Markit iBoxx ALBI Index Guide

June 2018

1 Markit iBoxx ALBI Indices

The Markit iBoxx Asian Local Bond Index family ("iBoxx ALBI") is designed to reflect the performance of local currency bonds from 11 Asian local currency bond markets. The index offers a broad coverage of the universe of internationally accessible bonds from China's on- and offshore markets, Hong Kong, India, Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan and Thailand, whilst upholding minimum standards of investability and liquidity. The indices are an integral part of the global IHS Markit iBoxx index families, which provide the marketplace with accurate and objective benchmarks by which to assess the performance of bond markets and investments.

The iBoxx ALBI Index family comprises an overall index and indices for each currency. Sovereign and non-sovereign sub-indices are calculated for those markets where the index includes non-sovereign bonds. All iBoxx indices are priced based on multiple data inputs. The iBoxx ALBI indices use multi-source prices as described in the document "Markit iBoxx Pricing Rules" publically available on the Methodology page of *http://www.markit.com/Documentation/Product/IBoxx*

Additionally, the index rules and their application will be governed by the Asian iBoxx Oversight Committee. This document covers the index family structure, rules and calculation methodology.

1.1 Index family structure

The table below provides an overview of the index family structure.

Markit iBoxx Asian Local Bond Index Family

Government	Non-Government	
	Sovereigns & Sub-sovereigns	Corporates
• China Onshore		
• China Offshore (IG, HY & unrated)*	• China Offshore	• China Offshore
• Hong Kong	• Hong Kong	• Hong Kong
• India	• Malaysia	• Malaysia
• Indonesia	• Singapore	• Singapore
• Malaysia		
• Philippines (Liquid & Money Market)		
• Singapore		
• South Korea		
• Taiwan		
• Thailand		
*Available sub-indices		
Country, Sector & Maturity Indices (1-3, 3-5, 5-7, 7-10 and 10+)		

1.2 iBoxx Asian Oversight Committee

In order to ensure the independence and the objectivity of the Markit iBoxx Asian Local Bond Index Family, the index rules and compliance will be assisted by the iBoxx Asian Oversight Committee, in line with the structure for the main iBoxx index families.

The Oversight Committee is comprised of representatives from a broad range of asset managers, consultants, industry bodies and regulators. The purpose of this committee is to review and discuss the recommendations made by IHS Markit and also to provide consultation on any market developments which may warrant rule changes.

1.3 Publication of the index

For all indices, end-of-day closing values are calculated and distributed once daily after the close of trading in the market. The target publication time is 10:10 p.m. HKT/ SGT. The indices are calculated every day except on holidays common to all Asian markets. In addition, the indices are calculated with the previous trading day's close on the last calendar day of each month if that day is not a trading day. IHS Markit publishes an index calculation calendar which is available in the indices section on *http://www.markit.com/Documentation/Product/IBoxx* under Calendar. The Markit iBoxx Asian Local Bond Index Family follows the 'Asia' holiday calendar.

Bond and index analytical values are calculated each trading day using the daily closing prices. Closing index values and key statistics are published at the end of each business day in the indices section on *www.markit.com/indices* for registered users.

Index data is also available from the main information vendors, including Bloomberg and Thomson Reuters.

2 Bonds selection rules

Bond selection criteria are applied consistently across all 11 currencies and markets. The constituents of the local currency indices are the basis for the aggregate Pan-Asia index.

The following selection criteria are used to determine the index constitutents:

* Bond Type
* Issuer Type
* Credit Rating
* Time to Maturity
* Amount outstanding

2.1 Bond type

Only fixed coupon bonds whose cash flows can be determined in advance are eligible for the indices. In particular, the following bond types are eligible:

* Fixed Coupon bonds ("plain vanilla bonds")
* Zero Coupon bonds

Exceptions:

* **Fixed Coupon Certificates of Deposit (Fixed Coupon CDs)** are only eligible for the china offshore and Hong Kong segments and are not eligible for the other 9 markets.
* **Zero Coupon Certificates of Deposit (Zero Coupon CDs)** are only eligible for the China offshore market and are not eligible for the other 10 markets.
* **Retail Bonds** are only eligible for the Philippines segment and are not eligible for the other 10 market.

All other bond types are excluded from the ALBI Index including:

* Bonds with embedded call or put options (except make-whole, tax changes calls and poison puts which remain eligible)
* Other Certificates of Deposit
* Floating rate notes and other fixed-to-floater bonds
* Step-up coupon bonds
* Sinking funds and amortizing bonds
* Bonds with warrants
* Convertibles
* Undated bonds
* Inflation, Index-Linked and Credit-Linked Notes
* Dual-Currency Bonds: Bonds that are denominated in one currency but pay either the coupon or the principal in a different currency

- Loan Participation Notes

- Retail bonds. The list of retail bonds is updated every month and published on *www.markit.com/ NewsInformation/GetNews/IBoxx* under *Indices News*

- Private placements. The list of private placements is updated every month and published on *www.markit.com/NewsInformation/GetNews/IBoxx* under *Indices News*.

