curve. The yield to worst is capped at 35% and the spread to worst is capped at 3,500bp.

Special Situations

Defaults

When an issuer defaults or expects to default on an interest payment, or enters into Chapter 7 or Chapter 11 bankruptcy protection, its bonds remain in the index until the end of the month and adjustments are made to the index returns. After the announcement by the company, we adjust the returns for the company's bonds to reflect the loss of coupon payments or accrued interest, where applicable. Returns for bankrupt securities only incorporate the gain or loss on principal, except in unique situations when bankrupt bonds trade with accrued interest. In addition, we exclude bankrupt bonds when calculating the average profile statistics of the indexes.

We remove the bankrupt securities from the index at the end of the month and place them in the Bankrupt/Default Index, beginning with the next month's index. Any bond that is assigned a D rating by S&P, regardless of whether that issuer has filed for bankruptcy protection, will be placed into the Bankrupt/Default Index for the next month's index. A bond exits the Bankrupt/Default Index when reorganization is completed or exchanged for other securities, or upon liquidation, or when neither S&P nor Moody's rates the bonds.

Related Benchmarks

Citigroup High-Yield Cash-Pay Index

The High-Yield Cash-Pay Index is compiled by removing the bonds in the Deferred-Interest Index from the High-Yield Market Index. It includes only cash-pay bonds (both registered and Rule 144A) with remaining maturities of at least one year and a minimum amount outstanding of US\$100 million. (Base date: December 31, 1988.)

Citigroup Deferred-Interest Index

The Deferred-Interest Index includes pay-in-kind bonds (PIKs), PIK toggle bonds, zero-to-full coupon bonds (ZTFs), zero-to-maturity bonds, step-up coupon bonds, and credit sensitive notes. (Base date: December 31, 1990.)

Maturity Sectors

High-Yield Market 1–7 Year Index

The High-Yield Market 1–7 Year Index (formerly, the Short-Term High Yield) includes those securities in the High-Yield Market Index with a remaining maturity of at least one year, but less than seven years. (Base date: December 31, 1988.)

High-Yield Market 7–10 Year Index

The High-Yield Market 7–10 Year Index (formerly, the Intermediate-Term High-Yield) includes those securities in the High-Yield Market Index with a remaining maturity of at least seven years, but less than ten years. (Base date: June 30, 1985.)

High-Yield Market 10+ Year Index

The High-Yield Market 10+ Year Index (formerly, the Long-Term High-Yield) includes those securities in the High-Yield Market Index with a remaining maturity of at least ten years. (Base date: December 31, 1979.)

High-Yield Market 7+ Year Index

The High-Yield Market 7+ Year Index (formerly, the Composite High-Yield) includes those securities in the High-Yield Market Index with a remaining maturity of at least seven years. (Base date: December 31, 1984.)

Quality Sectors

All BB-Rated Index

The All BB-Rated Index includes those bonds in the High-Yield Market Index (and before January 1989, the High-Yield 7+ Year Index) with an index quality of BB+, BB, or BB- rating. (Base date: December 31, 1984.)

All B-Rated Index

The All B-Rated Index includes those bonds in the High-Yield Market Index (and before January 1989, the High-Yield 7+ Year Index) with an index quality of B+, B, or B- rating. (Base date: December 31, 1984.)

All CCC-Rated Index

The All CCC-Rated Index includes those bonds in the High-Yield Market Index (and before January 1989, the High-Yield 7+ Year Index) with an index quality of CCC+ to C rating. (Base date: December 31, 1984.)

Additional Index

Bankrupt/Default Index

The Bankrupt/Default Index includes those securities of companies previously in the High-Yield Market Index or US Broad Investment-Grade Bond Index that have already filed or are soon expected to file for Chapter 7 or Chapter 11 bankruptcy protection (see Special Situations section) or securities of companies that have missed or expect to miss required interest payments. (Base date: December 31, 1990.)

US High-Yield Market Capped Index

The US High-Yield Market Capped Index uses the US High-Yield Market Index as its foundation. In addition to the basic design criteria used in the creation of the High-Yield Market Index (outlined in Figure 42), we impose a cap on the par amount of each issuer and delay the entry of fallen angels after their downgrade.

