S&P Dow Jones Indices

A Division of S&P Global

Fixed Income Policies & Practices
Methodology

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Introduction

This document covers constituent and index actions, per S&P Dow Jones Indices' Fixed Income Indices policies and practices. To understand and successfully use our indices it is important to know how adjustments are made, when different kinds of index actions occur, and how those events are treated. Our goal is to provide consistent and transparent global treatment of index actions, to the greatest extent possible. However, please note that local market and sector practices may dominate major decisions. Thus, this document outlines the general approaches applicable to the majority of fixed income indices but it is imperative to review each specific index methodology, as certain indices may differ from the general approaches.

S&P Dow Jones Indices uses a variety of processes for dealing with events impacting fixed income security constituents in the S&P Dow Jones Indices Fixed Income Indices. This document aims to provide a general outline of key events impacting fixed income constituents in the S&P Dow Jones Indices' Fixed Income Indices. Included herein are some of the more common events affecting fixed income securities, with definitions, and general policies and procedures of how S&P Dow Jones Indices deals with these events.

Defined terms used throughout this document (also see Appendix II) come from a variety of sources including, but not limited to, S&P Dow Jones Indices, the Securities Industry and Financial Markets Association (SIFMA) and the Municipal Securities Rulemaking Board (MSRB).

This document does not aim to be a substitute for the various policies and procedures outlined in each respective index's methodology. Please refer to each index's methodology for further policies and procedures applicable to each particular index.

Bond Events and Rebalancing

Credit events and corporate actions are a daily occurrence across the global fixed income marketplace. This document details some of the more common credit events, such as credit rating upgrades and downgrades, as well as defaults. The document also covers many of the common corporate actions, including calls and puts, mergers and acquisitions, and security refundings. In order to account for these actions, S&P Dow Jones Indices' fixed income indices are generally maintained in accordance with the following rebalancing rules as they relate to credit events and corporate actions. Fixed income indices are typically reviewed and rebalanced monthly. The Index Committee, nevertheless, reserves the right to make adjustments to an index at any time that it believes appropriate.

As a general rule:

- Publicly available information, up to and including the close on the Rebalancing Reference Date, is considered in the rebalancing.
- Additions, deletions and other changes to the index arising from the monthly (or periodic) rebalancing are published after the close of business on the Rebalancing Announcement Date.
- Index changes published in the announcement are not normally subject to revision and become effective after the close of business on the Rebalancing Date (typically the last business day of the month).
- Eligible securities are added to an index on the next Rebalancing Date, subject to the schedule of the monthly (or periodic) rebalancing procedures.
- Any index bond that fails to meet any one of the eligibility factors as of the next Rebalancing Date, is removed from the index on that Rebalancing Date.
- Credit events and corporate actions of index bonds are adjusted on the Rebalancing Reference Date to reflect any changes that have occurred since the previous Rebalancing Date, due to upgrades, downgrades, partial calls, tenders, etc. On the Rebalancing Reference Date, should an index bond's par amount outstanding fall below the minimum set forth in the index's methodology, the index bond is removed from the index at the next Rebalancing Date.

Generally, the index rebalancing follows a monthly schedule as follows:

- Rebalancing Date: Last day of the rebalancing period (T)
- Announcement Date: First date of rebalancing pro-forma (T-3)
- Rebalancing Reference: Date: Date where all eligible data is used (T-4)

All days reflect after the close and count business days. Please see each index's respective methodology for specific index rebalancing policies and procedures, including the index's Reference, Announcement and Rebalancing Dates, as each index (or index family) maintains its own rebalancing schedule.

Credit Events

Credit Ratings Revisions

Within the S&P Dow Jones Indices' family of fixed income indices, eligibility criteria differ among the various indices with regard to their constituent holdings. One aspect of this is their credit ratings. Some indices require that constituent securities be "investment-grade". Certain indices require that they be "high-yield" or "speculative". Some require a specific rating or range of ratings, while still others do not require a credit rating at all.

In general, the index eligible bond's underlying rating is used to evaluate index eligibility. Issuer rating may be applied in place of the bond level ratings. For example, a sovereign bond index may apply the long term foreign currency issuer rating in place of each sovereign bond issue.

For those fixed income indices where credit ratings are an eligibility factor for constituent holdings, a ratings revision may cause a security to be added to or deleted from an index on the subsequent monthly (or periodic) rebalancing. Index changes due to ratings revisions are not made intra-month (or intra-period).

Generally, S&P Dow Jones Indices uses credit ratings from three primary credit ratings agencies:

- S&P Global Ratings (SPGR)
- Moody's Investors Services (MIS)
- Fitch Ratings (FR)

However, in certain instances additional credit rating agencies may be used as noted in each index's methodology document. For example, the S&P China High Quality Corporate Bond Index eligibility rules require that each index constituent has issuer rating from at least one of the three primary credit rating agencies noted above, and a bond rating from a recognized Chinese rating agency.

To ensure quality and consistency in credit ratings used by S&P Dow Jones Indices, certain requirements are mandated when using credit rating agencies other than the three primary ones noted above. For example, the S&P China High Quality Corporate Bond Index eligibility rules require that each index constituent must be rated AAA by a recognized Chinese rating agency.

Please note that while the majority of indices (and sub-indices) use the credit ratings of all three primary ratings agencies, some indices use the ratings of only two agencies (e.g. MIS and SPGR) or one agency (e.g. SPGR) as disclosed in each index's respective methodology.

As a general rule, and for increased transparency and uniformity, when an index security has a rating from more than one eligible rating agency, the lowest of the ratings is used for index eligibility purposes. However, please see each respective index methodology for specific eligibility requirements and associated policies for specific ratings criteria.

Scenarios

For index calculation purposes, a credit ratings revision presents the following key questions:

- Additions - Does a non-index security become an index constituent?
- Deletions - Does the index security retain membership in the index?

To answer these questions, we need to know the index's credit rating criteria. In general, S&P Dow Jones Indices employs the following key credit ratings criteria:

1. Investment Grade - (≥BBB- by SPGR, ≥BBB- by FR, ≥Baa3 by MIS)
2. High Yield - (NR or ≤BB+ by SPGR, NR or ≤BB+ by FR, NR or ≤Ba1 by MIS)
3. Ratings Bands - A specified range of ratings (For example, a AA band index or sub-index may specify that index securities must have a rating of AA-, AA, AA+ by SPGR)
4. No Ratings Criteria

Please see each index's respective methodology for specific policies, procedures and ratings eligibility criteria for each respective index.

For purposes of this document, we will go through an example of each of the key ratings criteria, numbers 1-3 noted above and their associated scenarios. Number four is not applicable, as ratings revisions do not play a role in determining index security eligibility.

Scenario 1 – Investment Grade Credit Ratings Revision		
Scenario 1a: Ratings Criteria = Investment Grade (≥BBB-, ≥BBB-, ≥Baa3) Index security is downgraded between rebalancing dates.	Question: Is downgraded rating below eligibility criteria minimum? Examples: Yes. BBB- downgraded to BB+ No. A- downgraded to BBB+	Decision: If yes, delete from the index at the next rebalancing. If no, index security remains in the index, assuming all other eligibility requirements are met.
Scenario 1b: Ratings Criteria = Investment Grade (≥BBB-, ≥BBB-, ≥Baa3) Index security is upgraded between rebalancing dates.	Question: Not applicable, as upgraded rating is still above investment grade minimum. Example: BBB- upgraded to BBB	Decision: Index security remains in the index, assuming all other eligibility requirements are met.
Scenario 1c: Ratings Criteria = Investment Grade (≥BBB-, ≥BBB-, ≥Baa3) Non-index security is upgraded between rebalancing dates.	Question: Is upgraded rating at or above eligibility criteria minimum? Examples: Yes. BB+ upgraded to BBB- No. BB- upgraded to BB	Decision: If yes, add security to the index at the next rebalancing if all additional eligibility requirements are met. If no, security is not added to the index at the next rebalancing.
Scenario 1d: Ratings Criteria = Investment Grade (≥BBB-, ≥BBB-, ≥Baa3) Non-index security is downgraded between rebalancing dates.	Question: Not applicable, as downgraded rating is still below investment grade minimum. Example: BB+ downgraded to BB	Decision: Non-index security is not added to the index, as investment grade eligibility requirement is still not met.

Scenario 2 – High-Yield Credit Ratings Revision		
Scenario 2a: Ratings Criteria = High-Yield (NR or ≤BB+, NR or ≤BB+, NR or ≤Ba1) Index security is upgraded between rebalancing dates.	Question: Is upgraded rating above eligibility criteria maximum? Examples: Yes. BB+ upgraded to BBB- No. BB upgraded to BB+	Decision: If yes, delete from the index at the next rebalancing. If no, index security remains in the index, assuming all other eligibility requirements are met.
Scenario 2b: Ratings Criteria = High-Yield (NR or ≤BB+, NR or ≤BB+, NR or ≤Ba1) Index security is downgraded between rebalancing dates.	Question: Not applicable, as downgraded rating is still below high-yield maximum. Example: BB+ downgraded to BB	Decision: Index security remains in the index, assuming all other eligibility requirements are met.
Scenario 2c: Ratings Criteria = High-Yield (NR or ≤BB+, NR or ≤BB+, NR or ≤Ba1) Non-index security is downgraded between rebalancing dates.	Question: Is downgraded rating at or below eligibility criteria maximum? Examples: Yes. BBB- downgraded to BB+ No. AA downgraded to AA-	Decision: If yes, add security to the index at the next rebalancing if all additional eligibility requirements are met. If no, security is not added to the index at the next rebalancing.
Scenario 2d: Ratings Criteria = High-Yield (NR or ≤BB+, NR or ≤BB+, NR or ≤Ba1) Non-index security is upgraded between rebalancing dates.	Question: Not applicable, as upgraded rating is still above high-yield maximum. Example: BBB- upgraded to BBB	Decision: Non-index security is not added to the index, as high-yield eligibility requirement is still not met.

Scenario 3 – Ratings Bands Credit Ratings Revision		
Scenario 3a: Ratings Criteria = AA Band (AA-, AA, AA+ by SPGR) Index security is upgraded between rebalancing dates.	Question: Is upgraded rating above eligibility criteria maximum? Examples: Yes. AA+ upgraded to AAA No. AA- upgraded to AA	Decision: If yes, delete from the index at the next rebalancing. If no, index security remains in the index, assuming all other eligibility requirements are met.
Scenario 3b: Ratings Criteria = AA Band (AA-, AA, AA+ by SPGR) Index security is downgraded between rebalancing dates.	Question: Is downgraded rating below eligibility criteria minimum Examples: Yes. AA- downgraded to A+ No. AA downgraded to AA-	Decision: If yes, delete from the index at the next rebalancing. If no, index security remains in the index, assuming all other eligibility requirements are met.
Scenario 3c: Ratings Criteria = AA Band (AA-, AA, AA+ by SPGR) Non-index security is downgraded between rebalancing dates.	Question: Is downgraded rating within the ratings band? Examples: Yes. AAA downgraded to AA+ No. A- downgraded to BBB+	Decision: If yes, add security to the index at the next rebalancing if all additional eligibility requirements are met. If no, security is not added to the index at the next rebalancing.
Scenario 3d: Ratings Criteria = AA Band (AA-, AA, AA+ by SPGR) Non-index security is upgraded between rebalancing dates.	Question: Is upgraded rating within the ratings band? Examples: Yes. A+ upgraded to AA- No. BBB+ upgraded to A-	Decision: If yes, add security to the index at the next rebalancing if all additional eligibility requirements are met. If no, security is not added to the index at the next rebalancing.

Defaults

Within the S&P Dow Jones Indices' family of fixed income indices, eligibility criteria differ among the various indices with regard to their constituent holdings. One aspect of this is whether a security is in default or not.

Index constituent data received from service providers are flagged if they are in default.