For retail bonds and private placements, publicly available information is not always conclusive and the classification of a bond as a retail bond or a private placement will be made at IHS Markit's discretion based on the information available at the time of determination. IHS Markit may consult with the specific Index Advisory Committees to review potential retail bonds or private placements. Any bond classified as retail or private placement is added to the list of excluded private placements and retail bonds. The list is published on *www.markit.com/NewsInformation/GetNews/IBoxx* under *Indices News* for future reference and to ensure decision's consistency.

In instances where a new bond type is not specifically excluded or included according to the published index rules, IHS Markit will analyse the features of such securities in line with the principles set out in 2.1 of this guide. IHS Markit may consult the specific Index Advisory Committees. Any decision as to the eligibility or ineligibility of a new bond type will be published and the index rules will be updated accordingly.

2.2 Time to Maturity

All bonds must have a remaining time to maturity of one year at any rebalancing date. The time to maturity is calculated from the rebalancing date to the final maturity date of the bond by using the day count convention of the bond.

2.3 Credit Ratings

Domestic central government debt does not require a rating. Requirements for other bond issues vary depending on the currency.

For those markets with a credit rating requirement, the rating approach considers international and domestic rating agencies separately. The iBoxx rating is the corresponding iBoxx international rating, or in the absence of an international rating the iBoxx domestic rating.

iBoxx international rating:

Ratings from the following three credit rating agencies are considered

- Fitch Ratings
- Moody's Investor Service
- S&P Global Ratings

The rating process is predominately based on bond ratings. If no rating agency provides a bond rating then issuer ratings are considered for otherwise unrated senior bonds. Subordinated bonds without bond ratings or senior bonds without any bond or issuer rating are considered unrated.

Bonds are considered to be split-rated if one or more of the agency ratings is A-/A3 or higher **AND** one or more of the agency rating is BBB+/Baa1 or lower.

If more than one agency rates a bond then the iBoxx international rating is determined as follows:

- For bonds that are not split-rated, the average rating determines the index rating
- For newly issued split rated subordinated debt, and for split rated senior bonds from issuers not currently in ALBI, the minimum rating is assigned to the bond
- For split-rated bonds already included in the index and for newly issued senior bonds from issuers currently represented within ALBI the maximum rating is assigned to the bonds

iBoxx Domestic Rating:

The iBoxx domestic rating is currently only used for MYR-denominated non-sovereign bonds. Only ratings from RAM are considered. The iBoxx domestic rating is the corresponding bond rating from RAM. For senior bonds, in the absence of a bond rating, the RAM issuer rating is used as the iBoxx domestic rating.

2.4 Bond selection rules for individual markets

2.4.1 iBoxx ALBI China-Onshore

Issuer Type	Sovereigns	• **Eligible**: Bonds Issued by the Ministry of Finance • **Not eligible**: Bonds issued by the People's Bank of China Bonds issued by Local Governments but backed by the central government
	Non-Sovereigns	• Not eligible
Amount Outstanding		CNY 10bn
Listing / Clearing Venue		Bonds listed on the Interbank Market

2.4.2 iBoxx ALBI China Offshore

Issuer Type	Sovereigns	• Eligible
	Non-Sovereigns	• Eligible
Credit Rating	None	
Amount Outstanding	CNY 500m	

Listing / Clearing Venue	• Bonds issued in Hong Kong, Macau, or outside of the People's Republic of China
	• Bonds solely listed/registered in Taiwan are not eligible
	• Bonds need to be clearable through one of the following venues:
	  > Clearstream
	  > Euroclear
	  > Hong Kong CMU	

2.4.3 iBoxx ALBI Hong Kong

Issuer Type	Sovereigns	• Eligible • Sukuk Bonds are not eligible
	Non-Sovereigns	• Eligible • Sukuk Bonds are not eligible
Credit Rating	A- or above	
Amount Outstanding	HKD 300m	

2.4.4 iBoxx ALBI India

Issuer Type	Sovereigns	• Eligible
	Non-Sovereigns	• Not Eligible
Amount Outstanding	INR 50bn	

2.4.5 iBoxx ALBI Indonesia

Issuer Type	Sovereigns	• **Eligible:** Conventiona Indonesian Government Bonds • **Not eligible:** Indonesian Government Sukuk
	Non-Sovereigns	• Not eligible
Amount Outstanding	IDR 2trn	

2.4.6 iBoxx ALBI Malaysia

Issuer Type	Sovereigns	Conventional bonds and Sukuk are eligible
	Non-Sovereigns	Conventional bonds and Sukuk are eligible
Credit Rating	A- or above Bonds issued or guaranteed by Malaysian Central Government do not require a rating	
Amount Outstanding	Sovereigns: MYR 2bn Non-Sovereigns: MYR 500m	
Liquidity Criteria	The liquidity criteria only apply to non-sovereigns. Government bonds are not subject to the criteria. Bonds need to be actively traded in order to become eligible for the indices. Bonds are included in the index if they show the following trading activity at the first , second or third rebalancing following their issue date. For re-opened bonds the bonds are included in the index if they show the trading activity at first three month of the rebalancing following their re-opened dates. 5 days with trading volumes of at least MYR 5m during the rebalancing month. Bonds that do not pass the trading activity rule during the initial three rebalancing will not be considered for the indices at future rebalancings.	