The US High-Yield Market Capped Index caps the total debt of any single individual issuer at US\$10 billion par amount outstanding. When the total eligible par amount from one issuer exceeds US\$10 billion, the par amount of each bond from this issuer is scaled pro rata to reduce the total to US\$10 billion. By capping the par amount outstanding of large issuers, we limit the exposure that these issuers have on the High-Yield Market Capped Index, but retain the characteristics of the issuer's distribution across different maturities.

The High-Yield Market Capped Index addresses the disproportionate influence that a recently downgraded issuer can have on the index's characteristics upon entry. This is accomplished by delaying the entry of a fallen angel issuer's debt for a minimum of one month from its downgrade to high-yield status. Specifically, if both S&P and Moody's downgrade an issuer's debt to BB+/Ba1 or below, it will be eligible for the High-Yield Market Capped Index after a waiting period of one full calendar month. For example, if an issuer's debt is downgraded to high-yield status any day during the calendar month of May, it will be eligible for inclusion in the July High-Yield Market Capped Index. This aspect of the criteria provides time for the market to evaluate and adjust to any credit events associated with the fallen angels. In addition, it allows investors time to assess the value and risk of fallen angels without being underweighted in any sectors in which they are included.

Figure 45 details the design criteria and calculation assumptions for the High-Yield Market Capped Index and Figure 46 reviews the chronological summary of events/enhancements.

Figure 45. US High-Yield Market Capped Index — Design Criteria and Calculation Assumptions

Stated Coupon	Fixed rate
Minimum Maturity	One year
Minimum Issue Size (Prior to Capping)	Entry: US\$100 million minimum outstanding per issue when the issuer has a minimum of US\$400 million total outstanding debt that qualifies for inclusion, or US\$200 million minimum outstanding per issue when the issuer does not meet the US\$400 million minimum. Exit: A bond will exit when its amount outstanding falls below US\$100 million par amount. An issuer that has already satisfied the US\$400 million requirement will remain in the index — even if the total par amount outstanding of its bonds drops below the US\$400 million minimum.
Maximum Issuer Size	Capped at US\$10 billion maximum amount outstanding per issuer.
Maximum Quality	BB+/Ba1 by both S&P and Moody's
Minimum Quality	C by S&P or Moody's, see Special Situations on page 63)
Weighting	Market capitalization
Rebalancing	Once a month at the end of the month
Composition	Cash-pay, zero-to-full (ZTF), pay-in-kind (PIK), step-coupon bonds, and Rule 144A bonds issued by corporations domiciled in the United States or Canada only. Fallen angels: entry is subject to a waiting period of one full calendar month.
Reinvestment of Cash Flow	Continuous at the daily average of the one-month Eurodeposit rate for the calculation period
Calculation Frequency	Daily
Pricing	Primarily external pricing source, see Pricing in the General Methodology section for additional information (Page 11).
Settlement Date	Monthly: Last calendar day Daily: Same day except last business day of the month, when settlement is last calendar day
Base Date	December 31, 2001
Source: Citigroup Index LLC.	

Figure 46. Chronological Summary of US High-Yield Market Capped Index Events/Enhancements**Date Introduced Events/Enhancements**

October 2010	The issuer cap on the total debt of any individual issuer increased to US\$10 billion from US\$5 billion.
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Source: Citigroup Index LLC.

World Money Market Index

The World Money Market Index approximates the performance of money market instruments in the following 18 currencies: Australian dollar, Canadian dollar, Czech koruna, Danish krone, the euro, Hong Kong dollar, Hungarian forint, Japanese yen, Malaysian ringgit, New Zealand dollar, Norwegian krone, Polish zloty, Singapore dollar, South African rand, Swedish krona, Swiss franc, UK sterling, and US dollar. The index tracks the following instruments: one-, two-, three-, six-, and 12-month Eurodeposits. We believe that Eurodeposits represent a common asset class across currencies and provide a good proxy for short-term markets.

We compute returns daily and monthly for each of these instruments in their local currencies and in US dollar terms.

