

Markit iBoxx EUR Liquid Diversified Indices Guide

October 2014

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Changes to the Markit iBoxx EUR Liquid Diversified Indices Family

01 Dec 2014	Markit iBoxx EUR Liquid index family will follow the pricing methodology described in the document 'Markit iBoxx Pricing Rules' Index restatement, complaints sections added, Additional clarifications on bond eligibility, classification and corporate actions,
31 Jul 2013	The minimum notional amount requirement change from 1 billion to 500 million for the Markit iBoxx EUR Liquid Germany Covered Diversified Index.
31 Jul 2011	Maximum issuer weight in Markit iBoxx EUR Liquid Corporates Diversified and Markit iBoxx EUR Liquid Non-Financials Diversified index lowered from 7.5% to 4%
31 Jan 2011	Exclusion of step-up and rating-driven bonds from the Markit iBoxx EUR Liquid Corporates Diversified and launch of Markit iBoxx EUR Liquid Non-Financials Diversified Index

1 Markit iBoxx EUR Liquid Diversified Indices

The Markit iBoxx EUR Liquid Diversified indices consist of a subset of the bonds in the Markit iBoxx EUR index family of benchmark indices. The liquid diversified indices have been designed to provide a suitable basis for OTC, exchange-traded derivatives and Exchange Traded Funds (ETFs).

Broad benchmark indices generally consist of a large number of bonds, especially within the corporate sector. Portfolio managers tracking an index from the broad benchmark Markit iBoxx EUR index family may therefore incur substantial costs in attempting to replicate or hedge the individual bonds in the portfolio. Furthermore, bonds with special features or smaller amounts outstanding usually suffer from illiquid trading; resulting in relatively large bid-ask spreads.

The Markit iBoxx EUR Liquid Diversified indices are intended to address these deficiencies by limiting the number of bonds per index and excluding special bond types, thus reducing tracking and hedging costs.

All iBoxx indices are priced based on multiple data inputs. The Markit iBoxx EUR Index family uses multi-source prices as described in the document „Markit iBoxx Pricing Rules“ publically available on www.markit.com/indices. Additionally, the index rules and their application will be governed by two Index Advisory Committees:

- **Technical Committee:** consists of representatives from market makers / banks and meets on a monthly basis in order to provide feedback and information into the monthly rebalancing process and to monitor any market developments.
- **Oversight Committee:** consists of representatives from mostly the buy side and meets in order to discuss the decisions of the Technical Committee, the wider index rules and any market developments which may warrant rule changes.

This document covers the index rules and calculation methodology.

1.1 Index family structure

The Markit iBoxx EUR Liquid Diversified index family is comprised of Euro-denominated debt issued by Eurozone issuers. The index family is comprised of four different index sub-groups: sovereign diversified, Germany covered diversified, corporates diversified, and non-financials diversified.

The Markit iBoxx Sovereign Diversified index covers various maturity bucket indices.

The figure below provides an overview of the index family structure:



1.2 Index governance

In order to ensure the independence and the objectivity of the Markit iBoxx EUR Index family, the index rules and their enforcement will be governed by two distinct Index Advisory Committees, in line with the governance structure for the main Markit iBoxx index families.

1.2.1 Technical Committee

The Technical Committee is composed of representatives from market makers / banks . The main purpose of this group is to provide assistance in the identification of eligible constituents, especially in the instance where the eligibility or the classification of a bond is unclear or contentious. Additionally, the Technical Committee discusses any market developments which may warrant index rule changes, and provide recommendations on changes to the

rules or additional indices. It also reviews the impact of financial sanctions on the eligibility of countries or specific index constituents. The Technical Committee meets once a month.

1.2.2 Oversight Committee

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

1.3 Publication of the Markit iBoxx EUR Liquid Diversified Indices

The Markit iBoxx EUR Liquid Diversified indices are computed and disseminated once per minute between 9.00 a.m. and 5.15 p.m. CET. The indices are calculated every day except on common European bank holidays. In addition, the indices are calculated using the previous trading day's closing prices on the last calendar day of each month even if that day is not a trading day. Markit publishes an index calculation calendar which is available in the indices section on www.markit.com/indices under *Calendar* for registered users. Index data and bond price information is also available from main information vendors.

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. In addition, midday fixing levels for bond prices and indices are also published.