2.4.7 iBoxx ALBI Philippines

Issuer Type	Sovereigns	• Domestic Philippine Government Bonds • Retail Bonds are eligible
	Non-Sovereigns	Not eligible
Amount Outstanding	PHP 3bn	

2.4.8 iBoxx ALBI Singapore

Issuer Type	Sovereigns	Eligible
	Non-Sovereigns	Eligible
Credit Rating	None	
Amount Outstanding	**Sovereigns:** SGD 1.5bn **Non-Sovereigns:** SGD 300m	

2.4.9 iBoxx ALBI South Korea

Issuer Type	Sovereigns	**Eligible:** Korean Treasury Bonds, Monetary and FX Stabilisation Bonds
		Not eligible: Korea National Housing Bonds
	Non-Sovereigns	Not eligible
Amount Outstanding	KRW 1 trn	

2.4.10 iBoxx ALBI Taiwan

Issuer Type	Sovereigns	Eligible
	Non-Sovereigns	Not eligible
Amount Outstanding	TWD 30bn	

2.4.11 iBoxx ALBI Thailand

Issuer Type	Sovereigns	Eligible
	Non-Sovereigns	Not eligible
Amount Outstanding	THB 20bn	

2.5 Special Philippine Government bond indices

In addition to the standard Markit iBoxx ALBI Philippines, two additional indices covering the Philippine fixed income market are calculated.

2.5.1 iBoxx ALBI Philippines Money Market Index

The index contains all Philippine government bonds and Treasury Bills with a remaining maturity of between 3m and 1 year and a minimum notional size of PHP 3 bn. Retail bonds are eligible for the index.

2.5.2 iBoxx ALBI Philippines Liquid Index

The iBoxx ALBI Philippines Liquid Index contains only the most liquid and actively traded Philippine government bonds. The index is rebalanced quarterly on 31 March, 30 June, 30 September and 31 December each year.

Index constituents are selected from the overall universe of Philippine government bonds in two steps:

1. **Determination of the eligible universe of bonds**

   In order to be eligible for the index, bonds need to fulfil the following criteria:

- Fixed Coupon bullet bonds

- Denomiated in PHP

- Retail bonds are eligible for the Index

- Minimum time to maturity of 1.25 years for current index constituents and 2 years for potential inclusions

- Minimum size of PHP 3bn

2. Selection of index constituents from the eligible universe

Index constituents are selected from the universe of eligible bonds based on their quarterly trading volume. The thresholds required for inclusion in the index are set in relation to the total trading volume for all PHP denominated government bonds (excluding T-Bills) to reflect periods of high and low market liquidity. The following thresholds are used:

- Inclusion Threshold: 2% of the total quarterly trading volume

- Watch list Threshold:1% of the total quarterly trading volume

- Exclusion Threshold: 0.2% of the total quarterly trading volume

The following rules are applied to select the index constituents:

New bonds are eligible if:

- Their adjusted trading volume is above the Inclusion Threshold and they have been issued in the current quarter; or

- Their trading volume is above the Inclusion Threshold and they have been issued in the previous quarter; or

- Their trading volume has been above the Inclusion Threshold for two consecutive rebalancings

Current index constituents remain in the indexif:

- Their trading volume remains above the Watch list Threshold; or

- Their trading volume remains above the Exclusion Threshold and they are not on the watch list

- Current index constituents are put on the watch list if their quarterly trading volume falls below the Watch list Threshold and remains above the Exclusion Threshold

Current index constituents are removed from the indexif:

- They are already on the watch list and their trading volume is below the Watch list Threshold; or

- Their trading volume has fallen below the Exclusion Threshold

The adjusted trading volume for newly issued bonds is calculated as follows:

- Bonds issued in the first month of the quarter: No adjustment

- Bond issued in the second month of the quarter: Trading volume adjusted by the factor 1.5

- Bond issued in the last month of the quarter: Trading volume adjusted by the factor 3

2.5.3 iBoxx ALBI Philippines Domestic Indices

All iBoxx ALBI Philippines indices are also published in a domestic version. The bond eligibility criteria are identical to the iBoxx ALBI Philippines indices. The only difference is the pricing source used in the index calculation. The bonds in the iBoxx ALBI Philippines Domestic indices are valued using the PDST-R2 rates published by the Philippine Dealing & Exchange Corp.

3 Bond Classification

All bonds are classified based on the principal activities of the issuer and the main sources of the cash flows used to pay coupons and redemptions. In addition, a bond's specific collateral type or legal provisions are evaluated. Hence, it is possible that bonds issued from different subsidiaries of the same issuer carry different classifications.

The issuer classification is reviewed regularly based on updated information received by IHS Markit, and status changes are included in the indices at the next rebalancing if necessary. Where the sector classification of a specific entity is not very clear due to the diversified business of the entity, a decision will be made at IHS Markit's discretion. IHS Markit will assign the Markit classification according to its evaluation of the business risk presented in the security prospectus and annual reports, if available. IHS Markit will also compare the classification to peers in the potential sectors, and IHS Markit may consult with the Index Advisory Committees. Membership lists including bond classifications are published on the FTP server and in the indices section of *products.markit.com* for registered users.