The treatment for a default is generally as follows:

Defaulted bonds are excluded from S&P Dow Jones Indices unless explicitly stated in the methodology (e.g. The S&P Municipal Bond Defaulted Index). When an index bond defaults, the security is removed at the next rebalancing date.

Generally, a defaulted security typically remains in its index at the daily price received by service providers, which generally reflects the base recovery rate. However, the security is carried without any further interest accruals. If the vendor no longer publishes a daily price for a defaulted security, the security remains in the index at the last price received until the month-end rebalancing, when it is then deleted from the index. However, the Index Committee may determine that the security be removed from the index at a different price and may specify a price of $0.00. The decision of the Index Committee is final.

For further information on a specific index's policies relating to defaulted constituents, please see each index's respective methodology.

Scenarios

For index calculation purposes, a default presents the following key questions:

- Additions - Does a non-index security in default become an index constituent?
- Deletions - Does the index security retain membership in the index once it defaults?

Additions **-** Non-index securities in default are not added to an index.

Deletions **-** To answer the above question, we need to look at the following scenarios:

Scenario 1 - Defaults	
Scenario 1a: Index security defaults	Decision assuming all other eligibility requirements are met: The index security remains in the Index until the subsequent rebalancing at the daily price received from the vendor. All interest accruals cease for the defaulted security. At the next rebalancing, the security is deleted from the index. In addition, all interest accruals cease for the defaulted security. However, the Index Committee may determine that the security be removed from the index at a different price and may even specify a price of US$ 0.00. The decision of the Index Committee is final.

Please see each index's respective methodology for specific policies, procedures and ratings eligibility criteria for each respective index.

Corporate Action Events

Within the S&P Dow Jones Indices' family of fixed income indices, eligibility criteria differ among the various indices with regard to their constituent holdings. One aspect of this is whether the index can include bonds with embedded options or not. For those indices allowing callable bonds, the bond must conform to applicable eligibility criteria as outlined in the index's methodology which typically includes a minimum term to complete mandatory redemption (maturity, call and/or put date) and a minimum par amount outstanding. For the majority of fixed income indices, the minimum term to maturity and/or mandatory call date is at least one calendar month plus one calendar day as of the next index Rebalancing Date.

Calls

For those fixed income indices allowing the inclusion of callable bonds, S&P Dow Jones Indices actively tracks mandatory calls. A mandatory call may cause a bond to be deleted from the index on the subsequent Rebalancing Date.

Bonds with mandatory calls are typically deleted from the index at the rebalancing for the following reasons:

- **Indices with a minimum term to call:** Bonds that have a scheduled complete mandatory call such that the term to call is less than the minimum required as set forth in the index's methodology.
- **Indices without a minimum term to call:** Bonds that are subject to a mandatory call which will result in a complete call of the bond during the course of the month (or period).

Optional calls are not actively tracked by S&P Dow Jones Indices. Changes in par amounts are only taken into account on the Rebalancing Date.

In the case of a bond that is subject to a mandatory complete call, interest is typically accrued up to, but not including, the mandatory call date when the bond is redeemed and paid off. Thus, if a bond is deleted from an index on the rebalancing date, but this is before the mandatory call date (due to the term to mandatory call date not meeting minimum requirements), the interest on the bond ceases accruing and is no longer included in return calculations after the Rebalancing Date, since the bond has been deleted from the index.

Scenarios

For index calculation purposes, a bond call presents the following key question:

- Deletions - Does the index security retain membership in the index?

To answer this, we need to know whether the call is mandatory or optional and whether the call is complete or partial.

A key determinant in considering whether to delete an index bond from the index due to a mandatory complete call is its term to mandatory call date. If, at the rebalancing, the term to maturity or call date is less than the minimum required in the index eligibility criteria, the bond is deleted at that rebalancing. For partial calls, a key determinant in considering whether to delete an index bond from the index is whether the remaining par amount outstanding is greater than or equal to the minimum par amount outstanding required by the index's eligibility requirements as set forth in the index methodology. If, at the rebalancing, the par amount outstanding of the partially called bond is less than the minimum required, the bond is deleted at that rebalancing.

Scenario 1 - Calls		
Scenario 1a: Complete Mandatory Call	Generally, as of the next Rebalancing Date, the index bond must have a minimum term to mandatory call date as specified in the index methodology (typically greater than one calendar month) to remain in the index, otherwise it is deleted at the next Rebalancing Date. Question: Is the term to mandatory call date greater than or equal to the minimum required in the index methodology?	Decision: If yes, the bond remains in the index. If no, delete from the index on that Rebalancing Date
Scenario 1b: Partial Mandatory Call	Generally, as of the next Rebalancing Reference Date, the index bond must have a minimum par amount outstanding (as specified in the index methodology) to remain in the index, otherwise it is deleted at the next Rebalancing Date. Question: Is the par amount outstanding of the index bond greater than or equal to than the minimum required in the index methodology?	Decision: If yes, the bond remains in the index at the new par amount outstanding (net of any partial calls, tenders, sinking fund payments, etc.). If no, delete from the index on that Rebalancing Date
Scenario 1c: Optional Calls	Optional call notices are generally sent out 30 to 60 days prior to the call exercise date (though this may vary depending upon the issuer). As the outcome of an optional call exercise is unknown until after it has occurred, S&P Dow Jones Indices waits until the optional call has occurred (the call exercise date). Once the results of the call exercise are known, the analyst can determine the remaining par amount outstanding of the index bond, if any, and determine what further action to take. Question: As of the Rebalancing Reference date, does the new par amount outstanding (adjusted for any calls, tenders, sinking fund payments, etc.) meet the minimum par amount outstanding eligibility criteria as outlined in the index methodology?	Decision: If yes, the bond remains in the index at the new par amount outstanding (net of any calls, tenders, sinking fund payments, etc.). If no, delete from the index on that Rebalancing Date

Puts and Tenders

Within the S&P Dow Jones Indices' family of fixed income indices, eligibility criteria differ among the various indices with regard to their constituent holdings. One aspect of this is whether the index can include bonds with embedded optionality or not. Some indices exclude puttable bonds, while others allow them. For those indices allowing puttable bonds, the bond must conform to applicable eligibility criteria as outlined in the index's methodology which typically includes a minimum term to mandatory redemption (maturity, call and/or put date) and a minimum par amount outstanding. For the majority of fixed income indices, the minimum term to maturity and/or mandatory put date is at least one calendar month plus one calendar day as of the next Rebalancing Date. Certain indices, however, may differ.

Please refer to each index's methodology for further details on security eligibility requirements.

For those S&P Dow Jones Indices allowing the inclusion of puttable bonds, S&P Dow Jones Indices actively tracks mandatory tenders. A mandatory tender may cause a bond to be deleted from the index on the subsequent Rebalancing Date.

Bonds with mandatory tenders are typically deleted from the index at the rebalancing for the following reasons:

- **Indices with a minimum term to put:** Bonds that have a scheduled complete mandatory tender such that the term to put is less than the minimum required as set forth in the index's methodology.
- **Indices without a minimum term to put:** Bonds that are subject to a mandatory tender which will result in a complete tender of the bond during the course of the month (or period).

Optional tenders are not actively tracked by S&P Dow Jones Indices and as such are only taken into account on the Rebalancing Date when known par amounts of index bonds are adjusted to reflect any changes that have occurred since the previous Rebalancing Date, due to partial calls, tenders, etc. On the Rebalancing Date, should an index bond's par amount outstanding fall below the minimum set forth in the index's methodology, the index bond is removed from the index on that Rebalancing Date.

Scenarios

For index calculation purposes, a bond tender presents the following key questions:

- Deletions - Does the index security retain membership in the index?

To answer this, we need to know whether the tender is mandatory or optional and whether the tender is complete or partial.

A key determinant in considering whether to delete an index bond from the index due to a mandatory complete tender is its term to mandatory put date. If, at the rebalancing, the term to maturity or put date is less than the minimum required in the index eligibility criteria, the bond is deleted at that rebalancing. For partial tenders, a key determinant in considering whether to delete an index bond from the index is whether the remaining par amount outstanding is greater than or equal to the minimum par amount outstanding required by the index's eligibility requirements as set forth in the index methodology. If, at the rebalancing, the par amount outstanding of the partially tendered bond is less than the minimum required, the bond is deleted at that rebalancing.

Scenario 1 – Puts and Tenders		
Scenario 1a: Complete Mandatory Tender	Generally, as of the next Rebalancing Date, the index bond must have a minimum term to mandatory put date as specified in the index methodology (typically greater than or equal to one calendar month plus one calendar day) to remain in the index, otherwise it is deleted at the next Rebalancing Date. Question: Is the term to mandatory put date greater than or equal to the minimum required in the index methodology?	Decision: If yes, the bond remains in the index. If no, delete from the index on that Rebalancing Date
Scenario 1b: Partial Mandatory Tender	Generally, as of the next Rebalancing Date, the index bond must have a minimum par amount outstanding (as specified in the index methodology) to remain in the index, otherwise it is deleted at the next Rebalancing Date. Question: Is the par amount outstanding of the index bond greater than or equal to the minimum required in the index methodology?	Decision: If yes, the bond remains in the index at the new par amount outstanding (net of any partial calls, tenders, sinking fund payments, etc.). If no, delete from the index on that Rebalancing Date
Scenario 1c: Optional Tenders	Optional tender notices are generally sent out 30 to 60 days prior to the tender exercise date (though this may vary depending upon the issuer). As the outcome of an optional tender exercise is unknown until after it has occurred, S&P Dow Jones Indices waits until the optional tender has occurred (the tender exercise date). Once the results of the tender exercise are known, the analyst can determine the remaining par amount outstanding of the index bond, if any, and determine what further action to take. Question: As of the Rebalancing date, does the new par amount outstanding (adjusted for any calls, tenders, sinking fund payments, etc.) meet the minimum par amount eligibility criteria as outlined in the index methodology?	Decision: If yes, the bond remains in the index at the new par amount outstanding (net of any calls, tenders, sinking fund payments, etc.). If no, delete from the index on that Rebalancing Date

Refundings

There are two types of refundings that may affect bonds within the S&P Dow Jones Indices' family of fixed income indices:

- Current refundings
- Advance refundings

Eligibility criteria differ among the various indices with regard to their constituent holdings. One aspect of this is whether the index can include bonds that are prerefunded or escrowed to maturity. Some indices exclude these types of bonds while others allow them. For example, the S&P Municipal Bond Index allows prerefunded or ecrowed to maturity bonds. However, certain sub-indices of this index do not, such as the S&P Municipal Bond High-Yield Index.

Current Refundings

S&P Dow Jones Indices treats current refundings in a similar manner to that of mandatory calls. That is, once notice is given that a bond is subject to a complete call and current refunding by the issuer, the bond is deleted from the index at the subsequent rebalancing if the term to call and redemption is less than the minimum term to maturity or mandatory call required in the index's eligibility criteria (typically one calendar month plus one calendar day for most indices).

If subject to a partial current refunding, at the rebalancing date the outstanding par amount of the refunded bond is determined and if that amount is below the minimum par amount outstanding as set forth in the index's eligibility criteria, the bond is deleted at that rebalancing. If the outstanding par amount of the refunded bond is greater than or equal to the minimum established in the index's eligibility criteria, the bond remains an index constituent with its par amount outstanding adjusted for any partial refunding activity at the rebalancing.

However, please note that the refunding issue (new issue) is not automatically added to the index as a replacement for the refunded issue. The refunding issue must meet all the applicable eligibility criteria as stated in each index's methodology for inclusion in an index.

Advance Refundings

For those indices that do not allow prerefunded bonds or bonds escrowed to maturity, when notice of an advance refunding is received, S&P Dow Jones Indices deletes the index constituent, which has undergone an advance refunding at the next rebalancing.

It should be noted however, that the advance refunding issue (the new bond issuance) is not automatically added to the index as a replacement for the prerefunded issue. The advance refunding issue must meet all the applicable eligibility criteria as stated in each index's methodology for inclusion in an index.