2 Markit iBoxx EUR Liquid Sovereign Diversified Indices Rules

With the exception of the Markit iBoxx EUR Liquid Sovereigns Diversified 3m-1year index, the indices are based exclusively on sovereign bonds contained in the universe of the Markit iBoxx EUR benchmark indices. However, unlike the benchmark indices, the number of bonds in each liquid index is limited. To ensure that only suitable bonds enter the liquid indices, further selection criteria have been added. In addition to the selection criteria used to define the eligible bond universe, ranking criteria have been defined to determine which bonds enter the Markit iBoxx EUR Liquid Sovereign Diversified indices.

2.1 Bond Selection Rules for Markit iBoxx EUR Liquid Sovereign Diversified Indices

The following selection criteria are designed to reduce the number of bonds for the Markit iBoxx EUR Liquid Sovereign Diversified indices:

- Bond type
- Credit rating
- Time to maturity
- Amount outstanding

2.1.1 Bond Type

The Markit iBoxx EUR Liquid Sovereign Diversified indices include only Euro and legacy currency denominated bullet fixed coupon bonds (plain vanilla bonds). Sinking funds and amortizing bonds are excluded from the indices. T-Bills are only eligible for the Markit iBoxx EUR Liquid Sovereign Diversified 3 months – 1 year index.

2.1.2 Credit Rating

All countries in the Markit iBoxx EUR Eurozone index require a long-term local currency debt rating of investment grade. Individual bonds do not require a rating. Ratings from the following three credit rating agencies are considered for the calculation of the Markit iBoxx Rating:

- Fitch Ratings
- Moody's Investor Service
- Standard & Poor's Rating Services

Investment grade is defined as BBB- or higher from Fitch and Standard & Poor's and Baa3 or higher from Moody's. If a country is rated by more than one of the above agencies, then the Markit iBoxx rating is the average of the provided ratings. The rating is consolidated to the nearest rating grade. Rating notches are not used. For more information on how the average rating is determined, please refer to the Markit iBoxx Rating Rules. The Rules can be found on www.markit.com/indices under *Markit Bond Indices – Markit iBoxx → Markit iBoxx Rules*.

Prior to 01 January 2008, the lowest rating was used as the Markit iBoxx Rating.

2.1.3 Time to Maturity

To qualify for the Markit iBoxx EUR Liquid Sovereign Diversified indices all eligible bonds must have a remaining time to maturity of at least 1.5 years measured from the respective re-balancing date to the maturity date. The time to maturity for substitutes is measured from the substitution date to the maturity date of the bond. Bonds in the liquid indices with a remaining time to maturity of less than 1.5 years will be excluded from the indices at the next re-balancing.

For the Markit iBoxx EUR Liquid Sovereign Diversified 3 months – 1 year index, the minimum time to maturity is 6 months for new bonds and 3 months for bonds already included in the index.

2.1.4 Amount Outstanding

All bonds must have a specific minimum amount outstanding of EUR 2 billion in order to be eligible for the indices. The amount outstanding of each bond is used to calculate its index weight. The indices are capitalization-weighted.

2.1.5 Minimum run

Bonds in the Markit iBoxx EUR Liquid Sovereigns Diversified 3 months – 1 year Index need to stay in the index for at least six months. They are not replaced by higher ranked bonds unless they have already completed the minimum run period. There is no minimum run for the other Markit iBoxx EUR Liquid Sovereign Diversified indices.

2.2 Index Size, Bond Ordering and Bond Selection

2.2.1 Index Size

To facilitate the replication of the indices, the maximum number of bonds in each index is limited. For the Markit iBoxx EUR Liquid Sovereign Diversified 1–25 years index, the maximum number of bonds is 80, for all other indices, the maximum number of bonds is 25. In the event that the number of eligible bonds is less than or equal to the maximum number, all available bonds will be included in the index.

The weight of a country in an index is capped at 20%. If the weight of a country is capped, then the weighting of each bond from the country is reduced according to its relative weight.

2.2.2 Ranking Criteria

Should more than the maximum number of bonds be available for an index, ordering criteria are applied in order to rank the eligible bonds.

The following five criteria are applied:

1. Time since first settlement date between 0 and 4 years
2. Higher amount outstanding
3. More recent first settlement date
4. Longer time to maturity
5. Lower coupon

These criteria are applied to each pair of bonds in the order stated above until a difference can be established (i.e. if two bonds have a time since first settlement of between 0-4 years and have identical amounts outstanding, but one has a more recent first settlement date, then criteria 1 to 3 are applied, but 4 and 5 are not). With the help of the ranking criteria, a bond hierarchy can be defined, with the bond that has the highest amount outstanding at the top of the hierarchy.

If there is still a tie after these criteria are applied, the bond with higher ISIN is ranked first.