The main sector classifications within the Markit iBoxx Asian Local Bond Index Family are described below:

3.1 Sovereigns

Bonds issued by a central government and denominated in the respective local currency.

3.2 Other Sovereigns

Bonds issued by a central government but denominated in a foreign currency.

3.3 Sub-Sovereigns

Bonds issued by entities with explicit or implicit government backing due to legal provision, letters of comfort or the public service nature of their business. The issuer requires a strong central government ownership/relationship if its bonds are not explicitly guaranteed by the central government.

The five main sub-sovereign sectors are:

- **Agencies:** Bonds issued by entities whose major business is to fulfill a government-sponsored role to provide public, non-competitive services (e.g. Kreditanstalt fuer Wiederaufbau). Often, such business scope is defined by a specific law, or the issuer is explicitly backed by the government
- **Supranationals:** Bonds issued by supranational entities, i.e. entities that are owned by more than one central government (e.g.World Bank, EIB)
- **Public Banks:** Bonds issued by publicly owned and backed banks that provide regular commercial banking services (e.g. NV Bank Nederlandse Gemeenten)
- **Regions:** Bonds issued by local governments (e.g. Isle of Man)

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- **Other Sub-Sovereigns:** All remaining bonds considered sub-sovereign. There are three main types of bonds and issuers falling into this category:
  - > *Non-Financials:* A government backed issuer from a non-financial sector.
  - > *Guaranteed Financials*: A specific bond issued by a private sector financial institution that is irrevocably guaranteed by a government. Most of these bonds are issued under programs set-up after the 2008 financial crisis
  - > Bonds issued by unguaranteed institutions with an irrevocable and explicit guarantee by a central government that covers amount and timeliness of all interest and principal payments until the maturity of the bond

3.4 Corporate Sectors

Bonds issued by public or private corporations. Bonds secured by a 'floating charge' over some or all assets of the issuer are considered corporate bonds. Corporate bonds are further classified into Financials and Non-Financials bonds and then into their multiple-level economic sectors, according to the issuer's business scope. The category Guaranteed & Wrapped is added under Financials for corporate bonds whose timely coupon and/or principal payments are guaranteed by a special monoline insurer such as AMBAC or MBIA or through a letter of credit from a non-affiliated bank. The sector overview is shown in the tables below

Table 1: Overview of Markit iBoxx Corporate Sectors

	Economic Sector	Market Sector	Market Sub-Sector
Financials	Financials	Banks	Banks
		Insurance	Life Insurance
			Nonlife Insurance
		Financial Services	General Financial
			Real Estate
		Guaranteed & Wrapped	*
Non-Financials	Oil & Gas	Oil & Gas	Oil & Gas Producers
			Oil Equipment / Services & Distribution
	Basic Materials	Chemicals	Chemicals
		Basic Resources	Industrial Metals
			Mining
			Forestry & Paper
	Industrials	Construction & Materials	Construction & Materials
		Industrial Goods & Services	Aerospace & Defense
			Electronic & Electrical Equipment

Economic Sector	Market Sector	Market Sub-Sector
		General Industrials
		Industrial Engineering
		Industrial Transportation
		Support Services
Consumer Goods	Automobiles & Parts	Automobiles & Parts
	Food & Beverage	Beverages
		Food Producers
	Personal & Household Goods	Household Goods
		Personal Goods
		Tobacco
Health Care	Health Care	Pharmaceuticals & Biotechnology
Consumer Services	Retail	Food & Drug Retailers
		General Retailers
	Media	Media
	Travel & Leisure	Travel & Leisure
Telecommunications	Telecommunications	Fixed Line Telecommunications
		Mobile Telecommunications
Utilities	Utilities	Electricity
		Gas / Water & Multiutilities
Technology	Technology	Software & Computer Services
		Technology Hardware & Equipment

3.5 Additional Classifications

Corporate debt is further classified into senior and subordinated debt.

3.6 Classification Review Procedure

The issuer classification is reviewed regularly and status changes are included in the indices at the next rebalancing.

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4 Market Weights

4.1 Background

The iBoxx ALBI indices cover a variety of markets of different sizes. Simply weighting by market capitalization would skew the index profile heavily in favour of the two biggest markets (China and Korea) and result in a very low weight of smaller debt markets (e.g. Hong Kong or Singapore), which are more developed, more liquid and accessible for investment. Therefore a pure market capitalization weighting is unsuitable for Pan-Asian local currency debt and would prevent investors from obtaining a balanced exposure to the underlying bond markets.

For the period from 31 December 2012 to 30 November 2016, the weights assigned to the 11 markets are those determined by HSBC for the calculation of the HSBC Asian Local Bond Index. As part of the 2016 Annual Index Review, IHS Markit updated the methodology to calculate the weights for each market in the iBoxx ALBI index.