For those indices that do allow prerefunded bonds or bonds escrowed to maturity, S&P Dow Jones Indices treats advance refundings in a similar manner to that of mandatory calls. Remember that the time period for calling and redeeming prior issues in an advance refunding is greater than 90 days. As such, the prerefunded bond may continue to be included in the index (assuming other eligibility criteria are met) until notice is given of a call and redemption of the bond. Once notice of a complete call and redemption is given, the bond is deleted at the subsequent rebalancing if its term to mandatory call is less than the minimum required in the index eligibility criteria.

If subject to a partial advance refunding and once notice is given of a partial call and redemption, the outstanding par amount of the refunded bond is determined and if that amount is below the minimum par amount outstanding as set forth in the index's eligibility criteria, the bond is deleted at the next rebalancing. If the outstanding par amount of the refunded bond is greater than or equal to the minimum established in the index's eligibility criteria, the bond remains an index constituent with its par amount outstanding adjusted for any partial refunding activity at the rebalancing.
However, please note that the refunding issue (new issue) is not automatically added to the index as a replacement for the refunded issue. The refunding issue must meet all the applicable eligibility criteria as stated in each index's methodology for inclusion in an index.

To reiterate, bonds with mandatory complete calls (including refunded issues) are deleted from the index at the rebalancing for the following reasons:

- **Indices with a minimum term to call:** Bonds that have a scheduled complete mandatory call such that the term to call is less than the minimum required as set forth in the index's methodology.
- **Indices without a minimum term to call:** Bonds that are subject to a mandatory call which will result in a complete call of the bond during the course of the month (or period).

Bonds subject to mandatory partial calls (including refunded issues) are deleted from the index at the rebalancing for the following reason:

- Bonds whose par amount outstanding, as of the rebalancing date, has fallen below the minimum required in the index's eligibility criteria are deleted from the index at that rebalancing.

Scenarios

For index calculation purposes, a refunding presents the following key questions:

- Additions - Does a non-index security become an index constituent?
- Deletions - Does the index security retain membership in the index?

Additions - Please note that the refunding issue (new issue) is not automatically added to the index as a replacement for the refunded issue. The refunding issue must meet all the applicable eligibility criteria as stated in each index's methodology for inclusion in an index.

Deletions **-** To answer this, we need to know whether the refunding is a current refunding or an advance refunding and whether the refunding is complete or partial.

A key determinant in considering whether to delete an index bond from the index due to a complete refunding is its term to mandatory call date. If, at the rebalancing, the term to maturity or mandatory complete call date is less than the minimum required in the index eligibility criteria, the bond is deleted at that rebalancing. For partial refundings, a key determinant in considering whether to delete an index bond from the index is whether the remaining par amount outstanding is greater than or equal to the minimum par amount outstanding required by the index's eligibility requirements as set forth in the index methodology. If, at the rebalancing, the par amount outstanding of the partially refunded bond is less than the minimum required, the bond is deleted at that rebalancing.

Scenario 1 - Refundings		
Scenario 1a: Complete Current Refunding	Generally, as of the next Rebalancing Date, the refunded bond must have a minimum term to mandatory call date as specified in the index methodology (typically greater than or equal to one calendar month plus one calendar day) to remain in the index, otherwise it is deleted at the next Rebalancing Date. Question: Is the term to mandatory call date greater than or equal to the minimum required in the index methodology?	Decision: If yes, the bond remains in the index. If no, delete from the index on that Rebalancing Date

Scenario 1 - Refundings		
Scenario 1b: Partial Current Refunding	Generally, as of the next Rebalancing Date, the refunded bond must have a minimum par amount outstanding (as specified in the index methodology) to remain in the index, otherwise it is deleted at that Rebalancing Date. Question: Is the minimum par amount outstanding of the refunded bond greater than or equal to the minimum required in the index methodology?	Decision: If yes, the bond remains in the index at the new par amount outstanding (net of any partial calls, tenders, sinking fund payments, etc.). If no, delete from the index on that Rebalancing Date
Scenario 1c: Complete Advance Refunding (Index allows prerefunded bonds)	Generally, as of the next Rebalancing Date, the refunded bond must have a minimum term to mandatory call date as specified in the index methodology (typically greater than or equal to one calendar month) to remain in the index, otherwise it is deleted at the next Rebalancing Date. Question: Is the term to mandatory call date greater than or equal to the minimum required in the index methodology?	Decision: If yes, the bond remains in the index. If no, delete from the index on that Rebalancing Date
Scenario 1d: Partial Advance Refunding (Index allows prerefunded bonds)	Generally, as of the next Rebalancing Date, the refunded bond must have a minimum par amount outstanding (as specified in the index methodology) to remain in the index, otherwise it is deleted at that Rebalancing Date. Question: Is the minimum par amount outstanding of the refunded bond greater than or equal to the minimum required in the index methodology?	Decision: If yes, the bond remains in the index at the new par amount outstanding (net of any partial calls, tenders, sinking fund payments, etc.). If no, delete from the index on that Rebalancing Date
Scenario 1e: Advance Refunding (Index does not allow prerefunded bonds)	If an index does not allow prerefunded bonds or bonds escrowed to maturity, upon receipt of notice of advance refunding action on the part of the issuer, the prerefunded bond is deleted at the next Rebalancing Date. Question: As of the Rebalancing Date, has notification been received of an index bond being subject to an advanced refunding transaction?	Decision: If no, the bond remains in the index. If yes, delete from the index on that Rebalancing Date

Mergers & Acquisitions

In the event of a merger or acquisition, a corporate bond generally remains outstanding or is paid off and retired as a consequence of the merger or acquisition either via a call or tender.

Each index maintains its own constituent security eligibility criteria including minimum par amounts outstanding, credit ratings criteria, minimum term to maturity and/or call/put date, among others.

As merger and acquisition activity may impact one or more of the index's security eligibility requirements, an index security may be deleted from the index at the monthly or periodic rebalancing as a consequence of the merger or acquisition depending on the index's rebalancing schedule.

One family of indices that is worth noting are indices which require issuer level membership in a related stock index such as the S&P 500 Bond Index. The index consists of corporate bonds issued in the U.S. by companies (and their subsidiaries) in the S&P 500. The bond index naturally inherits the impact of M&A activity on the underlying equity index. For example, if Company X is a constituent of S&P 500 while Company Y is not, and Company X acquires Company Y, the bonds issued by Company Y (if not paid off or retired) will become eligible for the S&P 500 Bond Index subject to the other index eligibility criteria.

Please refer to *Equity Indices Policies & Practices Methodology* for further details on M&A driven changes to S&P Dow Jones Indices.

Scenarios

For index calculation purposes, a merger or acquisition presents the following key questions:

- Additions - Does a non-index security become an index constituent?
- Deletions - Does the index security retain membership in the index?

To answer these questions, we need to know the index's criteria regarding credit ratings, minimum term to effective maturity and minimum par amount outstanding.

As the key determinants for a bond's inclusion or deletion from an index in regards to merger and acquisition activity relate to credit ratings revisions, minimum term to effective maturity and minimum par amount outstanding, please see the sections of this document entitled *Credit Ratings Revisions*, *Calls* and *Puts and Tenders* for scenarios related to credit ratings revisions, calls and tenders.

Country Eligibility

S&P Dow Jones methodology focuses on providing a way to organize data into meaningful aggregates for the global fixed income investor base. Hence, classification of a country will depend on both the development level of its economy and the degree of accessibility to and liquidity of the particular fixed income market being classified.

In the initial step, countries are classified into two major economic development groups – *developed and emerging*. For the purposes of fixed income index classification, S&P Dow Jones Indices will leverage the classification on the IMF World Economic Outlook publication.

Additionally, factors which determine liquidity and accessibility are key in determining index membership eligibility. A unique problem in classifying fixed income assets arises from the participation of a diverse issuer base as well as the variety of jurisdictions and currencies of issuance that each issuer may access. For example, a sovereign may choose to fund its fiscal expenditures in local currency or in hard currency. The issuance may be in global markets or in local markets. These factors can impact the ability of a global investor to access the particular asset. Therefore, in this second classification step, the assets themselves, rather than the country of domicile or issuer name will need to be classified in the context of index inclusion.

The first two steps in the classification process will provide S&P Dow Jones with a list of countries to include on the annual Country Classification Consultation. Final decisions on classification are made by the S&P Dow Jones Indices Global Fixed Income Index Committee based on initial classification, consultation from market participants and relevant quantitative and qualitative information. The client consultation seeks to incorporate opinions from major institutional investors on a global basis.

Initial Country Categorization

From the perspective of the fixed income global investor, debt issued by the central government is likely the most liquid and accessible asset among debt issued by any other entity domiciled within that country. Hence as a first step, macroeconomic and policy data such as relative income ranking of a nation, diversification of the sources of the wealth (exports) and integration of the economy in the global markets are key factors which should be considered when classifying a country's development level by investors.

S&P Dow Jones Indices initially classifies fixed income markets leveraging the categorization found in the Fall/October IMF World Economic Outlook publication. The country classification in the WEO divides the world into two major groups - *advanced economies* and *emerging market and developing economies*. The objective of the classification in the IMF's publication is to provide meaningful aggregates of macroeconomic performance and projections. The main criteria used by the IMF to classify countries include per capita GNI and the degree of integration of the economy into the global financial system. Additionally export diversification is considered to avoid misclassifying rich emerging markets, such as oil exporters, as an advanced economy. It is worth noting that as stated in the WEO Statistical Appendix; *classification is not based on strict criteria, economic or otherwise, and it has evolved over time*.

Given that the IMF framework is suitable, S&P Dow Jones Indices will leverage the IMF classification but may ultimately deviate based on internal review and fixed income client consultation. For example, following the Greek debt crisis, the fixed income assets issued by entities domiciled in Greece may not share similarity in market behavior expected in a developed market. Additionally, market participants focused on investing in developed markets may not have appetite for the risk, therefore, although a country index may continue to exist (subject to price data availability), the assets would not be included in the developed aggregate indices.

Advanced Economies

Australia	Denmark	Hong Kong	Latvia	Norway	Spain
Austria	Estonia	Iceland	Lithuania	Portugal	Sweden
Belgium	Finland	Ireland	Luxembourg	Singapore	Switzerland
Canada	France	Israel	Malta	Slovak Republic	Taiwan
Cyprus	Germany	Italy	Netherlands	Slovenia	United Kingdom
Czech Republic	Greece	Japan	New Zealand	South Korea	United States

Emerging Markets and Developing Economies (Select 72 countries from 153 classified by IMF)

Angola	Costa Rica	Honduras	Morocco	Senegal	Vietnam
Argentina	Côte d'Ivoire	Hungary	Mozambique	Serbia	Zambia
Armenia	Croatia	India	Namibia	South Africa	Bahrain
Azerbaijan	Dominican Republic	Indonesia	Nigeria	Sri Lanka	Jordan
Belarus	Ecuador	Iraq	Pakistan	Tanzania	Kuwait
Belize	Egypt	Jamaica	Panama	Thailand	Oman
Bolivia	El Salvador	Kazakhstan	Paraguay	Trinidad & Tobago	Qatar
Brazil	Ethiopia	Kenya	Peru	Tunisia	Saudi Arabia
Bulgaria	Gabon	Lebanon	Philippines	Turkey	United Arab Emirates
Chile	Georgia	Malaysia	Poland	Ukraine	Cameroon
China	Ghana	Mexico	Romania	Uruguay	Suriname
Colombia	Guatemala	Mongolia	Russia	Venezuela	Barbados

Offshore financial centers not classified by the WEO such as Bermuda, British Virgin Islands and the Cayman Islands are considered to be emerging markets. Therefore, government related issues from these countries will be classified as Emerging Markets. Corporate issuance which are domiciled or have a country of risk in these offshore financial centers will also be considered to be emerging markets.