2.2.3 Limit on Number of Bonds from any Issuer in an index

The number of bonds from an issuing country that may enter an index is limited to 4 bonds.

2.3 Maturity Bands

The sovereign bonds are categorized into maturity buckets, which are then used to calculate maturity indices. To take into account the current issuance pattern by Eurozone governments, the maturity bands for the indices are defined as:

- 3 months – 1 year
- 1-3 years

- 3-5 years
- 5-7 years
- 7-10 years
- 1-10 years
- 1-25 years
- 10-15 years
- 10+ years
- 15+ years
- 25+ years

For the 1-3, 3-5, 5-7, 7-10, 1-10 and 1-25 years indices, the index contains bonds with a maturity of 1.5-3.5 years, 3.5-5.5 years etc. at each quarterly rebalancing to account for slight divergences from the issuance conventions in the countries covered by the indices.

3 Markit iBoxx EUR Liquid Germany Covered Diversified Index Rules

The index is solely based on bonds included in the Markit iBoxx EUR Germany Covered index. To ensure that only suitable bonds enter the liquid indices, further selection criteria have been added. In addition to the selection criteria used to define the eligible bond universe, ranking criteria have been defined to determine which bonds enter the Markit iBoxx EUR Liquid Germany Covered Diversified Index.

3.1 Bond Selection Rules for Markit iBoxx EUR Liquid Germany Covered Diversified Index

The following selection criteria are designed to reduce the number of bonds for the Markit iBoxx EUR Liquid Germany Covered Diversified indices:

- Bond type
- Age
- Time to maturity
- Issuer rating
- Amount outstanding

3.1.1 Bond Type

The Markit iBoxx EUR Liquid Germany Covered Diversified index includes only Euro and legacy currency denominated bullet fixed coupon bonds (plain vanilla bonds). Sinking funds and amortizing bonds are excluded from the index.

3.1.2 Age

All eligible bonds must have an age of no more than 4 years. The age is measured from the first settlement date of the bond to the rebalancing date. Bonds in the liquid indices with an age of more than 4 years will be excluded from the indices at the next re-balancing.

3.1.3 Time to Maturity

To qualify for the Markit iBoxx EUR Liquid Germany Covered Diversified index all eligible bonds must have a remaining time to maturity of at least 1.5 years measured from the respective re-balancing date to the maturity date. The maximum time to maturity is 10 years. The time to maturity for substitutes is measured from the substitution date to the maturity date of the bond. Bonds in the liquid indices with a remaining time to maturity of less than 1.5 years will be excluded from the indices at the next re-balancing.

3.1.4 Issuer rating

In addition to the rating criteria for the Markit iBoxx EUR benchmark indices, the senior unsecured debt rating of the covered bond issuer needs to be BBB or higher. Bonds from issuers rated BBB- or lower are not eligible for the index.

Ratings from the following three credit rating agencies are considered:

1. Fitch Ratings
2. Moody's Investor Service
3. Standard & Poor's Rating Services

If more than one agency provides a rating, the average rating is used.

3.1.5 Amount Outstanding

All bonds must have a specific minimum amount outstanding of EUR 500 million in order to be eligible for the indices. The amount outstanding of each bond is used to calculate its index weight. The index is capitalization-weighted.

3.2 Index Size, Bond Ordering and Bond Selection

3.2.1 Index Size and Capping Procedure

To facilitate the replication of the indices, the maximum number of bonds is limited to 30. In the event that the number of eligible bonds is less than or equal to the maximum number, all available bonds will be included in the index.

The weight of an issuer in the index is capped at 15%. If an issuer has to be capped the weight of the smallest bond from the issuer is reduced successively. If as a result of the capping the weight of a bond is reduced to zero, the next eligible bond from a non-capped issuer is included in the index, and the capping is reapplied.

The weight of all BBB/BBB+ issuers is capped at 50% of the index. If the BBB/BBB+ segment has to be capped, the weight of the smallest bonds in the index is reduced successively. If as a result of the capping the weight of a bond is reduced to zero, the next eligible bond from a non-BBB/BBB+ issuer is included in the index, and the capping is reapplied. If necessary, the 15% issuer cap is reapplied after the capping of the BBB segment.

The preliminary capping is performed with the closing prices of the third last trading day of the month. A bond whose first settlement date is later than the third last trading day of the month is assumed to have a price of 100. The final membership list is determined based on the results of the preliminary capping.

The final capping is applied after the close of the last trading day of the month with the final closing prices of all bonds. If as a result of the final capping, the weight of a bond is reduced to zero, it is not replaced.