The index dates back to December 1997 and measures the return of money market instruments, making the following assumptions:

- All Eurodeposits are held to maturity.
- The index invests only in Eurodeposits with maturities that correspond to the index. For example, the three-month US Dollar Money Market Index invests only in three-month US dollar Eurodeposits, and the six-month Japanese yen invests only in six-month Japanese yen Eurodeposits.
- For each index, at the beginning of each month, a fraction of the index matures and is rolled over into a new Eurodeposit of the same maturity. In any given month, the index includes a group of Eurodeposits equal in number to the number of months in the maturity of instruments in that particular index. For example, a three-month index is at any given time composed of three three-month Eurodeposits; at the beginning of each month one of the three Eurodeposits matures and is rolled over into a new three-month Eurodeposit. Similarly, a six-month index is composed of six six-month Eurodeposits, at any given time, and at the beginning of each month, one of the six Eurodeposits matures and is rolled over into a new six-month Eurodeposit.
- The returns for any given maturity index are computed from the actual Eurodeposits that constitute the index in that particular month. For example, the return for October for the three-month indexes would include the return of a laddered investment from July, August, and September. At the end of October, the July 31 Eurodeposit would mature and a new Eurodeposit would be included as of October 31, to continue the ladder for future returns. More details of return computation are given in the next section.
- For one-month Eurodeposits, a new Eurodeposit replaces a matured Eurodeposit at the beginning of every month, and the returns correspond to the Eurodeposit rate for the month for which the returns are computed.

Figure 47. World Money Market Index (WMMI) — Design Criteria and Calculation Assumptions

Category	Criteria
Maturity	One, two, three, six, and 12 months
Pricing	Monthly yields (bid), obtained from Reuters, 4:00 p.m. London time
Calculation Frequency	Daily
Composition	Generic Eurodeposits in the following currencies: Australian dollar, Canadian dollar, Czech koruna, Danish krone, euro, Hong Kong dollar, Hungarian forint, Japanese yen, Malaysian ringgit, New Zealand dollar, Norwegian krone, Polish zloty, Singapore dollar, South African rand, Swedish krona, Swiss franc, UK sterling, and US dollar
Base Date	December 31, 1997

Source: Citigroup Index LLC.

Figure 48. Chronological Summary of World Money Market Index (WMMI) Events/Enhancements

Date Introduced	Events/Enhancements
January 1978	Original Money Market Index introduced: Equally weighted composite of three-month deposits in eight currencies (US dollar, Canadian dollar, Deutschemark, Dutch guilder, French franc, Japanese yen, Swiss franc, and UK sterling)
January 1999	Expanded currency coverage to include Australian dollar, New Zealand dollar, Danish krone, euro, Norwegian krone, and Swedish krona Discontinued tracking deposits in the Deutschemark, Dutch guilder, and French franc (all EMU currencies folded into the euro) Composition changed to cover one- and three-month Eurodeposits for each currency
April 2000	Introduction of Greek drachma one- and three-month indexes. Greek drachma also included within the equally weighted composite WMMI
November 2000	Expanded currency coverage of the World Money Market Index to include six new currencies (Czech koruna, Hong Kong dollar, Hungarian forint, Polish zloty, Singapore dollar, and South African rand) Expanded maturity coverage of money market instruments to include the one-, two-, three-, six-, and 12-month Eurodeposits in each of the 18 currencies (Expansion in coverage does not affect the composite World Money Market Indexes)
January 2001	Composite World Money Market Index discontinued Greece drachma indexes discontinued as Greece joins the EMU
July 2007	Expanded currency coverage to include Malaysian ringgit

Source: Citigroup Index LLC.

Steps for Local Currency Return Computation

The return computation methodology is consistent across maturities. We detail below the steps for computing returns on three-month Eurodeposits for a given month, m .

Step 1: Obtain the nominal three-month Eurodeposit rates (quoted on an annual basis), y_{m-i} , as of the end of the months $m-1$, $m-2$, and $m-3$.

Step 2: Convert y_{m-i} into an effective term yield (equivalent to the three-month return), e_{m-i} , for the three-month term starting on the last calendar day of month $m-i$ and ending on the last calendar date of month $m-i+3$, using the actual number of days in the term and the day-count convention of the quoted rate (360 days per year for most, but not all, Eurodeposit rates):

$$e_{m-i} = y_{m-i} * (\text{Actual days in term})/360, i = 1,2,3$$

Step 3: Calculate the effective monthly return, r_{m-i} , which, when compounded through the length of the three-month term, would result in the effective term yield computed in Step 2:

$$r_{m-i} = (1 + e_{m-i})^{\text{Days in } m / \text{Days in 3-month term}} - 1, i = 1,2,3$$

Step 4: Calculate an average of the three monthly period yields derived in Step 3. This is the return on three-month deposits for the month m .

The same method is used to compute month-to-date returns on three-month Eurodeposits; the number of days used in Step 3 is appropriately modified.