Asset Classification

Once countries have been classified, for the purposes of Index aggregation, S&P Dow Jones Indices classifies available assets based on level of accessibility by the global fixed income investor base. Fixed income assets are issued by various issuer classes such as government, agency, corporations, and local authorities all of which have a differing level of risk and liquidity. Therefore, in certain cases, bonds issued by entities in the same country may require distinct classification. Furthermore, a single issuer can issue debt in various jurisdictions and currencies with implications on both accessibility and liquidity. That is, bonds issued by a single issuer may be classified differently in terms of index membership depending on market and currency of issuance. Ultimately, the second level of classification will be reliant more heavily on the purpose of the index.

Determination of inclusion will be made using quantitative and qualitative approach. From a purely quantitative perspective, information such as market share may be utilized. For example, in determining if a county’s local government bonds qualify for an emerging markets index, S&P Dow Jones will consider its relative weight among its peers. However, qualitative indicators such as ease of access, capital controls, institutional stability and investor appetite also play a part.

Recalculation Policy for S&P Dow Jones Indices' Branded Indices

S&P Dow Jones Indices reserves the right to recalculate an index at its discretion in the event one of the following issues has occurred:

1. Incorrect or revised price of one or more constituent securities;
2. Late announcement;
3. Incorrect calculation or data entry error;
4. Incorrect application of index methodology or missed methodology event.

A general description of how these events are handled is provided in the table below.

The decision to recalculate an index is made at the discretion of the applicable Index Manager and/or Index Committee, as set forth herein. The potential market impact or disruption resulting from the potential recalculation is considered when making any such decision.

Recalculation Events that may be made by an Index Manager without Involving the Index Committee. In the event one of the following recalculation events is discovered within two trading days of its occurrence, the Index Manager may, at his/her discretion, recalculate the index without involving the Index Committee. In the event any such recalculation event is discovered beyond such two trading day period, the applicable Index Committee shall decide whether the index should be recalculated.

Recalculation Events	Treatment In S&P Dow Jones Indices' Branded Indices
Incorrect or revised price of one or more constituent securities	Incorrect constituent prices enter a challenge process with the price provider. If the error is corrected by the price provider, this may result in a recalculation. Index levels are generally not recalculated due to a change in price but S&P Dow Jones Indices reserves the right to recalculate an index if a given price change is deemed, solely in its discretion, large enough.
Late announcement	Late information is applied at the earliest opportunity when S&P Dow Jones Indices becomes aware of the event.
Incorrect calculation or data entry error	Incorrect calculations or data entry mistakes caused by S&P Dow Jones Indices are corrected and impacted indices are recalculated.
Incorrect application of index methodology or missed methodology event	See below.

Index Methodology Event. The Index Committee shall determine whether or not to recalculate an index in the event an error is discovered by S&P Dow Jones Indices that was caused by the incorrect application of an index methodology and results in the incorrect composition and/or weighting of index constituents in accordance with the following guidelines:

- In the event the Index Committee discovers a constituent that does not meet index eligibility and selection criteria for a given index as documented in the index's methodology, and was therefore incorrectly added to or deleted from the index, or the constituent weightings in the index were incorrectly assigned, then the Index Committee may decide to amend the constituents or weighting of the index in line with the index methodology proactively (as opposed to retroactively) on a future date, providing reasonable advance notice from the announcement date to the effective date. The Index Committee will generally not alter the index composition and/or weightings of constituents retroactively except in accordance with the following guidelines:

  - The addition of a constituent that does not meet the index objective as defined in the index methodology (e.g. adding a non-Sukuk bond to a Sukuk bond index).
  - The changes made differ from those that were announced by S&P Dow Jones Indices in advance of the effective date (e.g. pro-forma files).

- If an incorrect application of the methodology for determining index composition or weighting is discovered after the action has been announced by S&P Dow Jones Indices, but prior to the effective date of the action, S&P Dow Jones Indices reserves the right to rescind the action and restate it using corrected data. S&P Dow Jones Indices will generally restate the action if the inconsistency is discovered within two trading days of the action becoming effective.

In the event S&P Dow Jones Indices chooses to recalculate an index, it shall do so within a reasonable timeframe following the detection and review of the issue. If it is determined that an index will be recalculated, the following steps will be taken upon completion of the recalculation:

- All impacted files are regenerated and reposted.
- All clients (i.e. S&P Dow Jones Indices-licensed entities) are notified of the recalculation and alerted when files have been successfully reposted.

S&P Dow Jones Indices applies the recalculation rules set forth herein to its branded indices and markets (developed, emerging and frontier). Any decisions that differ from the stated rules will be reviewed by the Index Committee and announced accordingly.

Common Identifiers. Incorrect identifiers are generally corrected on the same day such an error is detected and will be included in the next regularly scheduled file delivery. In the event that index analytics are changed, S&P Dow Jones Indices reserves the right to recalculate the indices affected by the change.

Index Governance

Index Committee

Indices are maintained by an Index Committee. Most committees are comprised of full-time professional members of S&P Dow Jones Indices' staff, with the exception of some co-branded indices, which may include committee members from external companies or exchanges. Please refer to individual index methodology documents for information on index committees with external index committee members. At each meeting, the Index Committee may review pending actions that may affect index constituents, statistics comparing the composition of the indices to the market, securities that are being considered as candidates for addition to an index, and any significant market events. In addition, the Index Committee may revise index policy covering rules for selecting securities or other matters.

Questions of interpretation or possible exceptions to rules are considered by the Index Committee responsible for the indices in question.

S&P Dow Jones Indices considers information about changes to its indices and related matters to be potentially market moving and material. Therefore, all Index Committee discussions are confidential.

S&P Dow Jones Indices' Index Committees reserve the right to make exceptions in the treatment if the need arises. In any scenario where the treatment differs from the general rules stated in this document, clients will receive sufficient notice, whenever possible.

Quality Assurance

S&P Dow Jones Indices maintains quality assurance processes and procedures for the calculation and maintenance of its indices that include a regularly scheduled meeting to review incidents or errors, if any, that occurred during the previous week and identify causes, determine repetitive issues and evaluate whether any long-term changes are necessary (e.g. a change in process). Incidents and errors are tracked through S&P Dow Jones Indices' internal system and significant matters are escalated, requiring, at times, an ad hoc meeting of the same group.

Internal Reviews of Methodology

Annual Review Process. In addition to its daily governance of indices and maintenance of index methodologies, at least once within any 12-month period, the Index Committee reviews each index methodology to ensure the indices continue to achieve the stated objectives, and that the data and methodology remain effective. The annual review process includes the gathering of information on the appropriateness, representativeness, and effectiveness of the index methodology from colleagues responsible for commercializing the indices. In the case that an index methodology is reviewed off cycle from the annual review, the Index Committee reserves the right to cancel the annual review if the requested review covers all the relevant issues.

Communication with Stakeholders and Consultations. S&P Dow Jones Indices communicates and consults with stakeholders through various channels using press releases, index announcements, emails and the distribution of data files. In addition, S&P Dow Jones Indices has a designated client service team available to respond to inquiries.

When a material change to an index methodology is considered, S&P Dow Jones Indices publishes a consultation inviting comments from external parties. A material change alters the index objective or changes the methodology in a way that affects the likelihood that the index will achieve its objective. Examples of methodology changes that could impact the index objective include altering rules determining the index universe, the selection of index constituents, or the weighting of those constituents. Consultations are posted on the Web site at *www.spdji.com*, and feedback is accepted only during the posted timeframe. Under normal circumstances the consultation period is open for a minimum of 30 days from publication, but S&P Dow Jones Indices reserves the right to conduct shorter or longer consultation periods, at the discretion of the Index Committee. Prior to the Index Committee's final review, S&P Dow Jones Indices will consider the issues and may request clarifications from respondents as part of that review. All feedback from consultations is reviewed and considered before a final decision is made by the Index Committee. Any changes to an index methodology are announced on the Web site.

Occasionally, S&P Dow Jones Indices may hold face-to-face meetings, conference calls, or hold meetings such as Advisory Panels.

Complaints Procedure. For any inquiry, comment, or complaint regarding the indices governed by this methodology, a Client Services Form can be found at *http://us.spindices.com/feedback/client-services*.

Index Policy

Announcements

Please refer to each respective index methodology for the specific policies and procedures related to index announcements for each fixed income index.

Major index releases are posted on the Web site, *www.spdji.com*.

For reposting guidelines due to late announcements or deviations from the index methodology, please refer to the - Recalculation Policy section in this document.

Calculations and Pricing Disruptions

If a pricing source required for index calculation is unable to provide daily pricing for one or more securities, the previous close is used for the affected securities. In the event intraday prices are available for a security, the last available trade price is used for index calculation.

In extreme circumstances, S&P Dow Jones Indices may decide to delay index adjustments or not publish an index.

Expert Judgment

S&P Dow Jones Indices' Index Committees may exercise Expert Judgment when the situation calls for the interpretation of data in calculating and maintaining an S&P Dow Jones Indices' Index. S&P Dow Jones Indices maintains internal records of the use of Expert Judgment and the rationale for any such use. Expert Judgment specifically and exclusively refers to S&P Dow Jones Indices' exercise of discretion with respect to its use of data in determining an index in the following context: Expert Judgment includes extrapolating data from prior or related transactions, adjusting data for factors that might influence the quality of data such as market events or impairment of a buyer or seller's credit quality, or weighing firm bids or offers greater than a particular concluded transaction. Other areas of discretion, such as methodology changes, are not, for the purposes of this document, considered Expert Judgment.

Discretion

S&P Dow Jones Indices' Index Committees may apply discretion to make decisions that differ from the index methodology in certain circumstances, including to avoid unnecessary turnover, excessive index changes or adjustments, or possible market disruption.

Data Hierarchy

Data used for the indices governed by this methodology may include:

a) Evaluated Prices:

- Evaluated pricing providers use a variety of different data inputs, anchored in actual transactions. The weight given to transactions is subject to the type of security, level of market activity, and timing.

b) Non-Evaluated Prices:

- Transactions if appropriate to the security to be priced and the time of pricing, and
- Firm-Bid Offers if applicable to the security in question and pricing timeliness.

Contact Information

For questions regarding an index, please contact: index_services@spglobal.com.

Appendix I

Key Ratings Symbols and Definitions Used by S&P Dow Jones Indices' Fixed Income Indices

S&P Dow Jones Indices uses a variety of criteria in constructing and maintaining fixed income indices. For many of the indices, credit ratings play a key role in the selection of index securities. For example, certain indices maintain eligibility criteria that require index securities to have an "investment-grade" rating of at least BBB- by S&P Global Ratings, Baa3 by Moody's, or BBB- by Fitch. Others require "high-yield" or "speculative" ratings below "investment-grade." Eligibility criteria for each S&P Dow Jones Indices Fixed income index can be found within its respective index methodology document available at *www.spdji.com*.

A plethora of credit ratings symbols and definitions exist depending on the following:

- The Nationally Recognized Statistical Rating Organizations (NRSRO) – S&P Global Ratings, Moody's, Fitch, etc.
- The type of credit rating - Issuer or Issue
- The tenor of the obligation - Long-term or Short-term
- The type of obligation - Structured Finance, Public Finance, Corporate Finance, etc.
- Additional criteria as set forth by each NRSRO

This section aims to provide a general outline of key credit ratings symbols and definitions used by many of the S&P Dow Jones Indices Fixed income indices. Included herein are some of the more common S&P Global Ratings, Moody's and Fitch ratings symbols and definitions used by the S&P Dow Jones Indices' family of fixed income indices.

This document does not aim to be a substitute for all the various ratings scales, symbols and definitions used by S&P Global Ratings, Moody's, Fitch and other NRSROs. For the full range of credit scales, symbols and definitions used by each NRSRO, please refer to each respective agency's Web site.