3.2.2 Ranking Criteria

Should more than the maximum number of bonds be available for an index, ordering criteria are applied in order to rank the eligible bonds. The following four criteria are applied to establish a bond hierarchy:

1. Higher amount outstanding
2. More recent first settlement date
3. Longer time to maturity
4. Lower coupon

These criteria are applied to each pair of bonds in the order stated above until a difference can be established (i.e. if two bonds have identical amounts outstanding and the same first settlement date but one has a longer time to maturity, then criteria 1 to 3 are applied, but 4 is not). With the help of the ranking criteria, a bond hierarchy can be defined, with the bond that has the highest amount outstanding at the top of the hierarchy.

If there is still a tie after these criteria are applied, the bond with the higher ISIN (ranked in alpha-numerical order) is selected.

3.2.3 Limit on Number of Bonds from any Issuer in an index

The number of bonds from an issuer that may enter an index is limited to 4 bonds.

4 Markit iBoxx EUR Liquid Corporates Diversified Index Rules

The index is solely based on bonds included in the Markit iBoxx EUR Corporates index. To ensure that only suitable bonds enter the liquid indices, further selection criteria have been added. In addition to the selection criteria used to define the eligible bond universe, ranking criteria have been defined to determine which bonds enter the Markit iBoxx EUR Liquid Corporates Diversified Index.

4.1 Bond Selection Rules for Markit iBoxx EUR Liquid Corporates Diversified Index

The following selection criteria are designed to reduce the number of bonds for the Markit iBoxx EUR Liquid Corporates Diversified indices:

- Bond type
- Age
- Time to maturity
- Bond Rating
- Issuer origin
- Issuer size
- Amount outstanding

4.1.1 Bond Type

The Markit iBoxx EUR Liquid Corporates Diversified index includes only Euro and legacy currency denominated bullet fixed coupon bonds (plain vanilla bonds). Step-up bonds are excluded from the index. Sinking funds and amortizing bonds are also excluded from the indices. Only senior debt is eligible for the indices.

4.1.2 Age

All eligible bonds must have an age of no more than 3 years. The age is measured from the first settlement date of the bond to the rebalancing date. Bonds in the liquid indices with an age of more than 3 years will be excluded from the indices at the next re-balancing.

4.1.3 Time to Maturity

To qualify for the Markit iBoxx EUR Liquid Corporates Diversified index all eligible bonds must have a remaining time to maturity of at least 1.5 years measured from the respective re-balancing date to the maturity date. The maximum time to maturity is 10 years. The time to maturity for substitutes is measured from the substitution date to the maturity date of the bond. Bonds in the liquid indices with a remaining time to maturity of less than 1.5 years will be excluded from the indices at the next re-balancing.

4.1.4 Bond Rating

The rating of a non-financial bond must be BBB- or higher. The rating of a financial bond must be A- or higher. The rating of the Markit iBoxx EUR benchmark indices is used.

4.1.5 Issuer origin

Only issuers which are headquartered in a Euro country or in Denmark, Norway, Sweden, Switzerland or the United Kingdom are eligible for inclusion. In addition, only bonds issued in a member country of the Euro or in Denmark, Norway, Sweden, Switzerland or the United Kingdom are eligible for inclusion.

4.1.6 Issuer size

The minimum outstanding debt for Non-Financials is EUR 5.0 billion. The amounts outstanding of all senior bonds in the Markit iBoxx EUR benchmark are counted regardless of the country of issue of the bond.

There are no issuer size restrictions for Financials.

4.1.7 Amount Outstanding

All financial bonds must have a specific minimum amount outstanding of EUR 1 billion in order to be eligible for the indices. The minimum amount outstanding for non-financials is EUR 500 million.

The amount outstanding of each bond is used to calculate its index weight. The index is capitalization-weighted.

4.2 Index Size, Bond Ordering and Bond Selection

4.2.1 Index Size and Capping Procedure

To facilitate the replication of the indices, the maximum number of bonds is limited to 75. In the event that the number of eligible bonds is less than or equal to the maximum number, all available bonds will be included in the index.

The weight of an issuer in the index is capped at 4%. If an issuer has to be capped the weight of the smallest bond from the issuer is reduced successively. If as a result of the capping the weight of a bond is reduced to zero, the next eligible bond from a non-capped issuer is included in the index, and the capping is reapplied.

The preliminary capping is performed with the closing prices of the third last trading day of the month. A bond whose first settlement date is later than the third last trading day of the month is assumed to have a price of 100. The final membership list is determined based on the results of the preliminary capping.