In additional, with effect from 30th November 2016, the annual fundamental target weight of Taiwan has been set to 0% and the weight of Taiwan in the iBoxx ALBI Index will be gradually reduced to 0 in line with the adjustment procedure set out below to reflect the current capital control regulations affecting foreign investors into the Taiwan bonds market. The capital control and their impact on the accessibility of Taiwan will be monitored as part of the regular annual index reviews.

4.2 Market weight composition

For The indices are fundamentally weighted with the weight of each market determined from baseline weight (BW) and a number of factors:

- Local bond market size (S)
- Bond market accessibility – GEMLOC Investability Indicator (G)

1. Baseline weight

The baseline for the fundamental weighting assumes an equal weight allocated to each market subject to market size considerations. The baseline weight for medium-sized markets is set at 50% of the weight allocated to large markets. For this purpose, the size of each market is defined as the size of the domestic government bond market comprising all government bonds with a remaining time to maturity of 1 year or more. Markets with a size of less than US$ 50bn are considered medium-sized.

Type	Baseline weight (BW)	Markets as of 31st Nov 2016
Large (8 markets)	11.11%	China onshore, India, Indonesia, Malaysia,
		Philippines, Singapore, South Korea, Thailand
Medium-sized (2 markets)	5.56%	China offshore, Hong Kong
Non-investable (1 market)	0%	Taiwan

2. Adjustment factors

Local bond market size

Local bond market size is defined as the USD market capitalization of all qualifying bonds for the respective single currency iBoxx ALBI sub-index. The annual target weights calculation uses the September iBoxx ALBI index composition with data as of 31 August. The forecasts use the data as of 28/29 February and 31 May respectively.

GEMLOC Investability Indicator

The GEMLOC Investability Indicator is a transparent measure of investability based on a methodology developed by the World Bank. The GEMLOC Investability Indicator scores markets on a set of 14 subfactors that are aggregated to the overall score. GEMLOC details can be accessed on IHS Markit website at following path

http://www.markit.com/Documentation/Product/IBoxx > Rules Benchmark > Global > Global Emerging Market.

Moody's Analytics Knowledge Services acts as a third party in this process and provides IHS Markit with the GEMLOC Investability Indicators updated quarterly every year.

Calculation of the adjustment

Each factor is normalized using the following method:

$$F_{i,j} = \frac{f_{i,j}}{\sum_{m=1}^{n} f_{m,j}} - \frac{1}{n}$$

Where:

$f_{i,j}$ is the original value of factor j in market i

$F_{i,j}$ is the normalized value of factor j in market i

n is the number of markets with a baseline weight greater than 0.

3. Combined adjustment factor

Each markets' adjustment factor (AF) is the weighted sum of the two factors:

$$AF_i = \frac{1}{3} S_i + \frac{2}{3} G_i$$

Where:

$AF_{i,j}$ is the adjustment factor of market i

S_i is the normalized value of bond market size of market i

G_i is the normalized value of the GEMLOC Indicator i

Each market's theoretical target weight is the sum of the baseline weight and the adjustment factor:

$$W_i = BW_i + AF_i$$

Where:

$AF_{i,j}$ is the adjustment factor of market i

BW_i is the base market weight of market i

W_i is the weight of market i in the index

4. Additional restrictions for markets with high access restrictions

To reflect additional constraints facing investors in local currency bond markets, markets with high capital access restrictions will be further capped. The degree of market access is measured by the GEMLOC Securities Market Access Score:

- Weight of markets with a securities market access score of 0: 0% (excluded from the indices)
- Weight of markets with a securities market access score between 1 and 50: 50% of the theoretical target weight

The excess weight from the capping is redistributed to the remaining markets in proportion to their theoretical weight, subject to a maximum of 20% in any market. The market weights are rounded to four decimal places (1 basis point). The final target weights are rounded to the fourth decimal (i.e. 1 basis point). In case that the sum of the rounded weights are above or below 100%, the weight(s) of the largest market(s) are adjusted by ±.01% each until the sum of the weights is exactly 100%

5. Review process and Implementation of the target market weights

The review process distinguishes between regular and extraordinary reviews. In order to enhance the stability of the indices and to capture long-term trends within the 11 markets, the target market weights are reviewed annually for the 30 November re-balancing. The target market weights are not changed between review dates unless an extraordinary review is conducted.

The implementation of the new target weights starts on 30 November each year. The maximum change to the weight of a market for the target weight implementation is 0.5%. If the difference between the current weights and the new target weights is larger than 0.5% for any market, then the weights will be implemented over several quarters (30 November, 28/29 February, 31 May and 31 August) subject to a maximum change of 0.5%.

The iBoxx Asian Oversight Committee or IHS Markit may decide to undertake an extraordinary review of market weights at any monthly re-balancing, if profound changes in one or more of the eleven markets suggest that the weights of the markets would change significantly during the review. Examples of such events are a major increase in bond issuance or liquidity, or major regulatory changes that impact the GEMLOC Investability Indicators significantly.

IHS Markit will also publish a forecast for the upcoming annual review at the beginning of March and June each year. The forecast will be based on the updated index market capitalization and GEMLOC Investability Indicator for each market.