For calculating returns for any other maturity, similar methodology is used. For example, to calculate returns for the six-month Eurodeposits for a given month m , we average the six effective monthly returns calculated using the six six-month Eurodeposit rates as of the end of months $m-1$, $m-2$, $m-3$, $m-4$, $m-5$, and $m-6$.

For one-month Eurodeposits, since a new Eurodeposit replaces a matured Eurodeposit at the beginning of every month, the averaging in Step 4 is omitted for calculating returns.

Sample Base Currency Return Computation

The following example illustrates the computation steps for local and US dollar-based returns on a three-month Sterling Eurodeposit.

Figure 49. World Money Market Index (WMMI) — Assumed Conventions and Data

Conventions	Data	
Month for Which Returns Are Being Computed	July 2007	
Quote Convention	Yield (%/Annum)	
Day-Count Basis	ACT/365	
Yields	April 30	5.61% (y)
	May 31	5.71% (y)
	June 30	5.86% (y)
US Dollar/UK Sterling Spot Exchange Rates	June 29	2.00635
	July 31	2.03205

Source: Citigroup Index LLC.

Compute Local Currency Return

Calculate the effective term yield:

$$e_{\text{April}} = 5.61\% * (31+30+31)/365 = 1.4140\%$$

$$e_{\text{May}} = 5.71\% * (30+31+30)/365 = 1.4392\%$$

$$e_{\text{June}} = 5.86\% * (31+30+31)/365 = 1.4770\%$$

where y_{month} should be interpreted as the effective yield for the three-month return. In other words, the Eurodeposit that yielded 5.61% per annum on April 30 returns 1.4140% for the three-month term (92 days).

Calculate the effective monthly returns:

$$r_{\text{April}} = (1+1.4140\%)^{(31/92)} - 1 = 0.4743\%$$

$$r_{\text{May}} = (1+1.4392\%)^{(31/92)} - 1 = 0.4827\%$$

$$r_{\text{June}} = (1+1.4770\%)^{(31/92)} - 1 = 0.4953\%$$

where r_{month} is the Eurodeposit return for the 31-day month of July. For example, the April 30 Eurodeposit returned 0.4743% for the month of July. This return, in turn, would compound over 92 days to yield e_{month} , or 1.4140%.

Compute the average of the monthly returns from above. This is our sector return for the month in local (sterling) terms.

$$r_{\text{avg}} = (r_{\text{April}} + r_{\text{May}} + r_{\text{June}}) / 3 = 0.4841\%$$

Compute Currency Return

$$C_{\text{uk}} = (2.03205 - 2.00635) / (2.00635) = 1.2809\%$$

Compute Total Return (in US Dollar Terms)

$$R_{\text{usd}} = [(1 + 0.4841\%) * (1 + 1.2809\%)] - 1 = 1.7712\%$$

Figure 50. World Money Market Index — Reuters Instrument Codes (RICs) Used to Obtain Monthly Yields (Bid) for Eurodeposits

Currency	1-Month	2-Month	3-Month	6-Month	12-Month
US Dollar	USD1MD	USD2MD	USD3MD	USD6MD	USD1YD
Canadian Dollar	CAD1MD	CAD2MD	CAD3MD	CAD6MD	CAD1YD
Czech Koruna	CZK1MD	CZK2MD	CZK3MD	CZK6MD	CZK1YD
Danish Krone	DKK1MD	DKK2MD	DKK3MD	DKK6MD	DKK1YD
Euro	EUR1MD	EUR2MD	EUR3MD	EUR6MD	EUR1YD
Hungarian Forint	HUF1MD	HUF2MD	HUF3MD	HUF6MD	HUF1YD
Norwegian Krone	NOK1MD	NOK2MD	NOK3MD	NOK6MD	NOK1YD
Polish Zloty	PLN1MD	PLN2MD	PLN3MD	PLN6MD	PLN1YD
Swedish Krona	SEK1MD	SEK2MD	SEK3MD	SEK6MD	SEK1YD
Swiss Franc	CHF1MD	CHF2MD	CHF3MD	CHF6MD	CHF1YD
UK Sterling	GBP1MD	GBP2MD	GBP3MD	GBP6MD	GBP1YD
Australian Dollar	AUD1MD	AUD2MD	AUD3MD	AUD6MD	AUD1YD
New Zealand Dollar	NZD1MD	NZD2MD	NZD3MD	NZD6MD	NZD1YD
Hong Kong Dollar	HKD1MD	HKD2MD	HKD3MD	HKD6MD	HKD1YD
Japanese Yen	JPY1MD	JPY2MD	JPY3MD	JPY6MD	JPY1YD
Malaysian Ringgit	MYR1MD	MYR2MD	MYR3MD	MYR6MD	MYR1YD
Singapore Dollar	SGD1MD	SGD2MD	SGD3MD	SGD6MD	SGD1YD
South African Rand	ZAR1MD	ZAR2MD	ZAR3MD	ZAR6MD	ZAR1YD