Key Ratings Symbols and Definitions Used by S&P Dow Jones Indices' Fixed Income Indices

Long-Term Issue Credit Ratings

S&P	Moody's	Fitch*	
AAA	Aaa	AAA	*"Prime / Maximum Safety"*
AA+	Aa1	AA+	*"High Grade High Quality"*
AA	Aa2	AA	
AA-	Aa3	AA-	
A+	A1	A+	*"Upper Medium Grade"*
A	A2	A	
A-	A3	A-	
BBB+	Baa1	BBB+	*"Lower Medium Grade"*
BBB	Baa2	BBB	
BBB-	Baa3	BBB-	
BB+	Ba1	BB+	*"Non Investment Grade"*
BB	Ba2	BB	*"Speculative"*
BB-	Ba3	BB-	
B+	B1	B+	*"Highly Speculative"*
B	B2	B	
B-	B3	B-	
CCC+	Caa1	CCC	*"Substantial Risk"*
CCC	Caa2	-	*"In Poor Standing"*
CCC-	Caa3	-	
CC	Ca	CC	*"Extremely Speculative"*
C	C	C	*"May be in Default"*
D	-	D	*"Default"*

* For Fitch, Ratings Scale herein refers to the scale for Structured, Project and Public Finance Obligations. For additional rating scales and definitions, please refer to Fitch Ratings (www.fitchratings.com).

Short-Term Issue Credit Rating

S&P	Moody's**	Fitch	
A-1+	VMIG 1	F1+	*"Investment Grade"*
A-1	VMIG 2	F1	
A-2	VMIG 2	F2	
A-3	VMIG 3	F3	
B	SG	B	*"Speculative"*
C	-	C	
D	-	RD/D	

** For Moody's, Rating Scale herein refers to the scale for Variable Rate Demand Obligations. For additional short-term rating scales and definitions, please refer to Moody's Investor's Services (www.moodys.com).

S&P Global Ratings Issue Credit Ratings Definitions[1]

An S&P Global Ratings issued credit rating is a forward-looking opinion about the creditworthiness of an obligor with respect to a specific financial obligation, a specific class of financial obligations, or a specific financial program (including ratings on medium-term note programs and commercial paper programs). It takes into consideration the creditworthiness of guarantors, insurers, or other forms of credit enhancement on the obligation and takes into account the currency in which the obligation is denominated. The opinion reflects S&P Global Ratings' view of the obligor's capacity and willingness to meet its financial commitments as they come due, and may assess terms, such as collateral security and subordination, which could affect ultimate payment in the event of default.

Issue credit ratings can be either long-term or short-term. Short-term ratings are generally assigned to those obligations considered short-term in the relevant market. In the U.S., for example, that means obligations with an original maturity of no more than 365 days including commercial paper. Short-term ratings are also used to indicate the creditworthiness of an obligor with respect to put features on long-term obligations. The result is a dual rating, in which the short-term rating addresses the put feature, in addition to the usual long-term rating. Medium-term notes are assigned long-term ratings.

S&P Global Ratings Long-Term Issue Credit Ratings

Rating	*Definition*
AAA	An obligation rated 'AAA' has the highest rating assigned by S&P Global Ratings. The obligor's capacity to meet its financial commitment on the obligation is extremely strong.
AA	An obligation rated 'AA' differs from the highest-rated obligations only to a small degree. The obligor's capacity to meet its financial commitment on the obligation is very strong.
A	An obligation rated 'A' is somewhat more susceptible to the adverse effects of changes in circumstances and economic conditions than obligations in higher-rated categories. However, the obligor's capacity to meet its financial commitment on the obligation is still strong.
BBB	An obligation rated 'BBB' exhibits adequate protection parameters. However, adverse economic conditions or changing circumstances are more likely to lead to a weakened capacity of the obligor to meet its financial commitment on the obligation.
BB	An obligation rated 'BB' is less vulnerable to nonpayment than other speculative issues. However, it faces major ongoing uncertainties or exposure to adverse business, financial, or economic conditions which could lead to the obligor's inadequate capacity to meet its financial commitment on the obligation.
B	An obligation rated 'B' is more vulnerable to nonpayment than obligations rated 'BB', but the obligor currently has the capacity to meet its financial commitment on the obligation. Adverse business, financial, or economic conditions will likely impair the obligor's capacity or willingness to meet its financial commitment on the obligation.
CCC	An obligation rated 'CCC' is currently vulnerable to nonpayment, and is dependent upon favorable business, financial, and economic conditions for the obligor to meet its financial commitment on the obligation. In the event of adverse business, financial, or economic conditions, the obligor is not likely to have the capacity to meet its financial commitment on the obligation.
CC	An obligation rated 'CC' is currently highly vulnerable to nonpayment.

[1] "S&P Global Ratings Definitions," Apr. 19, 2018, S&P Global Ratings. *https://www.standardandpoors.com/en_US/web/guest/article/-/view/sourceId/504352*.

Rating	Definition
C	A 'C' rating is assigned to obligations that are currently highly vulnerable to nonpayment, obligations that have payment arrearages allowed by the terms of the documents, or obligations of an issuer that is the subject of a bankruptcy petition or similar action which have not experienced a payment default. Among others, the 'C' rating may be assigned to subordinated debt, preferred stock or other obligations on which cash payments have been suspended in accordance with the instrument's terms or when preferred stock is the subject of a distressed exchange offer, whereby some or all of the issue is either repurchased for an amount of cash or replaced by other instruments having a total value that is less than par.
D	An obligation rated 'D' is in payment default. The 'D' rating category is used when payments on an obligation, including a regulatory capital instrument, are not made on the date due even if the applicable grace period has not expired, unless S&P Global Ratings believes that such payments will be made during such grace period. The 'D' rating also will be used upon the filing of a bankruptcy petition or the taking of similar action if payments on an obligation are jeopardized. An obligation's rating is lowered to 'D' upon completion of a distressed exchange offer, whereby some or all of the issue is either repurchased for an amount of cash or replaced by other instruments having a total value that is less than par.
NR	This indicates that no rating has been requested, that there is insufficient information on which to base a rating, or that S&P Global Ratings does not rate a particular obligation as a matter of policy.

Note: *The ratings from 'AA' to 'CCC' may be modified by the addition of a plus (+) or minus (-) sign to show relative standing within the major rating categories.*

S&P Global Ratings Short-Term Issue Credit Ratings

Rating	Definition
A-1	A short-term obligation rated 'A-1' is rated in the highest category by S&P Global Ratings. The obligor's capacity to meet its financial commitment on the obligation is strong. Within this category, certain obligations are designated with a plus sign (+). This indicates that the obligor's capacity to meet its financial commitment on these obligations is extremely strong.
A-2	A short-term obligation rated 'A-2' is somewhat more susceptible to the adverse effects of changes in circumstances and economic conditions than obligations in higher rating categories. However, the obligor's capacity to meet its financial commitment on the obligation is satisfactory.
A-3	A short-term obligation rated 'A-3' exhibits adequate protection parameters. However, adverse economic conditions or changing circumstances are more likely to lead to a weakened capacity of the obligor to meet its financial commitment on the obligation.
B	A short-term obligation rated 'B' is regarded as having significant speculative characteristics. The obligor currently has the capacity to meet its financial commitment on the obligation; however, it faces major ongoing uncertainties which could lead to the obligor's inadequate capacity to meet its financial commitment on the obligation..
C	A short-term obligation rated 'C' is currently vulnerable to nonpayment and is dependent upon favorable business, financial, and economic conditions for the obligor to meet its financial commitment on the obligation.
D	A short-term obligation rated 'D' is in payment default. The 'D' rating category is used when payments on an obligation, including a regulatory capital instrument, are not made on the date due even if the applicable grace period has not expired, unless S&P Global Ratings believes that such payments will be made during such grace period. The 'D' rating also will be used upon the filing of a bankruptcy petition or the taking of a similar action if payments on an obligation are jeopardized.

Moody's General Credit Ratings Services Definitions[2]

Moody's Long-Term Obligation Ratings

Moody's long-term ratings are opinions of the relative credit risk of financial obligations with an original maturity of one year or more. They address the possibility that a financial obligation will not be honored as promised. Such ratings use Moody's Global Scale and reflect both the likelihood of default and any financial loss suffered in the event of default.

Rating	***Definition***
Aaa	Obligations rated 'Aaa' are judged to be of the highest quality, with minimal credit risk.
Aa	Obligations rated 'Aa' are judged to be of high quality and are subject to very low credit risk.
A	Obligations rated 'A' are considered upper-medium grade and are subject to low credit risk.
Baa	Obligations rated 'Baa' are subject to moderate credit risk. They are considered medium grade and as such may possess certain speculative characteristics.
Ba	Obligations rated 'Ba' are judged to have speculative elements and are subject to substantial credit risk.
B	Obligations rated 'B' are considered speculative and are subject to high credit risk.
Caa	Obligations rated 'Caa' are judged to be of poor standing and are subject to very high credit risk.
Ca	Obligations rated 'Ca' are highly speculative and are likely in, or very near, default, with some prospect of recovery of principal and interest.
C	Obligations rated 'C' are the lowest rated class and are typically in default, with little prospect for recovery of principal or interest.

Note: *Moody's appends numerical modifiers 1, 2, and 3 to each generic rating classification from 'Aa' through 'Caa'. A '1' indicates that the obligation ranks in the higher end of its generic rating category; A '2' indicates a mid-range ranking; and a '3' indicates a ranking in the lower end of that generic rating category.*

Moody's Demand Obligation Ratings

In the case of variable rate demand obligations (VRDOs), a two-component rating is assigned - a long or short-term debt rating and a demand obligation rating. The first element represents Moody's evaluation of the degree of risk associated with scheduled principal and interest payments. The second element represents Moody's evaluation of the degree of risk associated with the ability to receive purchase price upon demand ("demand feature"), using a variation of the MIG rating scale, the Variable Municipal Investment Grade or VMIG rating.

When either the long- or short-term aspect of a VRDO is not rated, that piece is designated NR, e.g., Aaa/NR or NR/VMIG 1.

VMIG rating expirations are a function of each issue's specific structural or credit features.

[2] "Ratings Symbols and Definitions," Jul. 2017, Moody's Investors Service
<http://www.moodys.com/researchdocumentcontentpage.aspx?docid=PBC_79004>

Rating	Definition
VMIG 1	This designation denotes superior credit quality. Excellent protection is afforded by the superior short-term credit strength of the liquidity provider and structural and legal protections that ensure the timely payment of purchase price upon demand.
VMIG 2	This designation denotes strong credit quality. Good protection is afforded by the strong short-term credit strength of the liquidity provider and structural and legal protections that ensure the timely payment of purchase price upon demand.
VMIG 3	This designation denotes acceptable credit quality. Adequate protection is afforded by the satisfactory short-term credit strength of the liquidity provider and structural and legal protections that ensure the timely payment of purchase price upon demand.
SG	This designation denotes speculative-grade credit quality. Demand features rated in this category may be supported by a liquidity provider that does not have an investment grade short-term rating or may lack the structural and/or legal protections necessary to ensure the timely payment of purchase price upon demand.

Fitch Ratings Definitions[3]

Fitch Long-Term Structured, Project & Public Finance Obligations Ratings

Ratings of structured finance, project finance and public finance obligations on the long-term scale, including the financial obligations of sovereigns, consider the obligations' relative vulnerability to default. These ratings are typically assigned to an individual security or tranche in a transaction and not to an issuer.

Rating	Definition
AAA	Highest credit quality. 'AAA' ratings denote the lowest expectation of default risk. They are assigned only in cases of exceptionally strong capacity for payment of financial commitments. This capacity is highly unlikely to be adversely affected by foreseeable events.
AA	Very high credit quality. 'AA' ratings denote expectations of very low default risk. They indicate very strong capacity for payment of financial commitments. This capacity is not significantly vulnerable to foreseeable events.
A	High credit quality. 'A' ratings denote expectations of low default risk. The capacity for payment of financial commitments is considered strong. This capacity may, nevertheless, be more vulnerable to adverse business or economic conditions than is the case for higher ratings.
BBB	Good credit quality. 'BBB' ratings indicate that expectations of default risk are currently low. The capacity for payment of financial commitments is considered adequate but adverse business or economic conditions are more likely to impair this capacity.
BB	Speculative. 'BB' ratings indicate an elevated vulnerability to default risk, particularly in the event of adverse changes in business or economic conditions over time.
B	Highly speculative. 'B' ratings indicate that material default risk is present, but a limited margin of safety remains. Financial commitments are currently being met; however, capacity for continued payment is vulnerable to deterioration in the business and economic environment.
CCC	Substantial credit risk. Default is a real possibility.
CC	Very high levels of credit risk. Default of some kind appears probable.
C	Exceptionally high levels of credit risk. Default appears imminent or inevitable.