6. Current and historical weights

The file containing current and historical weights for the index is available in the indices section on the Rules Benchmark page of *http://www.markit.com/Documentation/Product/IBoxx*

5 Index calculation

5.1 Static data

Information used in the index calculation is sourced from offering circulars and checked against standard data providers.

FX spot and forward rates are sourced from WM Company. The daily index calculation uses the FX rates from 8am London time.

5.2 Bond prices

For more details please refer to the *Markit iBoxx Pricing Rules* document, available in the *Methodology* section of the Markit iBoxx Documentation page on *www.markit.com/Documentation/Product/IBoxx*.

5.3 Withholding tax treatment

Withholding taxes are not taken into account the calculation of the iBoxx ALBI indices with the exception of PHP-denominated bonds. For PHP-denominated bonds, the 20% final withholding tax is applied to the iBoxx ALBI Philippines index and the PHP-denominated component of the iBoxx ALBI Overall and other aggregate indices containing PHP denominated bonds.

5.4 Rebalancing process

The Markit iBoxx Asian Local Bond Index Family is rebalanced monthly on the last business day of the month after the close of business. Changes to outstanding amounts are only taken into account if they are publicly known three business days before the end of the month. Changes in ratings are only taken into account if they are publicly known two business days before the end of the month. New bonds issued are taken into account if they are publicly known to settle until the last calendar day of the month, inclusive, and if their rating has become known at least three trading days before the end of the month.

Preview lists of eligible bonds are published ten (T-10), four (T-4), and three (T-3) trading days before end of the month. The preview membership list is published on the FTP server and in the indices section on *www.markit.com/indices* under *Data/Bond List Preview* for registered users.

Three business days before the end of each month, a membership list with final amount outstanding for each bond is published. This list contains the maximum number of constituents for the next month.

Two business days before the end of each month, the rating information for the constituents is updated and the list is adjusted for all rating changes which are known to have taken place two trading days before the end of the month. Bonds which are known to have been upgraded to investment grade

two trading days before the end of the month are not included in the membership, but bonds which are known to have been downgraded to sub-investment grade two trading days before the end of the month do get excluded from the membership.

On the last business day of each month, IHS Markit publishes the final membership with closing prices for the bonds, and various bonds analytics based on the index prices of the bonds.

5.5 Index data

The calculation of the index is based on bid prices. New securities are included in the index at their respective ask prices when they enter the index family. In the event that no price can be established for a particular security, the index continues to be calculated based on the last available price. This might be the case in periods of market stress, or disruption as well as in illiquid or fragmented markets. If the required inputs become impossible to obtain, IHS Markit may consult the specific Index Advisory Committees at the following rebalancing date. Decisions are made publicly available on a timely basis and IHS Markit may refer back to previous cases.

A sub-index of the iBoxx ALBI index family is calculated if at least one bond matches all inclusion criteria. If no more bonds qualify for an index, then its level will remain constant. If at least one bond becomes available again, the index calculation will be resumed and chained to the last calculated level. All bonds are assigned to sub-indices according to their classification. The assignment of a bond to a certain maturity bucket is based on its expected remaining life. All bonds remain in their maturity bucket for the entire month. Calculation occurs on a daily basis as soon as the prices become available. The indices are calculated on each trading day (Monday to Friday), unless this day is a holiday in each of the 11 markets. The indices are also calculated on the last calendar day of each month irrespective of holidays and weekends. If the indices are calculated on a day that is a non-business day in one or more of the markets, then the prices for bonds denominated in the currency of those markets will be carried forward from the previous trading day and the index will be calculated using those prices and the current accrued interest and coupon payment data.

On the last trading day of a month, the rebalancing takes place after close of market.

5.6 Index calculus

For specific index formulas please refer to the *Markit iBoxx Bond Index Calculus* document, available in the *Methodology* section of the iBoxx Documentation page on *www.markit.com/Documentation/Product/IBoxx*.

5.7 Treatment of the special intra-month events

Data for the application of corporate actions in the index may not be fully or timely available at all times, e.g. the final call prices for make-whole calls or the actual pay-in-kind percentage for PIK-payment options. In such cases, IHS Markit will estimate the approximate value based on the available data at the time of calculation.

5.8 Index and analytics weightings

The individual single currency iBoxx ALBI indices are volume-weighted indices, with a bond's base market value as the weighting factor. The base market value and amount outstanding of a bond are only adjusted within the monthly re-balancing process at the end of each month. However, scheduled redemption payments for amortizing bonds and sinking funds are taken into account when they occur, as they are affecting the index return and analytical values. In addition, bonds that are fully redeemed intra-month are also taken into account immediately. Therefore, the indices are calculated using the amount outstanding adjusted for increases as well as repurchases that took place during the month.

All calculations are based on the adjusted amount outstanding that reflects the outstanding bond notional at the last rebalancing.

5.9 Scheduled partial redemptions: sinking funds and amortizing bonds

Amortising bonds are bonds whose face value is redeemed according to a schedule at more than one redemption date. Interest payments are made on the basis of the remaining outstanding amount of the bond. *Sinking funds* are bonds, where money is applied periodically to redeem part of the outstanding before maturity. At the redemption dates, the appropriate amount of bonds may either be retired randomly from the outstanding bonds, or may be purchased on the open market and thus retired. Interest payments are made on the remaining outstanding bonds.