The final capping is applied after the close of the last trading day of the month with the final closing prices of all bonds. If as a result of the final capping, the weight of a bond is reduced to zero, it is not replaced.

4.2.2 Ranking Criteria

Should more than the maximum number of bonds be available for an index, ordering criteria are applied in order to rank the eligible bonds. The following four criteria are applied to establish a bond hierarchy:

1. Higher amount outstanding
2. More recent first settlement date
3. Longer time to maturity
4. Lower coupon

These criteria are applied to each pair of bonds in the order stated above until a difference can be established (i.e. if two bonds have identical amounts outstanding and the same first settlement date but one has a longer time to maturity, then criteria 1 to 3 are applied, but 4 is not). With the help of the ranking criteria, a bond hierarchy can be defined, with the bond that has the highest amount outstanding at the top of the hierarchy.

If there is still a tie after these criteria are applied, the bond with the higher ISIN (ranked in alpha-numerical order) is selected.

4.2.3 Limit on Number of Bonds from any Issuer in an index

The number of bonds from an issuer that may enter an index is limited to 2 bonds.

5 Markit iBoxx EUR Liquid Non-Financials Diversified Index Rules

The index is solely based on bonds included in the Markit iBoxx EUR Corporates index. To ensure that only suitable bonds enter the liquid indices, further selection criteria have been added. In addition to the selection criteria used to define the eligible bond universe, ranking criteria have been defined to determine which bonds enter the Markit iBoxx EUR Liquid Non-Financials Diversified Index.

5.1 Bond Selection Rules for Markit iBoxx EUR Liquid Non-Financials Diversified Index

The following selection criteria are designed to reduce the number of bonds for the Markit iBoxx EUR Liquid Non-Financials Diversified index:

- Bond type
- Issuer type
- Age
- Time to maturity
- Bond Rating
- Issuer origin
- Issuer size
- Amount outstanding

5.1.1 Bond Type

The Markit iBoxx EUR Liquid Non-Financials Diversified index include only Euro and legacy currency denominated bullet fixed coupon bonds (plain vanilla bonds). Step-up coupon bonds are excluded as are sinking funds and amortizing bonds. Only senior debt is eligible for the indices.

5.1.2 Issuer Type

Only bonds from non-financial issuers qualify.

5.1.3 Age

All eligible bonds must have an age of no more than 3 years. The age is measured from the first settlement date of the bond to the rebalancing date. Bonds in the liquid indices with an age of more than 3 years will be excluded from the indices at the next re-balancing.

5.1.4 Time to Maturity

To qualify for the Markit iBoxx EUR Liquid Non-Financials Diversified index all eligible bonds must have a remaining time to maturity of at least 1.5 years measured from the respective re-balancing date to the maturity date. The maximum time to maturity is 10 years. The time to maturity for substitutes is measured from the substitution date to the maturity date of the bond. Bonds in the liquid indices with a remaining time to maturity of less than 1.5 years will be excluded from the indices at the next re-balancing.

5.1.5 Bond Rating

The rating of a non-financial bond must be BBB- or higher. The rating of the Markit iBoxx EUR benchmark indices is used.

5.1.6 Issuer origin

Only issuers who are headquartered in a Euro country or in Denmark, Norway, Sweden, Switzerland or the United Kingdom are eligible for inclusion. In addition, only bonds issued in a member country of the Euro or in Denmark, Norway, Sweden, Switzerland or the United Kingdom are eligible for inclusion.

5.1.7 Issuer size

The minimum outstanding debt of an issuer is EUR 3.0 billion. The amounts outstanding of all senior bonds in the Markit iBoxx EUR benchmark index are counted regardless of the country of issue of the bond.

5.1.8 Amount Outstanding

All bonds must have a specific minimum amount outstanding of EUR 750 million in order to be eligible for the indices. The amount outstanding of each bond is used to calculate its index weight. The indices are capitalization-weighted.

5.2 Index Size, Bond Ordering and Bond Selection

5.2.1 Index Size and Capping Procedure

To facilitate the replication of the indices, the maximum number of bonds is limited to 40. In the event that the number of eligible bonds is less than or equal to the maximum number, all available bonds will be included in the index.

The weight of an issuer in the index is capped at 4%. If an issuer has to be capped the weight of the smallest bond from the issuer is reduced successively. If as a result of the capping the weight of a bond is reduced to zero, the next eligible bond from a non-capped issuer is included in the index, and the capping is reapplied.