[3] "Definitions of Ratings and Other Forms of Opinion," Dec. 2014, Fitch Ratings <http://www.fitchratings.com/web_content/ratings/fitch_ratings_definitions_and_scales.pdf>

Rating	Definition
D	Default. Indicates a default. Default generally is defined as one of the following: • failure to make payment of principal and/or interest under the contractual terms of the rated obligation; • the bankruptcy filings, administration, receivership, liquidation or other winding-up or cessation of the business of an issuer/obligor; or • the distressed exchange of an obligation, where creditors were offered securities with diminished structural or economic terms compared with the existing obligation to avoid a probable payment default.
NR	Not Rated. Used to denote securities not rated by Fitch where Fitch has rated some, but not all, securities comprising an issuance capital structure.

Note: *The modifiers "+" or "-" may be appended to a rating to denote relative status within major rating categories. Such suffixes are not added to the 'AAA' obligation rating category, or to corporate finance obligation ratings in the categories below 'B'.*

Fitch Short-Term Ratings

Short-Term Ratings Assigned to Issuers or Obligations in Corporate, Public and Structured Finance

A short-term issuer or obligation rating is based in all cases on the short-term vulnerability to default of the rated entity or security stream and relates to the capacity to meet financial obligations in accordance with the documentation governing the relevant obligation. Short-Term Ratings are assigned to obligations whose initial maturity is viewed as "short term" based on market convention. Typically, this means up to 13 months for corporate, sovereign, and structured obligations, and up to 36 months for obligations in U.S. public finance markets.

Rating	Definition
F1	Highest short-term credit quality. Indicates the strongest intrinsic capacity for timely payment of financial commitments; may have an added "+" to denote any exceptionally strong credit feature.
F2	Good short-term credit quality. Good intrinsic capacity for timely payment of financial commitments.
F3	Fair short-term credit quality. The intrinsic capacity for timely payment of financial commitments is adequate.
B	Speculative short-term credit quality. Minimal capacity for timely payment of financial commitments, plus heightened vulnerability to near term adverse changes in financial and economic conditions.
C	High short-term default risk. Default is a real possibility.
RD	Restricted default. Indicates an entity that has defaulted on one or more of its financial commitments, although it continues to meet other financial obligations. Applicable to entity ratings only.
D	Default. Indicates a broad-based default event for an entity, or the default of a short-term obligation.

Appendix II

Glossary of Terms

The data used by the S&P Dow Jones Indices' fixed income indices is contained in two output files, the Constituent Level file and the Index Level file.

The constituent level file shows data at the constituent security level. For example, it shows the security identifier (CUSIP, ISIN or SEDOL), security description, local currency par amount, security credit rating, etc., of each fixed income security in an index. The index level file shows data at the index level and uses the base currency of the index. For example, it shows the index name, the index total return value, the weighted average credit ratings, adjusted market value of the index, constituent count, etc.

This section aims to provide a general outline of the key data displayed in these files in addition to related fixed income terminology. Included herein are definitions of the key terms and calculations of the two files as they relate to the S&P Dow Jones Indices' fixed income indices. Where relevant, we have provided additional important fixed income terms which may not appear in the output files.

This document does not aim to be a substitute for the specific index methodology documents of each index. Rather, this document is a general outline and calculations for certain indices may differ. Therefore, please refer to each index methodology for specific details regarding constituent security eligibility and index calculations at both the constituent and index levels.

High-Yield Bonds: Bonds rated 'BB+' or lower by S&P Global Ratings and Fitch Ratings or 'Ba1' or lower by Moody's Investors Service. These lower credit ratings indicate a higher risk of default. Due to the increased risk of default, these bonds are typically issued at a higher yield than more creditworthy bonds. Also known as "speculative" or "junk" bonds.

Investment Grade Bonds: Bonds rated 'BBB-' or above by &P Global Ratings and Fitch Ratings or 'Baa3' or above by Moody's Investors Service. These higher credit ratings indicate a lower risk of default. Correspondingly, these bonds also tend to issue at lower yields than less creditworthy bonds. Also known as "high grade" bonds.

Ratings Upgrades or Downgrades: Ratings revisions that are generally made by ratings agencies when something changes, either with the bond itself or the underlying economic fundamentals of the company, government or organization that issued the bond. For example, a bond may be <u>downgraded</u> (assigned a lower rating than it was initially given) because the issuer's financial condition, or the general economy in which it participates, has deteriorated.

Constituent Level Terminology

Accrued Interest: Interest deemed to be earned on a security but not yet paid to the investor.

Adjusted Market Value: An adjustment to an index constituent's market value in order to conform to a particular index methodology weighting rules and concentration requirements. The calculation for the adjusted market value is as follows:

*ADJ Market Value = Market Value * AWF*

See each respective index's methodology for details on weighting, constituent concentration requirements and index calculations.

Adjusted Weight Factor (AWF): Sometimes referred to as "Additional Weight Factor," the AWF is the value used to manipulate the market value of securities in equal or modified market-cap weighted indices. Often, this is equal to one (1), and has no effect on a constituent security. However, for indices that have certain rules governing constituent weight limits and/or concentration requirements, an adjusted weight factor (AWF) is used to bring into line the weights and market values of certain index constituents in order to conform to the index methodology.

See each respective index's methodology for details on weighting, constituent concentration requirements and index calculations.

For more detailed information regarding the application of AWFs, see the S&P Dow Jones Indices' *Index Mathematics Methodology* available at www.spdji.com.

Beginning Market Value: The security's adjusted market value as of the close of the last rebalancing period.

Cash: In reference to S&P Dow Jones Indices' fixed income indices, cash received on the instrument since the last rebalancing.

Clean Price: Price of a bond excluding accrued interest. Bond prices are usually quoted clean.

Country: Two-letter ISO country codes defined and published by the International Organization for Standardization (ISO), to represent countries, dependent territories, and special areas of geographical interest. Examples of ISO country codes include the codes for the United States (US), France (FR), and Japan (JP).

Country of Risk: Country assigned to a bond issue based on a combination of factors such as geographic revenue distribution, filing currency, and location of headquarters and primarly security listing

Country of Domicile: Country assigned to a bond issue based on its listing domicile.

Coupon: The current annual coupon rate. Coupons are generally, but not always, paid semiannually.

Currency Code: ISO currency codes are three-letter alphabetic codes that represent the various currencies used throughout the world. The codes were developed and are maintained by the International Organization for Standardization (ISO), which provides standards for businesses, governments and societies.

CUSIP: The Committee on Uniform Security Identification Procedures was established by the American Bankers Association to develop a uniform method of identifying securities. CUSIP numbers are unique nine-character alphanumeric identifiers assigned to each series of securities. CUSIPs are assigned by CUSIP Global Services (CGS), the overarching entity representing all CUSIP global identification offerings. CGS is managed on behalf of the American Bankers Association (ABA) by S&P Global Market Intelligence's CUSIP Service Bureau.

Daily Interest Return: The daily interest return (or daily coupon return) is the return due to interest earned on a bond. See S&P Dow Jones Indices' Fixed Income Index Mathematics Methodology and/or the respective index's methodology for calculation details.

Daily Price Return: The daily price return measures the return due to the day-over-day change in the market price of the bond. See S&P Dow Jones Indices' Fixed Income Index Mathematics Methodology and/or the respective index's methodology for calculation details.

Daily Total Return: An investment performance measure showing the actual rate of return of an index portfolio security day-over-day. Daily total return accounts for two categories of return: interest income and capital appreciation, or price return.

Price return measures the return due to the change in the market price of the bond. Interest return (or coupon return) includes the return due to the interest earned on that bond. In the case of zero coupon bonds, the accretion in price due to interest return is reported as price return.

See S&P Dow Jones Indices' Fixed Income Index Mathematics Methodology and/or the respective index's methodology for calculation details.

Description: Security name and description based on information from data feeds used by S&P Dow Jones Indices, such as Thomson Reuters, IDC, etc., depending on the index.

Description (Other): Security name and description based on additional/alternative information from data feeds used by S&P Dow Jones Indices, such as Thomson Reuters, IDC, etc., depending on the index.

Dirty Price: Price of a bond including accrued interest. May also be called the "all-in price".

Effective Date: Date of the data, as of after the close of business.

Effective Duration: Effective duration is a modification to Modified Duration and designed for bonds that have embedded options. This measure of duration takes into account the fact that expected cash flows will fluctuate as interest rates change, as opposed to the static approach that Modified Duration takes.

Effective Maturity: For fixed income securities with a mandatory redemption, call, tender or similar event prior to the maturity date, it is the date of such future event. If no mandatory redemption, call, tender or similar event is applicable to the security, it is generally the maturity date.

Face (or Par Value or Principal Value): The principal amount of a security that appears on the face of the instrument.

Face Value: The par value of a security, as distinct from its market value.

Fitch Rating: The fixed income security credit rating as per Fitch Ratings. Please see Appendix I *Key Ratings Symbols and Definitions Used by S&P Dow Jones Indices' Fixed Income Indices*.

FX Rate: The FX rate, or foreign exchange rate, is the price of one currency expressed in another currency. In other words, the rate at which one currency can be exchanged for another.

Generally, unless otherwise stated in the respective index methodology, the base currency of the index is U.S. Dollars. Therefore, holdings of foreign denominated constituent securities are translated into index base currency values using the daily spot FX rate. Securities denominated in U.S. Dollars, such as U.S. municipal securities show an FX rate of one (1). See *Market Value* for calculation details.

GICS Code: In 1999, S&P and MSCI jointly developed Global Industry Classification Standard (GICS®) to establish a global standard for categorizing companies into sectors and industries, thereby enabling asset owners, asset managers and investment research specialists to make seamless comparisons across indices by industry, by region, and globally. GICS is the basis of most sector and industry-based indices at S&P Dow Jones Indices. All classifications are agreed upon and implemented by both S&P and MSCI.

S&P and MSCI frequently undergo a GICS structure review with clients. This usually occurs on an annual basis and may result in major structural changes to GICS.

Detailed information can be found in S&P Dow Jones Indices' *Global Industry Classification Standard Methodology* and the *GICS Map* available on our Web site, *www.spdji.com*.

PICS Code: Product Identification Codes that apply specifically to fixed income issues. PICS codes rely on a similar methodology as the GICS code, but are compiled solely by S&P Global and are classified based on the individual debt issue, which may be different at the issuer level.

Index Weight: Generally, for market-value weighted indices, the index weight is the relative weight of the index security in the index. This is defined as the market value of that security expressed as a percentage of the aggregate market value of all index securities in the index portfolio. However, certain indices maintain weight caps or other restrictions. See S&P Dow Jones Indices' Fixed Income Index Mathematics Methodology and/or the respective index's methodology for calculation details.

ISIN: An International Securities Identification Number (ISIN) uniquely identifies a security. Its structure is defined in International Standard for Organization 6166. Securities for which ISINs are issued include bonds, commercial paper, equities and warrants. The ISIN code is a 12-character alpha-numerical code that does not contain information characterizing financial instruments, but serves for uniform identification of a security at trading and settlement.

Macaulay Modified Duration: Macaulay Duration measures the number of years required to recover the true cost of a bond, considering the present value of all coupon and principal payments received in the future. Thus, it is a value-weighted average of the timing of the cash flows and is quoted in terms of years.