For the two bond types above, price and accrued interest are quoted and calculated to the actual amount outstanding (par). Scheduled redemptions within the period are taken into account immediately. Coupon payments, however, refer to the scheduled amount outstanding over the last coupon period; scheduled redemptions within the month are not taken into account.

5.10 Full redemptions: exercised calls, puts and buybacks

If a bond is fully redeemed intra-month, the bond effectively ceases to exist. In all calculations, the redeemed bond is treated as cash based on the last price, the call price or repurchase price, as applicable. The redemption factor, redemption and the redemption price are used to treat these events in the index and analytics calculation. In addition, the clean price of the bond is set to the redemption price, and the interest accrued until the redemption date is treated as an irregular coupon payment.

5.11 Bonds trading flat of accrued

If a bond is identified as trading flat of accrued, the accrued interest of the bond is set to 0 in the total return index calculation and is excluded from the calculation of all bond and index analytical values.

Bonds will be considered trading flat of accrued in any of the following situations:

- a bond has been assigned a default rating and/or
- issuer has announced a failure to pay a coupon and/or
- issuer has announced an intention not to make a payment on an upcoming coupon (grace period).

5.12 Multi-coupon bonds

Some bonds have pre-defined coupon changes that lead to a change in the annual coupon over the life of the bond. In all instances, the coupon change must be a fixed amount on top of a fixed coupon, i.e. floating coupon bonds are not eligible for the indices. The two main categories of bonds are step-up bonds and event-driven bonds.

- **Step-up bonds:** These are bonds with a pre-defined coupon schedule that cannot change during the life of the bond. The coupon schedule is used in all bond calculations.
- **Event-driven bonds:** These are bonds whose coupon may change upon occurrence (or non-occurrence) of pre-specified events, such as rating changes, e.g. rating-driven bonds, failure to register a bond (register-driven bonds), or failure to complete a merger, (merger-driven bonds). In the calculation of the indices and the analytics, the coupon schedule as of the calculation date is used. That is to say, any events occurring after the calculation date are ignored in the determination of the applicable coupon schedule.

  Example of an event-driven bond: A bond's rating changes on 31 December 2003 from A- to BBB +, and the coupon steps up from 6% to 6.25% from 1 March 2004 onward. The coupon dates are 1 October and 1 April each year. The correct coupon schedule for the bond and index calculations is date dependent. The index calculation on 20 December 2003 uses the 6% coupon for the whole life of the bond, while the calculation on 31 January 2004 uses a 6% coupon for the current coupon period to 29 February 2004, and a 6.25% coupon for all later interest payments. The index calculation on 20 March uses a 6% coupon until 29 February, a 6.25% coupon for the remainder of the current coupon period and a 6.25% coupon for all future coupon payments. The index calculation after 1 April uses a 6.25% coupon.

5.13 Ex-dividend conventions

Some markets have ex-dividend conventions. Ex-dividend means that the next coupon is detached from the bond several days in advance of the coupon payment date. The date on which the next coupon is detached is the ex-dividend date and the period between the ex-dividend date and the coupon payment date is the ex-dividend period. If a bond is in the ex-dividend period, the next coupon payment will not be paid to a buyer of this bond, but will be paid to the original bond holder.

The indices and analytics calculations take ex-dividend conventions into account. During the ex-dividend period, the accrued interest of the bond is negative, while the next coupon payment is held separate in the variable coupon adjustment. If the bond enters the index during the ex-dividend period, then the next coupon payment and the coupon adjustment will not accrue to the index, however, if the bond was already in the index, the next coupon payment needs to be included in the total return calculations. This is controlled via the ex-dividend indicator which is 0 if the bond enters the index during the current ex-dividend period and 1 if not. The same treatment is also applied to all analytics

calculation, i.e. the first cash flow is excluded from the calculations if the bond enters during the current ex-dividend period.

5.14 Index History

The index history starts on 31 December 2012. All indices have a base value of 100 on that date.

5.15 Settlement Conventions

All iBoxx indices are calculated using the assumption of T+0 settlement days.

5.16 Data publication and access

The table below summarizes the publication of Markit iBoxx Asian Local Bond Index Family in the *Indices* section of the IHS Markit website *www.markit.com/indices* for registered users and on the FTP server.