The preliminary capping is performed with the closing prices of the third last trading day of the month. A bond whose first settlement date is later than the third last trading day of the month is assumed to have a price of 100. The final membership list is determined based on the results of the preliminary capping.

The final capping is applied after the close of the last trading day of the month with the final closing prices of all bonds. If as a result of the final capping, the weight of a bond is reduced to zero, it is not replaced.

5.2.2 Ranking Criteria

Should more than the maximum number of bonds be available for an index, ordering criteria are applied in order to rank the eligible bonds. The following four criteria are applied to establish a bond hierarchy:

1. Higher amount outstanding
2. More recent first settlement date
3. Longer time to maturity
4. Lower coupon

These criteria are applied to each pair of bonds in the order stated above until a difference can be established (i.e. if two bonds have identical amounts outstanding and the same first settlement date but one has a longer time to maturity, then criteria 1 to 3 are applied, but 4 is not). With the help of the ranking criteria, a bond hierarchy can be defined, with the bond that has the highest amount outstanding at the top of the hierarchy.

If there is still a tie after these criteria are applied, the bond with the higher ISIN (ranked in alpha-numerical order) is selected.

There are 40 bonds selected from the list in descending rank with one bond per issuer selected first, and if less than 40 issuers qualify, a second bond per issuer is selected subsequently until 40 bonds have been selected.

5.2.3 Limit on Number of Bonds from any Issuer in an index

The number of bonds from an issuer that may enter an index is limited to 2 bonds.

6 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 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, decision will be made at Markit's discretion. Markit will assign the Markit classification according to its evaluation of the business risk presented in the security prospectus and annual reports, if available. Markit will also compare the classification to peers in the potential sectors, and Markit may consult with the Index Advisory Committees. Membership list including classification is published on the FTP server and in the indices section on www.markit.com/indices for registered users for future reference and to ensure decision's consistency.

The main sector classifications within the Markit iBoxx EUR Liquid indices are described below.

6.1 Sovereigns

Bonds issued by a central government of a member country of the Eurozone and denominated in Euro or in a pre-Euro currency.

6.2 Corporates

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 insurance-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. The sector overview is shown in table 1 below.

Table 1: Overview of Markit iBoxx Corporates Sectors

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

6.3 Covered

Bonds which are secured by a general pool of assets in case the issuer becomes insolvent are considered covered bonds. German Pfandbriefe is a bond type included in the Markit iBoxx EUR Liquid Germany Covered Diversified Index.

7 Index Calculation

7.1 Static Data

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

7.2 Bond Prices

For more details please refer to the “Markit iBoxx Pricing Rules” document, available on the Markit iBoxx Rules page of www.markit.com (<http://www.markit.com/en/products/data/indices/bond-indices/iboxx/rules.page>) in the Methodology Documentation section on the right-hand side of the page.

7.3 Rebalancing Process

The index is rebalanced every quarter at the end of January, April, July and October. The indices are re-balanced on the last calendar day of the month after the last index calculation. Rebalancing also takes place if the last day of the month falls on a non-business day.

Changes to amounts outstanding 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.

The rebalancing procedure for the Markit iBoxx EUR Liquid Diversified indices is analogous to the rebalancing of the Markit iBoxx EUR Benchmark indices.

Four business days before the end of each month, a preliminary membership list is published on the FTP server.

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, Markit publishes the final membership with closing prices for the bonds, and various bonds analytics based on the index prices of the bonds.

7.3.1 Re-balancing Procedure

In a first step the selection criteria are applied to reduce the universe of EUR denominated bonds:

- Amounts outstanding are applied as of three business days before the re-balancing date
- A bond remains in its respective maturity bucket until the next re-balancing
- Only bonds with a first settlement date on or before the re-balancing date are included in the selection process

Once the eligible bond universe has been defined, the ranking criteria are employed to determine a distinct hierarchy of bonds in the universe.

Bonds enter the respective index according to their rank in the hierarchy (with the highest rank entering first) until the maximum number of bonds per index has been reached.

7.4 Index Data

The Markit iBoxx EUR Liquid Diversified indices are computed and disseminated Monday to Friday once per minute between 9:00 a.m. and 5:15 p.m. CET. The indices are calculated every day except on common European bank holidays. The indices are based on real-time prices. The indices are also calculated on the last calendar day of each month irrespective of holidays and weekends. If the index is calculated on a day that is a non-business day, then the

prices from the previous trading day will be carried forward and the index will be calculated using those prices and the current accrued interest and coupon payment data.