Note: In the event of incorrect or missing rates, we will roll previous values or use an alternative source, if available.
Source: Reuters.

Dow Jones Citigroup® Sukuk Index

The Dow Jones Citigroup Sukuk Index is designed to measure the performance of global Islamic fixed-income securities — also known as *sukuk*. This index includes US dollar-denominated investment-grade sukuk issued in the global markets that are Sharia compliant.

The Dow Jones Citigroup Sukuk Index shares design criteria and calculation assumptions with the broader Citigroup fixed-income index family, including Citigroup’s World Broad Investment-Grade (WorldBIG) Bond Index and follows the same consistent, quantitative methodology as the Dow Jones Islamic Market (DJIM) Indexes, which are monitored to ensure their continued compliance with Sharia Law.

Figure 51 details the design criteria and calculation of the Dow Jones Citigroup Sukuk Index.

Figure 51. Dow Jones Citigroup Sukuk Index — Design Criteria and Calculation Assumptions

Stated Coupon	Fixed-rate, floating-rate
Minimum Maturity	One year
Minimum Size Outstanding	US\$200 million
Minimum Quality	BBB-/Baa3 by S&P or Moody’s. If a bond is not rated by S&P and Moody’s, an explicit or implicit rating of BBB-/Baa3 by a leading rating agency.
Weighting	Market capitalization updated once a month at the end of the month
Yield Curve	Citigroup Treasury Model (off-the-run) Curve
Reinvestment of Cash Flow	One-month US dollar Eurodeposit for the calculation period
Calculation Frequency	Daily
Pricing	Individual Citi trader pricing generally taken as of the local market close, see Pricing in the General Methodology section (Page 11).
Volatility	10% single volatility
Base Date	September 30, 2005

Source: Citigroup Index LLC.

Figure 52. Chronological Summary of US High-Yield Market Capped Index Events/Enhancements

Date Introduced	Events/Enhancements
October 2009	Minimum issue size eligibility decreased to US\$200 million.

Source: Citigroup Index LLC.

Pricing

Bid-side prices from Citi are collected at the close of the local market for use in calculating monthly returns. However, because of the illiquid nature of the bonds, the valuations placed on the bonds by traders are based more on their estimate of where the bonds might trade rather than an observation of where they actually trade.

Sharia Compliance

Sukuk are essentially asset-backed bonds, neither equity nor debt from the perspective of conventional capital markets. As such, the content and structure of sukuk must be examined carefully to assure that they are Sharia compliant. While it is possible for an index to stipulate criteria relating to the nature of the underlying assets of sukuk to determine whether or not sukuk are Sharia compliant, the structure of sukuk presents a far more complicated picture. First, given the complexities involved when structuring such instruments for assets held in one jurisdiction by special purpose vehicles (SPVs), or

trusts domiciled in other jurisdictions, or held by investors in still other jurisdictions, certification of compliance by an internationally recognized Sharia supervisory board (SSB) must be established. Second, the basic structure of sukuk must fall under one of the categories specified by the Auditing and Accounting Organization of Islamic Financial Institutions (AAOIFI). After these two criteria are established, the final Sharia screening criteria will deal exclusively with the nature of the underlying assets. To summarize, the Sharia screening criteria are:

- 1 Certification by a recognized Sharia supervisory board;
- 2 Compliance with AAOIFI standards for tradable sukuk;
- 3 Compliance of the underlying assets with Sharia principles (similar to the set of guidelines established by the DJIM Indexes for primary business).

The First Screen

The first criterion for considering sukuk is to ensure that the issuance is certified by a reputable SSB. In many cases, sukuk will be certified not only by the issuer's SSB, or the arranger, but also by the investor's SSB as well. To address the potential problem of differing SSB interpretations, the screen will be passed only if sukuk has been certified by a Sharia supervisory board with international membership or if more than one SSB from different geographic regions have certified sukuk.