Modified Duration is a modification of the Macaulay Duration formula designed to measure how small changes in the yield to maturity affect the price of a bond. It follows the concept that interest rates and bond prices move in opposite directions.

Market Value: For S&P Dow Jones Indices' fixed income indices, the market value of the respective index security, calculated for each security as of the close on each calendar day. See S&P Dow Jones Indices' Fixed Income Index Mathematics Methodology and/or the respective index's methodology for calculation details.

Maturity Date: The date when the principal amount of a bond or other fixed income security is due to be repaid and interest payments stop. The maturity date tells you the last scheduled date when you will get your principal back and for how long you will receive interest payments. However, it is important to note that some fixed income securities have provisions for calls, puts and/or sinking funds, which means that the debt may be paid back prior to the stated maturity date.

Monetary Default: When an issuer does not pay all or part of the principal or interest to bondholders when due, it is considered a monetary default.

Moodys Rating: The fixed income security credit rating as per Moody's Investors Service. Please see Appendix I *Key Ratings Symbols and Definitions Used by S&P Dow Jones Indices' Fixed Income Indices*.

OA Spread (Option Adjusted Spread): The average spread over the benchmark curve, based on potential paths that can be realized in the future for interest rates. The potential paths of the cash flows are adjusted to reflect the options (puts/calls) embedded in the bond.

Par Amount: The principal amount of a bond or note due at maturity, stated in the local currency. Also known as "par value", "face value" and "principal".

Prepayment (Principal Prepayment): Repayment of the principal amount by the issuer prior to the stated maturity. Includes "call," but "prepayment" usually connotes less formal procedures than a call.

Price: The amount to be paid for a security generally stated as a percentage of its face value or par.

For S&P Dow Jones Indices' fixed income indices, the price in the constituent file is the clean price, i.e. the prices of bonds excluding their respective accrued interest. In the U.S., market convention dictates that bond prices are usually quoted clean.

Price to Date: The redemption date used in the yield calculation of fixed income securities that results in the lowest return for the bond at its current price considering the maturity date of the security and any prior optional call provisions that may exist.

Price with Accrued: Price with accrued is commonly referred to as the “dirty price” and is the price of a bond including interest accrued up to the business day from the last coupon payment. The dirty price is the price an investor will pay to acquire the bond.

Pricing Details: Free text security pricing notes for applicable indices, generally from the security pricing service.

Principal: The face amount of a bond, exclusive of accrued interest and payable at maturity.

Prior Optional Call Provisions: Provisions outlined in the bond indenture at the time of the bonds sale that allow the issuer (borrower) to redeem the bonds at specific dates and prices prior to the bond’s stated maturity.

Redemption: The paying off or buying back of a bond by the issuer; also, the repurchase of investment trust units by the trustee, at the bid price.

Redemption Date: The day when the bond's term ends and the principal amount of a security is payable along with any final interest payment. Also called the “maturity date”. In cases of a callable bond, it may be the “call date”.
Redemption Premium: The amount by which the “call” price of a security exceeds its principal, or par value.

SEDOL: SEDOL stands for Stock Exchange Daily Official List, a list of security identifiers used in the United Kingdom and Ireland for clearing purposes. The numbers are assigned by the London Stock Exchange on request by the security issuer. SEDOLs serve as the NSIN or National Securities Identifying Number for all securities issued in the United Kingdom and are, therefore, part of the security's ISIN as well.

SP Rating: The fixed income security credit rating as per S&P Global Ratings. Please see Appendix I *Key Ratings Symbols and Definitions Used by S&P Dow Jones Indices’ Fixed Income Indices*.

State: Two-letter U.S. Postal Service codes representing U.S. states, dependent territories, and special areas of geographical interest. Examples include the codes for New York (NY), District of Colombia (DC), and Guam (GU).

For purposes of S&P Dow Jones Indices Fixed income indices, the security’s state is that of the issuer and includes all 50 U.S. states, the District of Columbia, the Commonwealth of Puerto Rico, and U.S. territories such as Guam and the U.S. Virgin Islands.

Variable Rate Demand Obligation (VRDO): A bond which bears interest at a variable, or floating, rate established at specified intervals (e.g., flexible, daily, weekly, monthly or annually). It contains a put option permitting the bondholder to tender the bond for purchase when a new interest rate is established. VRDOs are also referred to as VRDNs (N=Notes), VRDBs (B=Bonds) or “low floaters”.

Years to Maturity: The number of years until maturity.

Yield to Call: The annual rate of return expected on a bond based on its current price and the assumption the bond will be called or redeemed by the issuer at a predetermined date and price.

Yield to Maturity: The annual rate of return expected on a bond based on its current price and the assumption that it will be held to maturity. Sometimes also referred to as “yield.”

Yield to Worst: This is the lowest yield generated, given the potential stated calls prior to maturity.

Index Level Terminology

Constituent Count: The number of fixed income constituent securities in the respective index at the close of business on the effective date.

Convexity (Market Value Weighted Average): Convexity is a measure of the change in a security's duration with respect to changes in interest rates. The more convex a security is, the more its duration will change with interest rate changes.

The index level file shows weighted average convexity. This is the weighted average of the convexities of all the fixed income securities in an index. This figure is computed by weighting the convexity of each fixed income security in the index by the market value of the security, then averaging these weighted figures.

The measure is calculated by totaling each bond's market value. The weight of each bond is found by dividing the market value of each into the total of all. To arrive at the weighted average convexity, the weight of each security is multiplied by the convexity of each bond, and then all the values are added together. For example, say an index has three bonds with market values of $1,000, $2,000 and $3,000 (a total of $6,000) and convexities of 23.19, 77.11 and 21.15 respectively. The weights of these are 1/6 (1,000/6,000), 1/3 (2,000/6,000) and 1/2 (3,000/6,000). The weighted average convexity is approximately 40.143 (1/6 * 23.19 + 1/3 * 77.11 + 1/2 * 21.15).

Coupon (Par Amount Outstanding Weighted Average): The weighted average of the stated interest rates of all the fixed income securities in a respective index. This figure is computed by weighting the coupons of each constituent security in the index by the par amount of the security, then averaging these weighted figures.

The measure is calculated by totaling each security's par amount. The weight of each security is found by dividing the par amount of each into the total of all. To arrive at the weighted average coupon, the weight of each security is multiplied by the coupon of each security, and then all the values are added together. For example, say an index has two bonds with adjusted par amounts of $6,000,000 and $4,000,000 (a total of $10,000,000) and coupons of 7.5% and 5% respectively. The weights of these are 0.6 (6,000,000/10,000,000) and 0.4 (4,000,000/10,000,000). The weighted average coupon would be 6.5% (0.6 * 7.5% + 0.4 * 5%).

Daily Index Return: The day-over-day change in index total return. See S&P Dow Jones Indices' Fixed Income Index Mathematics Methodology and/or the respective index's methodology for calculation details.

Fitch Rating (Market Value Weighted Average): The weighted average of all the Fitch Ratings rated bonds held by the index. The measure gives investors a snapshot of the index's overall credit quality. The lower the weighted average credit rating, the riskier the index. The weighted average credit rating is expressed as a regular letter rating, for example AAA, BBB and CCC.

To arrive at the weighted average credit rating, the calculation starts with dividing the market value of each Fitch Ratings rated bond in the index by the total adjusted market value of the Fitch Ratings rated bonds in the index. Bonds not rated by Fitch Ratings are excluded from this calculation. This gives the individual Fitch Ratings rated bond weights. The weight of a bond determines how much that bond influences the weighted average credit rating. Each bond's weight is then multiplied by its credit rating score as noted in the map below:

Fitch L-T Rating / Score

AAA	100	A-	94	BB-	88	CCC-	82	C-	76
AA+	99	BBB+	93	B+	87	CC+	81	DDD	75
AA	98	BBB	92	B	86	CC	80	DD	74
AA-	97	BBB-	91	B-	85	CC-	79	D	73
A+	96	BB+	90	CCC+	84	C+	78	N/R	0
A	95	BB	89	CCC	83	C	77		

See *SP Rating* for an example of a weighted average credit rating calculation.

Fitch ST Rating (Market Value Weighted Average): The weighted average of all the Fitch Ratings rated short-term fixed income securities held by the index. The measure gives investors a snapshot of the index's overall credit quality. The lower the weighted average credit rating, the riskier the index. The weighted average credit rating is expressed as a regular letter rating, for example F1, B and C.

To arrive at the weighted average credit rating, the calculation starts with dividing the market value of each Fitch Ratings rated short-term security in the index by the total market value of the Fitch Ratings rated short-term securities in the index. <u>Securities not rated by Fitch Ratings are excluded from this calculation</u>. This gives the individual Fitch Ratings rated security weights. The weight of a security determines how much that security influences the weighted average credit rating. See *SP Rating* for an example of a weighted average credit rating calculation.

Index Code: S&P Dow Jones Indices' unique index code to represent each respective index.

Index IR Value: Daily index interest return values are generally calculated each day by applying the current day's index interest return to the previous day's index value. See S&P Dow Jones Indices' Fixed Income Index Mathematics Methodology and/or the respective index's methodology for calculation details.

Index Market Value: The sum of all the index constituents' market values. See S&P Dow Jones Indices' Fixed Income Index Mathematics Methodology and/or the respective index's methodology for calculation details.

Index Name: Name of the index to which the data applies.

Index Par Amount Outstanding: The sum of all the index constituents' par amounts. See S&P Dow Jones Indices' Fixed Income Index Mathematics Methodology and/or the respective index's methodology for calculation details.

Index PR Value: Daily index price return values are generally calculated each day by applying the current day's index price return to the previous day's index value. See S&P Dow Jones Indices' Fixed Income Index Mathematics Methodology and/or the respective index's methodology for calculation details.

Index TR Value: Daily index total return values are generally calculated each day by applying the current day's index total return to the previous day's index value. See S&P Dow Jones Indices' Fixed Income Index Mathematics Methodology and/or the respective index's methodology for calculation details.

ISO (Currency) Code: ISO currency codes are three-letter alphabetic codes that represent the various currencies used throughout the world. The codes were developed and are maintained by the International Organization for Standardization (ISO), which provides standards for businesses, governments and societies.

ISO currency code standards are periodically updated and published. Examples of ISO currency codes include the codes for the Euro (EUR), U.S. Dollar (USD), and Pound Sterling (GBP). These codes are used in foreign exchange markets, such as forex and currency futures. Each of the three-letter alphabetic codes has a corresponding three-digit numeric code. For example, the three-digit numeric code for the U.S. Dollar (USD) is 840.

For purposes of S&P Dow Jones Indices Fixed income indices, the index level ISO code is the base currency of the index, generally U.S. Dollars unless otherwise stated in the index's methodology document.

For example, even though the S&P/Citigroup International Treasury Bond Indices contain bonds denominated in a variety of local currencies, the index itself is in U.S. Dollars.

Local Rating (Market Value Weighted Average): Following the concept and calculation methodology outlined in *SP Rating*, *Moody Rating* and *Fitch Rating*, Local Rating is a placeholder for use if and when an additional ratings agency is used to rate constituent bonds in conformity with the rules governing certain indices. Please refer to the index's methodology for the policies regarding its constituent ratings requirements.

See *SP Rating*, *Moody Rating* and *Fitch Rating* for details on how to compute.

Local ST Rating (Market Value Weighted Average): Following the concept and calculation methodology outlined in *SP ST Rating*, *Moody ST Rating* and *Fitch ST Rating*, Local ST Rating is a placeholder for use if and when an additional ratings agency is used to rate constituent short-term securities in conformity with the rules governing certain indices. Please refer to the index's methodology for the policies regarding its constituent ratings requirements.

See *SP ST Rating*, *Moody ST Rating* and *Fitch ST Rating* for details on how to compute.

Modified Duration (Market Value Weighted Average): The weighted average of the modified durations of all the fixed income securities in an index. This figure is computed by weighting the modified duration of each fixed income security in the index by the market value of the security, then averaging these weighted figures.