Frequency	File Type	Access
Daily	Underlying file – Bond level	FTP Server
	Indices files – Index level	FTP Server / IHS Markit website / Bloomberg (index levels only)
Weekly	Preview components	FTP Server / IHS Markit website
Daily from T+1	Forwards	FTP Server
Monthly	End of month components	FTP Server / IHS Markit website
	XREF files	FTP Server

Markit iBoxx indices are also published through number information service providers including Bloomberg and Thomson Reuters. Please contact IHS Markit for a list of current service providers that carry the iBoxx ALBI Index data. The Bloomberg ticker and Reuters RIC code for the main iBoxx ALBI indices are:

ISIN	Markit Index Name	Total Return Index		Price Index	
		BBG Ticker	RIC Code	BBG Ticker	RIC Code
GB00BYZW8M61	Markit iBoxx ALBI (USD Unhedged)	IBXXALBI	.IBXXALBI	IBXXALBC	.IBXXALBC
GB00BYZW7B81	Markit iBoxx ALBI China Onshore	IBXXCNYT	.IBXXCNYT	IBXXCNYP	.IBXXCNYP
GB00BYZW7416	Markit iBoxx ALBI China Offshore	IBXXCNHT	.IBXXCNHT	IBXXCNHP	.IBXXCNHP
GB00BYZW7C98	Markit iBoxx ALBI Hong Kong	IBXXHKBI	.IBXXHKBI	IBXXHKBC	.IBXXHKBC

		Total Return Index		Price Index	
GB00BYZW7Z26	Markit iBoxx ALBI India	IBXXINTR	.IBXXINTR	IBXXINCP	.IBXXINCP
GB00BYZW7Y19	Markit iBoxx ALBI Indonesia	IBXXIDTR	.IBXXIDTR	IBXXIDCP	.IBXXIDCP
GB00BYZW8042	Markit iBoxx ALBI South Korea	IBXXKRTR	.IBXXKRTR	IBXXKRCP	.IBXXKRCP
GB00BYZW8158	Markit iBoxx ALBI Malaysia	IBXXMYTR	.IBXXMYTR	IBXXMYCP	.IBXXMYCP
GB00BYZW8604	Markit iBoxx ALBI Philippines	IBXXPHTR	.IBXXPHTR	IBXXPHCP	.IBXXPHCP
GB00BYZW8B56	Markit iBoxx ALBI Philippines Liquid	IBXXCHOF	.IBXXCHOF	IBXXCHMS	.IBXXCHMS
GB00BYZW8C63	Markit iBoxx ALBI Philippines Money Market	IBXXCHOG	.IBXXCHOG	IBXXCHMT	.IBXXCHMT
GB00BYZW8D70	Markit iBoxx ALBI Singapore	IBXXSGXR	.IBXXSGXR	IBXXSGXP	.IBXXSGXP
GB00BYZW8J33	Markit iBoxx ALBI Taiwan	IBXXTWTR	.IBXXTWTR	IBXXTWCP	.IBXXTWCP
GB00BYZW8H19	Markit iBoxx ALBI Thailand	IBXXTHTR	.IBXXTHTR	IBXXTHCP	.IBXXTHCP

5.17 Index Restatement

Index restatement follows the policy described in the *Markit iBoxx Index Restatement Policy* document, available in the *Methodology* section of the Markit iBoxx Documentation page on *www.markit.com/Documentation/Product/IBoxx*.

5.18 Index Review

The rules for the index are reviewed once per year during the annual index review process to ensure that the index provides a balanced representation of the Local Currency debt markets of the economies covered by the indices. Decisions made following the Annual Index Review will be published on *www.markit.com/NewsInformation/GetNews/IBoxx* under *Indices News* shortly committee has been held. The publication will contain a detailed overview and timelines for implementation of the rules changes.

6 Changes to the Markit iBoxx Asian Local Bond Index Family

30 Nov 2017	**Annual Index Review 2017**
	● iBoxx ALBI Indices - Update of 2017 Market Weights
01 May 2017	Update to the Liquidity requirement and monitoring period for MYR denominated non-government bonds
30 Nov 2016	**Annual Index Review 2016**
	● Methodology Update – ALBI annual weights assessment
	● Exclusion of Taiwan from the iBoxx ALBI Indices
	● Bond selection rules change – iBoxx ALBI India
	● Launch of new sub-indices by sector and maturity for iBoxx ALBI and all single currency indices
25 Aug 2016	Update to the Sukuk eligibility for ALBI HKD
7 Jun 2016	Updates on publication timelines and preview schedules
30 Apr 2016	Launch of the Markit iBoxx ALBI Philippines Domestic indices
3 Mar 2016	Clarification on the index holiday schedule
19 Feb 2016	Update to the rebalancing process and preview schedule
20 Jan 2016	Launch of the Markit iBoxx ALBI index family

7 Further Information

Glossary of key terms

The Markit iBoxx Glossary document of key terms is available in the Methodology section of the Markit iBoxx Documentation page on *www.markit.com/Documentation/Product/iBoxx*.

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Formal complaints

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For any general index enquiries, please contact iBoxx indices support group at *indices@ihsmarkit.com*.

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Markit Indices Limited owns, manages, compiles and publishes the iTraxx credit derivative indices and the iBoxxFX Trade Weighted Indices.

8 Appendix

8.1 Annotations

$f_{i,j}$	denotes the original value of factor j in market i
$F_{i,j}$	denotes the normalized value of factor j in market i
n	denotes the number of markets with a baseline weight greater than 0
AF_i	denotes adjustment factor of market i
S_i	denotes normalized value of bond market size of market i
G_i	denotes normalized value of the GEMLOC Indicator i
BW_i	denotes base market weight of market i
AF_i	denotes weight of market i in the Markit iBoxx Asian Local Bond Index Family

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