The Second Screen

The second criterion is the most complex of all. Because of the standards for sukuk issued by the AAOIFI in 2004, a diverse range of instruments has been identified, and their acceptance by Islamic banks and financial institutions has been universal.

The Third Screen

The underlying assets to be securitized in sukuk must comply with Sharia principles, similar to the way stocks are screened for compliance of the primary business, so as not to permit companies that are engaged in any of the so-called prohibited industries. The industry-based screening criteria are similar to those established for the DJIM Indexes.

Data Accessibility

The Dow Jones Citigroup Sukuk Index is available on www.djindexes.com, The Yield Book fixed-income analytical system, and major data vendor services.

Industry Classification

Citigroup Fixed-Income Indexes utilize two proprietary industry/asset classification codes: Global Industry Code (GLIC) and Corporate Bond Sector (COBS) code.

Figure 53. Global Industry Code (GLIC)

GLIC	Description	GLIC	Description
SVGN	Sovereign	IEGY	Industrial — Energy
SGTD	Sovereign Guaranteed	ITRN	Industrial — Transportation
SGSP	Sovereign Government Sponsored	IOTH	Industrial — Other
RGTD	Regional Government Guaranteed	UELC	Utility — Electric
RGSP	Regional Government Sponsored	UGAS	Utility — Gas
RGOV	Regional Government	UTEL	Utility — Telecom
MBS	Collateralized — Mortgage	UOTH	Utility — Other
ABS	Collateralized — Asset Backed	FBNK	Finance — Bank
PFBF	Collateralized — Covered	FIND	Finance — Independent
IMAN	Industrial — Manufacturing	FINS	Finance — Insurance
ISRV	Industrial — Service	FOTH	Finance — Other
ICON	Industrial — Consumer		

Source: Citigroup Index LLC.

Figure 54. Corporate Bond Sector (COBS) Code

COBS	Description	COBS	Description
Government/Government Sponsored		Industrial — Service	
DSOV	Domestic Sovereign	BCAS	Broadcast/Outdoor
FSOV	Foreign Sovereign	CBLE	Cable
RGOV	Regional Government	SATE	Satellite
AGEN	Agency	PUBL	Publishing
SPRA	Supranational	GAME	Gaming
		FUNN	Leisure
Collateralized		LODG	Lodging
MTGE	Mortgage	HEAL	Health Care Supply
CARD	Credit Cards	HLCF	Health Care Facilities
CARS	Cars	PHRM	Pharmaceuticals
STRA	Stranded Asset	REST	Restaurants
RMTR	Residential Mortgage Master Trust	FDRG	Retail Food & Drug
EQLS	Securitized Equipment Lease	RETL	Retail
WBUS	Whole Business Securitization	ENVS	Environmental Services
ABSO	ABS — Other	TWER	Tower
PFFF	Covered — Jumbo Pfandbrief Offentliche	PDEV	Property/Real Estate Developer
PFHY	Covered — Jumbo Pfandbrief Hypotheken	GTCO	General Trading Company (sogo shosha)
PFOF	Covered — French	OTHS	Other Service
PFCE	Covered — Spanish		
PFOT	Covered — Other	Industrial — Consumer	
Industrial — Manufacturing		CONS	Consumer Products
AERO	Aerospace	TOBC	Tobacco
AUTO	Auto Manufacturing	FOOD	Food Processors
VEHL	Vehicle Parts	BEVG	Beverage/Bottling
BLDG	Building Materials	FISH	Fishery
HOME	Home Builders	Industrial — Energy	
CSTR	Construction Business	SOGP	Secondary Oil & Gas Producers
CHEM	Chemicals	OILE	Oil Equipment
CONG	Capital Goods	OILS	Oil Service
INFO	Information & Data Technology	OILR	Oil Refining & Marketing
TRON	Electronics	OILI	Integrated Oil
MACH	Machinery	PPAN	Retail Propane Distributors
METL	Metals/Mining	GSPL	Gas Pipelines
PACK	Container/Packaging		
PAPR	Paper & Forest Products		
TEXT	Textiles		

Figure 54. Corporate Bond Sector (COBS) Code (Continued)