The calculation of the index is based on bid prices. Bonds that are not in the Markit iBoxx EUR Liquid Diversified indices for the current month, but become eligible for them at the next re-balancing, enter the indices at their ask price. For the avoidance of doubt, each index is treated separately, so a bond will enter a certain index at its ask price, even if it is already included in a different Markit iBoxx EUR Liquid Diversified index. In the event that no price can be established for a particular bond, 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, Markit may consult the specific Index Advisory Committees at the following rebalancing date. To ensure consistency, decisions taken are made publicly available on a timely basis and Markit has the ability to refer back to previous cases.

On the last trading day of a month, the rebalancing takes place after the daily index calculation for the current month's list, including the calculation of the last calendar day's indices, has been performed.

7.5 Index Calculus

For specific index formulae please refer to Markit iBoxx Bond Calculus document, available on the Markit iBoxx Rules page of www.markit.com (<http://www.markit.com/en/products/data/indices/bond-indices/iboxx/rules.page>) in the Methodology Documentation section on the right-hand side of the page.contact

7.6 Treatment of the special intra-month events

Data for the application of corporate actions in the indices 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, Markit will estimate the approximate value based on the available data at the time of calculation.

7.6.1 Index Adjustments between Scheduled Rebalancings

Coupon changes: While most index adjustments are made through the quarterly re-balancing procedure, coupon changes are taken into account in the calculation of the indices from the exact date on which the coupon was altered.

Bonds no longer in benchmark index: Bonds may drop out of the Markit iBoxx EUR Liquid Diversified indices at the end of a month because they have left the benchmark indices. In this case they will be replaced by suitable substitutes.

Cash Investment: Cash received from coupon payments and non-substituted bonds will be invested at the end of each month in the money market until the end of the following month.

7.6.2 Monthly Bond Substitution between Scheduled Rebalancings

Bonds can leave the Markit iBoxx EUR index universe due to:

- Default of the issue or issuer
- Rating downgrade to sub-investment grade of the issue or issuer
- Reduction in the amount outstanding due to repurchases below threshold level
- Other reasons

Bonds that leave the Markit iBoxx EUR Overall benchmark index also exit the Markit iBoxx EUR Liquid Diversified indices at month-end. If this occurs between two re-balancing dates, other suitable bonds will replace those that have left.

The procedures in chapters 7.6.3 and 7.6.4 are applied only if a bond has left a liquid diversified index between re-balancing dates.

7.6.3 Substitution List

At the end of the month, the eligible bond universe for the coming month is compiled and published in accordance with the selection and ranking criteria. These are applied to establish a hierarchy within the eligible bond universe. All bonds already in the indices are eliminated from the hierarchy, resulting in a substitution list for each index. A

separate list that contains bonds dropped and the selected substitutes with their fictitious amounts outstanding is published.

7.6.4 Bond Substitution

If the bonds are no longer in the Markit iBoxx EUR Overall benchmark index, they will also leave the Markit iBoxx EUR Liquid Diversified indices. For each bond that has left, another bond will become the substitute and enter the index where available. The proceeds from the sale of a dropped bond are invested in its substitute. The substitute will have a fictitious amount outstanding:

$$(1) \quad O_{\text{substitute}} = \frac{(P_{\text{dropped}}^b + A_{\text{dropped}}) \cdot O_{\text{dropped}}}{P_{\text{substitute}}^a + A_{\text{substitute}}}$$

where:

A_{dropped}	= Accrued interest of dropped bond
$A_{\text{substitute}}$	= Accrued interest of substitute bond
O_{dropped}	= Amount outstanding of dropped bond
$O_{\text{substitute}}$	= Fictitious amount outstanding of substitute bond
$P_{\text{substitute}}^a$	= Ask price of substitute bond
P_{dropped}^b	= Bid price of dropped bond

For specific cost factor calculation formulae please contact iBoxx@markit.com. The substitute will have a notional amount outstanding based on formula (1).

The substitute bond enters the Markit iBoxx EUR Liquid Diversified indices at the ask price.

In the event that no substitute is available, the proceeds from the sale of the dropped bond are invested as cash.

7.6.5 Monthly Cash Re-investment between Scheduled Re-balancing Dates

Cash received from coupon payments and non-substituted bonds are invested at the end of each month in the money market until the end of the following month. Cash from earlier months will also be re-invested at the end of each month. The interest rate applied is one-month LIBID.

LIBID is defined as the relevant one month EURIBOR less 1/8 (12.5 basis points). At the next rebalancing cash is invested in the index.