The measure is calculated by totaling each bond's market value. The weight of each bond is found by dividing the market value of each into the total of all. To arrive at the weighted average modified duration, the weight of each security is multiplied by the modified duration of each bond, and then all the values are added together. For example, say an index has three bonds with market values of $1,000, $2,000 and $3,000 (a total of $6,000) and modified durations of 5.5, 7.8 and 12 respectively. The weights of these are 1/6 (1,000/6,000), 1/3 (2,000/6,000) and 1/2 (3,000/6,000). The weighted average modified duration is approximately 9.52 (1/6 * 5.5 + 1/3 * 7.8 + 1/2 * 12).

Moody Rating (Market Value Weighted Average): The weighted average of all the Moody's Investors Service rated bonds held by the index. The measure gives investors a snapshot of the index's overall credit quality. The lower the weighted average credit rating, the riskier the index. The weighted average credit rating is expressed as a regular letter rating, for example Aaa, Baa2 and Caa2.

To arrive at the weighted average credit rating, the calculation starts with dividing the market value of each Moody's Investors Service rated bond in the index by the total adjusted market value of the Moody's Investors Service rated bonds in the index. Bonds not rated by Moody's Investors Services are excluded from this calculation. This gives the individual Moody's Investors Service rated bond weights. The weight of a bond determines how much that bond influences the weighted average credit rating. Each bond's weight is then multiplied by its credit rating score as noted in the map below:

Moody's L-T Rating / Score

AAA	100	A2	95	BA1	90	B3	85	CA1	80	WR	0
AA1	99	A3	94	BA2	89	CAA1	84	CA2	79		
AA2	98	BAA1	93	BA3	88	CAA2	83	CA3	78		
AA3	97	BAA2	92	B1	87	CAA3	82	C	77		
A1	96	BAA3	91	B2	86	CA	81	N/R	0		

See *SP Rating* for an example of a weighted average credit rating calculation.

Moody ST Rating (Market Value Weighted Average): The weighted average of all the Moody's Investors Service rated short-term fixed income securities held by the index. The measure gives investors a snapshot of the index's overall credit quality. The lower the weighted average credit rating, the riskier the index. The weighted average credit rating is expressed as a regular letter rating, for example VMIG 1, VMIG2 and SG, for Variable Rate Demand Obligations.

To arrive at the weighted average credit rating, the calculation starts with dividing the market value of each Moody's Investors Service rated short-term security in the index by the total market value of the Moody's Investors Service rated short-term securities in the index. <u>Securities not rated by Moody's Investors Services are excluded from this calculation</u>. This gives the individual Moody's Investors Service rated security weights. The weight of a security determines how much that security influences the weighted average credit rating. See *SP Rating* for an example of a weighted average credit rating calculation.

OA Spread (Market Value Weighted Average Option-Adjusted Spread): The weighted <u>average</u> of the option adjusted spreads of all the fixed income securities in an index. This figure is computed by weighting the option adjusted spread of each fixed income security in the index by the market value of the security, then averaging these weighted figures.

The measure is calculated by totaling each bond's market value. The weight of each bond is found by dividing the market value of each into the total of all. To arrive at the weighted average option adjusted spread, the weight of each security is multiplied by the option adjusted spread of each bond, and then all the values are added together. For example, say an index has three bonds with market values of $1,000, $2,000 and $3,000 (a total of $6,000) and option adjusted spreads of 5.64, 7.905 and 11.648 respectively. The weights of these are 1/6 (1,000/6,000), 1/3 (2,000/6,000) and 1/2 (3,000/6,000). The weighted average option adjusted spread is approximately 9.399 (1/6 * 5.64 + 1/3 * 7.905 + 1/2 * 11.648).

Price (Par Amount Outstanding Weighted Average): This number reveals whether an index favors bonds selling at prices above or below face value and can also serve as an indicator of interest-rate sensitivity. It is normally expressed as a percentage of par value.

This figure is computed by weighting the clean prices of each constituent security in the index by the par amount of the security, then averaging these weighted figures.

The measure is calculated by totaling each security's par amount. The weight of each security is found by dividing the par amount of each into the total of all. To arrive at the weighted average price, the weight of each security is multiplied by the clean price of each security, and then all the values are added together. For example, say an index has two bonds with adjusted par amounts of $6,000,000 and $4,000,000 (a total of $10,000,000) and prices of 91.3 and 100.137 respectively. The weights of these are 0.6 (6,000,000/10,000,000) and 0.4 (4,000,000/10,000,000). The weighted average price would be 94.835 (0.6 * 91.3 + 0.4 * 100.137).

Rebalancing Announcement Date: The date on which changes to the index are published.

Rebalancing Date: The date when the changes to the index published on the "rebalancing announcement date" become effective.

Rebalancing Reference Date: The cutoff date whereby publicly available information is considered in the rebalancing.

SP Rating (Market Value Weighted Average): The weighted average of all the S&P Global Ratings rated bonds held by the index. The measure gives investors a snapshot of the index's overall credit quality. The lower the weighted average credit rating, the riskier the index. The weighted average credit rating is expressed as a regular letter rating, for example AAA, BBB and CCC.

To arrive at the weighted average credit rating, the calculation starts with dividing the market value of each bond in the index rated by S&P Global Ratings by the total adjusted market value of bonds in the index rated by S&P Global Ratings. <u>Bonds not rated by S&P Global Ratings are excluded from this calculation</u>. This gives the individual S&P Global Ratings rated bond weights. The weight of a bond determines how much that bond influences the weighted average credit rating. Each bond's weight is then multiplied by its credit rating score as noted in the map below:

S&P Global Ratings' L-T Rating / Score

AAA	100	A	95	BB+	90	B-	85	C	80
AA+	99	A-	94	BB	89	CCC+	84	D	79
AA	98	BBB+	93	BB-	88	CCC	83	N/R	0
AA-	97	BBB	92	B+	87	CCC-	82		
A+	96	BBB-	91	B	86	CC	81		

For example say an index has three bonds with adjusted market values of $1,000, $2,000 and $3,000 (a total of $6,000) and S&P Global Ratings credit ratings of AAA, A+ and BBB- respectively. The weights of these are 1/6 (1,000/6,000), 1/3 (2,000/6,000) and 1/2 (3,000/6,000). The weighted average credit rating is approximately A- or 94.17 (1/6 * 100 + 1/3 * 96 + 1/2 * 91). Note, decimals of 0.5 and above are rounded up to the next rating, while those below 0.5 are rounded down.

SP ST Rating (Market Value Weighted Average): The weighted average of all the S&P Global Ratings rated short-term fixed income securities held by the index. The measure gives investors a snapshot of the index's overall credit quality. The lower the weighted average credit rating, the riskier the index. The weighted average credit rating is expressed as a regular letter rating, for example A-1, B and C.

To arrive at the weighted average credit rating, the calculation starts with dividing the market value of each S&P Global Ratings rated short-term security in the index by the total adjusted market value of the S&P Global Ratings rated short-term securities in the index. <u>Securities not rated by S&P Global Ratings are excluded from this calculation</u>. This gives the individual S&P Global Ratings rated security weights. The weight of a security determines how much that security influences the weighted average credit rating. See *SP Rating* for an example of a weighted average credit rating calculation.

Tax Equivalent Yield (Market Value Weighted Average): For tax-exempt municipal indices, the tax equivalent yield is a formula which converts the lower yield of a tax-exempt bond into the higher yield of a taxable security to allow investors to compare yields on the two securities. It is calculated as follows:

Tax Equivalent Yield = Tax Free Municipal Bond Yield / (1 – Tax Rate)

For purposes of S&P Dow Jones Indices Fixed income indices, the tax rate used is generally 35%.

For example, if a tax-free municipal bond has a yield to maturity of 10% and the tax rate is 35%, a taxable bond would need a pretax yield to maturity of 15.38% (10% / 65%) in order to be considered as having an equivalent yield. Therefore, all taxable bonds with the same risk but with a pretax yield of less than 15.38% should be considered as having an inferior return compared to the 10% tax-exempt municipal bond.

The index level file shows weighted average tax equivalent yield. This is the weighted average of the tax equivalent yields of all the fixed income securities in a tax-exempt municipal index. This figure is computed by weighting the tax equivalent yield of each fixed income security in a tax-exempt municipal index by the market value of the security, then averaging these weighted figures.

The measure is calculated by totaling each bond's market value. The weight of each bond is found by dividing the market value of each into the total of all. To arrive at the weighted average tax equivalent yield, the weight of each security is multiplied by the tax equivalent yield of each bond, and then all the values are added together. For example, say an index has three bonds with market values of $1,000, $2,000 and $3,000 (a total of $6,000) and tax equivalent yields of 5%, 7% and 10%. The weights of these are 1/6 (1,000/6,000), 1/3 (2,000/6,000) and 1/2 (3,000/6,000). The weighted average taxable equivalent yield is approximately 8.17% (1/6 * 5% + 1/3 * 7% + 1/2 * 10%).

Years to Maturity (Market Value Weighted Average): The weighted average of the years to maturity of all the bonds in a respective index. This figure is computed by weighting the maturity of each fixed income security in the index by the market value of the security, then averaging these weighted figures.

The measure is calculated by totaling each bond's market value. The weight of each bond is found by dividing the market value of each into the total of all. To arrive at the weighted average years to maturity, the weight of each security is multiplied by the time until maturity of each bond, and then all the values are added together. For example, say an index has three bonds with market values of $1,000, $2,000 and $3,000 (a total of $6,000) and mature in one, two and three years respectively. The weights of these are 1/6 (1,000/6,000), 1/3 (2,000/6,000) and 1/2 (3,000/6,000). The weighted average years to maturity is 2 1/3 years (1/6 * 1 year + 1/3 * 2 years + 1/2 * 3 years).

Yield to Maturity (Market Value Weighted Average): The weighted average of the yields to maturity of all the fixed income securities in an index. This figure is computed by weighting the yield to maturity of each fixed income security in the index by the market value of the security, then averaging these weighted figures.

The measure is calculated by totaling each bond's market value. The weight of each bond is found by dividing the adjusted market value of each into the total of all. To arrive at the weighted average yield to maturity, the weight of each security is multiplied by the yield to maturity of each bond, and then all the values are added together. For example, say an index has three bonds with market values of $1,000, $2,000 and $3,000 (a total of $6,000) and yield to maturities of 5%, 7% and 10% respectively. The weights of these are 1/6 (1,000/6,000), 1/3 (2,000/6,000) and 1/2 (3,000/6,000). The weighted average yield to maturity is approximately 8.17% (1/6 * 5% + 1/3 * 7% + 1/2 * 10%).

Yield to Maturity Adjustment for Inflation-linked Securities[4]: To calculate the yield to maturity adjustment, one has to project the inflation rate for future cash flows of the bond. The projected inflation rate is an approximation of future inflation. See S&P Dow Jones Indices' Fixed Income Index Mathematics Methodology and/or the respective index's methodology for calculation details.

Yield to Worst (Market Value Weighted Average): The weighted average of the yields to worst of all the fixed income securities in an index. This figure is computed by weighting the yield to worst of each fixed income security in the index by the market value of the security, then averaging these weighted figures. The measure is calculated by totaling each bond's market value. The weight of each bond is found by dividing the adjusted market value of each into the total of all. To arrive at the weighted average yield to worst, the weight of each security is multiplied by the yield to worst of each bond, and then all the values are added together. For example, say an index has three bonds with adjusted market values of $1,000, $2,000 and $3,000 (a total of $6,000) and yields to worst of 5%, 7% and 10% respectively. The weights of these are 1/6 (1,000/6,000), 1/3 (2,000/6,000) and 1/2 (3,000/6,000). The weighted average yield to worst is approximately 8.17% (1/6 * 5% + 1/3 * 7% + 1/2 * 10%).

[4] Nominal yield is applied to inflation/index-linked securities only.

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