COBS	Description	COBS	Description
Industrial — Transportation		Utility — Other	
AIRL	Airlines	PWER	Power
RAIL	Railroads	WATR	Water
OTHT	Other Transportation	OTHU	Other Utility
Industrial — Other		Finance — Bank	
OTHI	Other Industrial	BANK	Banks
Utility — Telecommunication		Finance — Independent	
BBND	Broadband	IFIN	Independent Finance
CLEC	Competitive Local Exchange Company		
DIVT	Diversified Telecom	Finance — Insurance	
ISPD	ISP/Data	LIFE	Life Insurance
PAGE	Paging	PCAS	Property & Casualty Insurance
WLES	Wireless		
Utility — Gas		Finance — Other	
GASL	Gas Utility – Local Distributors	LEAS	Leasing
		MTGB	Mortgage Banking
		SECS	Securities
Utility — Electric		REIT	Real Estate Investment Trust
ELEC	Electric Utility	OTHF	Other Finance

Source: Citigroup Index LLC.

Fixed-Income Glossary

Asset-Backed

This sector includes financings that are backed purely by pools of assets and supporting credit enhancement structures, such as American Express Master Trust issues that are backed by credit card loans.

Corporate

This sector includes bonds issued by industrial companies, utilities, and financial service companies, including those that carry bank guarantees. In addition, special purpose debt-issuing subsidiaries of such corporations are included, as are subsidiaries whose primary purpose is to provide financing to customers for the purchase and/or lease of the parent companies' products.

Covered

We define this sector to include all Pfandbrief and Pfandbrief-like securities predominant in the euro region.

Eurodollar Bond

A bond issued outside the boundaries of the United States that pays interest and principal in US dollars.

Euro Medium-Term Note

A facility for an issuer to issue debt opportunistically in the Euromarkets in various currencies, maturities, and structures, using a single set of documentation.

European Economic and Monetary Union (EMU) Member Countries (as of January 2012)

Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, the Netherlands, Portugal, Slovakia, Slovenia, and Spain.

European Union (EU) Member States (as of January 2012)

Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom.

Eurosterling Bond

A bond issued outside the boundaries of the United Kingdom that pays interest and principal in British pounds sterling.

Euroyen Bond

A bond issued outside the boundaries of Japan that pays interest and principal in Japanese yen.

Financial

The issuer must be solely engaged in the financial sector. This includes commercial and investment banks, insurance companies, savings and loans, and building societies. It also includes the financial subsidiaries of conglomerates when the subsidiary does not operate for the primary benefit of the manufacturing arm (such as, General Electric Capital Corporation).

Global Bond

Registered bonds issued simultaneously within and outside of the United States. These issues are traded across all markets and can settle through Cedel, Euroclear, and DTC.

Group-of-Ten (G-10) Countries

Belgium, Canada, France, Germany, Italy, Japan, the Netherlands, Sweden, the United Kingdom, and the United States (Switzerland is the honorary eleventh member of the G-10).

National Currency Unit (NCU)

The pre-EMU currencies of the EMU member countries (for example, French francs). These currencies continue to exist and circulate, but the intra-NCU exchange rates and the NCU exchange rates with the euro are irrevocably locked. Most EMU sovereign debt issued in NCUs has been redenominated into euros, but most other bonds remain denominated in NCUs. For index purposes, we quote all NCU amounts in euro terms whether or not individual bonds have been redenominated, because there is no foreign exchange effect.

Official and Agency

This includes all local government, provincial, and city debt as well as other agencies such as nonsovereign-guaranteed central and state banks and export credit agencies. Issues in this sector may have provincial or local government guarantees, but do not have sovereign guarantees. Examples include Canadian provinces, Bank of Greece, Crédit Local de France, and the German Landesbanks.

Regulation S and Rule 144A

Regulation S (Reg S) of the US Securities and Exchange Commission (SEC) sets forth a “safe harbor” that exempts certain securities from the registration requirements of the Securities Act of 1933, provided that such securities are not offered in the primary market to US investors. Rule 144A modifies the primary market restriction to allow the sale of such securities to Qualified Institutional Buyers (QIBs).

Securities issued under Reg S and sold initially to non-US investors may subsequently be sold to US investors in the secondary market after a brief “seasoning” period has elapsed,

typically 40 days. However, a holding of securities issued under Reg S and sold initially to QIBs under Rule 144A cannot be sold to other US investors in the secondary market until a two-year seasoning period has elapsed.

The US Broad Investment-Grade Bond Index includes securities issued under Rule 144A that have registration rights.