7.7 Determination of Benchmarks

Benchmark spreads are calculated for every constituent bond as the difference between the annual or semi-annual yield of the bond and the annual or semi-annual yield of its benchmark. The benchmark assignment for the bonds is reviewed monthly.

Benchmarks for the bonds in the Markit iBoxx EUR Liquid indices are equivalent to the benchmarks for the respective bonds in the Markit iBoxx EUR Benchmark universe. Benchmark bond is defined as the most liquid and low risk bond in each of the maturity bands listed below.

The procedure starts at first running a regression algorithm on all bonds in the Markit iBoxx Eurozone index in order to determine the benchmark curve, and bonds with a positive spread to the curve are eliminated. The procedure is then repeated until one of the following is met:

- (i) R-square above 0.99
- (ii) Standard deviation of yield-spread to curve is less than 3.5 b.p.s.
- (iii) Number of bonds left is between 15 and 40.

The bonds remaining after running the procedure above are assigned to Sets A or B depending on their age. An eligible bond is assigned to Set A within a maturity band if it is not older than two years. Otherwise, it is assigned to Set B. The age of a bond is calculated from the first settlement date to the current rebalancing date. The largest bond (by amount outstanding) of all bonds in Set A is selected as the respective benchmark for each defined maturity band. If Set A is empty, then the most recently issued bond of Set B is chosen as the respective benchmark of the band.

Maturity bands are defined as follows:

- 1 year: Maturity < 1.5 years
- 2 years: Maturity 1.5 to < 2.5 years
- 3 years: Maturity 2.5 to < 3.5 years
- 4 years: Maturity 3.5 to < 4.5 years
- 5 years: Maturity 4.5 to < 5.5 years
- 6 years: Maturity 5.5 to < 6.5 years
- 7 years: Maturity 6.5 to < 7.5 years
- 8 years: Maturity 7.5 to < 8.5 years
- 9 years: Maturity 8.5 to < 9.5 years
- 10 years: Maturity 9.5 to < 12.5 years
- 15 years: Maturity 12.5 to < 17.5 years
- 20 years: Maturity 17.5 to < 25 years
- Long: Maturity 25 years and greater

For every bond in the Markit iBoxx EUR indices, the benchmark bond with the closest maturity is selected as a benchmark. Therefore, the chosen benchmark is not necessarily the same as the benchmark for the maturity band of the bond. If the time to maturity distance of a bond to its two neighboring benchmarks is exactly the same, then the benchmark bond with the closer coupon is chosen. If the coupon distance of the two neighboring bonds is also exactly the same, then the younger of the two benchmark bonds is chosen.

7.8 Index History

The index history starts on 31/10/2005 with a base value of 100.

7.9 Settlement Conventions

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

7.10 Withholding Tax Clause

The European Union sometimes discusses the introduction of a withholding tax on coupons. This may lead to a situation where the index is calculated using the full coupon, yet a trading desk only receives a net coupon. Should this issue arise, it will be addressed in the index calculation.

7.11 Calendar

Markit publishes an index calculation calendar which is available in the indices section on www.markit.com/indices under *Calendar* for registered users. This calendar provides an overview of the index calculation times of the Markit iBoxx bond index families in a given year.

7.12 Data publication and Access

The table below summarises the publication of Markit iBoxx EUR in the indices section of the Markit website, www.markit.com/indices and on the FTP server.

Daily Files	Access
<ul style="list-style-type: none"> • Underlying file – Bond level • Indices files – Index level 	Markit FTP Server Markit FTP Server/ Markit website/ Bloomberg for index levels only
Weekly Files	
<ul style="list-style-type: none"> • Previews_components 	Markit FTP Server/ Markit website
Monthly files	

<ul style="list-style-type: none"> • End of Month Components • XREF files 	Markit FTP Server/ Markit website Markit FTP Server
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7.13 Index Restatement

Index restatement follows the policy described in the Index restatement policy document, available on the Markit iBoxx Rules page of www.markit.com (<http://www.markit.com/en/products/data/indices/bond-indices/iboxx/rules.page>) in the Methodology Documentation section.

7.14 Annual Index Review

The rules for the index are reviewed once per year during the annual index review process. Decisions made following the annual index review will be published on Markit’s website shortly after both Committees have been held. The publication will contain a detailed overview and timelines for implementation of the rules changes.

8 Further Information

- Glossary of key terms is available in the *Glossary* document, available on the Markit iBoxx Rules page of www.markit.com (<http://www.markit.com/en/products/data/indices/bond-indices/iboxx/rules.page>) in the Methodology Documentation section.

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