The High-Yield Market Index includes issues available for sale under Rule 144A immediately on satisfaction of our entry criteria. Before 1999, we delayed entry of these securities until the SEC registration process was completed.

The Eurodollar Index includes these securities immediately on satisfaction of our entry criteria.

Seasoning

The rules defining the length of time by which a bond is seasoned are complex and vary for different issuers; there has been a trend toward shortening this period. We adopt a simplifying rule for the purpose of determining when a bond becomes seasoned: An issue is to be deemed seasoned for the purposes of the Eurobond Indexes 40 calendar days after the initial payment date.

Sovereign and Sovereign-Guaranteed

This sector includes sovereign debt and any issues carrying an explicit sovereign guarantee irrespective of the function of the issuer — for example, Qantas Airways and Kobe City.

Supranational

Supranationals are supported by the capital of more than one sovereign state, such as the World Bank and the Asian Development Bank.

Yankee

A bond denominated in US dollars issued in the United States by foreign banks, sovereigns, other government entities, and corporations whose parent companies resides outside the United States. These bonds are registered with the SEC.

Discontinued Indexes

The Citigroup indexes in this section have been discontinued.

Global Government Bond Composite Index

The Global Government Bond Composite Index, discontinued in September 2006, included all government bond markets that Citigroup tracked. In addition to the 22 countries included in the WGBI, New Zealand was included in this index.

European Government Bond Composite Index

The European Government Bond Composite Index, discontinued in September 2006, included the 17 sectors of the Global Government Bond Composite Index that were geographically located in Europe, namely: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Norway, Poland, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

Targeted Index Matrix Series (TIMS)

The Targeted Index Matrix Series (TIMS), discontinued on March 31, 2005, was designed to provide a generalized framework for constructing customized benchmarks that spanned the realm of duration and quality combinations available in the investment-grade fixed-income market. The matrix was based on two fundamental variables: (1) a percentage core holding in the credit and collateralized component of the USBIG Index, which provided an approximate gauge of quality level; and (2) effective duration as a measure of interest-rate sensitivity. For a desired effective duration, an index “cell” was created by combining the credit/collateralized core with an appropriate sector of Treasury securities. The Treasury sector acted as the swing component required to attain the desired index duration.

Brady Bond Index

Market coverage of the Brady bonds was migrated to the ESBI Index. The performance and characteristics will be available via the Brady bond sector of the ESBI family of indexes.

The Brady Bond Index was designed to measure the performance of US dollar emerging market debt that has been restructured under the Brady Plan and has a minimum of US\$500 million per issue amount outstanding. The index measured returns for all Brady bonds beginning with the first issue by Mexico in March 1990.

Emerging Markets Mutual Fund (EMMF) Debt Index

The Emerging Markets Mutual Fund (EMMF) Debt Index, discontinued on June 30, 2003, was designed to provide the managers of regulated mutual funds with a more appropriate benchmark than the Brady Bond Index. Regulated mutual funds face diversification rules that prevent the managers from matching the market weightings of the Brady Bond Index, which are concentrated in a few large credits. The EMMF Index was constructed to conform to mutual fund diversification regulations. Under these rules, half of a portfolio could have been invested in individual credits in amounts of less than

5% of the total portfolio size. The remaining half could have been invested in positions no greater than 25%.

An alternative to the EMMF Index is our ESBI-Capped Index, which limits exposure to any one country by placing a ceiling on the par value contribution of each country.

Safest of High-Yields Index

The Safest of High-Yields Index, discontinued on June 30, 2003, was a market-capitalization-weighted managed portfolio of high-yield securities selected by Citigroup credit research analysts for high-coupon income and stable or improving credit quality.

Government and Eurobond Composite Index (GECI)

The GECI was discontinued in January 2002. It was originally created to track the performance of the international investment-grade bond markets. With the launch of the World Broad Investment-Grade (WorldBIG) Bond Index in August 2000, the GECI benchmark grew obsolete. The WorldBIG Index is designed to be our broadest market measure for global investors. It is a liquid-replicable index that offers a natural extension of credit risk for investors who favor traditional government debt.

World Bond Index

The World Bond Index was discontinued on December 31, 1995. This index served as a broad benchmark measuring the performance of government, Eurobonds, and foreign bonds in ten currencies. The index was sample-based and focused on the five-year and longer sectors of these markets. It was introduced in 1981 and had historical returns dating back to January 1978. The introduction of the World Government Bond Index in 1986 made the World Bond Index obsolete.

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