S&P DOW JONES INDICES
McGRAW HILL FINANCIAL

S&P/ISDA CDS Indices
Methodology

March 2016

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Introduction

S&P/ISDA Credit Default Swap (CDS) Indices are designed to track the credit default swap market for global corporate and sovereign entities, including those in distinct Global Industry Classification Standard (GICS®) sectors and sub-industries.

Each series of the S&P/ISDA CDS Indices has a 5 ¼ year maturity at inception and is comprised of a sector dependent number of reference entities. A new series for each index is launched twice a year in March and September. A new series for each of the S&P/ISDA U.S.150 Credit Spread Indices is launched four times a year in March, June, September and December.

Index Family

S&P/ISDA CDS U.S. Investment Grade Index. The index is comprised of 100 equally-weighted (1%) reference entities. These reference entities include corporate names with public debt or issuer ratings assigned by two of Standard & Poor's, Fitch, and Moody's. The lowest rating from the agencies is used to determine membership within the index and sub-index, and must be BBB-, BBB- and Baa3 or higher, respectively.

Sub-indices include:

- S&P/ISDA CDS U.S. Investment Grade A and Above Index
- S&P/ISDA CDS U.S. Investment Grade BBB Index

S&P/ISDA CDS U.S. High Yield Index. The index is comprised of 80 equally-weighted (1.25%) reference entities. These reference entities include corporate names with public debt or issuer ratings assigned by two of Standard & Poor's, Fitch, and Moody's. The highest rating from the agencies is used to determine membership within the index and sub-index, and must be lower than BBB-, BBB- and Baa3, respectively.

Sub-indices include:

- S&P/ISDA CDS U.S. High Yield BB Index
- S&P/ISDA CDS U.S. High Yield B and Below Index

S&P/ISDA 100 CDS Index. The index includes those constituents in the S&P 100 equity index that have sufficient liquidity in the five-year CDS market (on average about 80-90 of the index constituents). Reference entities are weighted in accordance with their market capitalization weighting in the S&P 100, with periodic adjustment. Some constituents in the S&P 100 do not have an active, liquid CDS market. As such, these companies are not included in the S&P/ISDA 100 CDS Index. The weights of these excluded companies are redistributed evenly among the other reference entities in the index.

S&P/ISDA CDS Select Sector Indices. The indices are comprised of reference entities that are corporate names with the appropriate GICS sector/industry/sub-industry classifications as outlined later in this document. There is no minimum ratings criterion for inclusion in these indices. The Select Sector indices are equally-weighted and have a predetermined number of reference entities specified in the name of the index. For instance, the S&P/ISDA CDS U.S. Consumer Discretionary Select 20 Index has 20 equally-weighted reference entities from the consumer discretionary market segment (GICS code = 25).

The S&P/ISDA International Developed Nation Sovereign CDS Index. The reference entities have the same country constituents and approximate weightings as the S&P/Citigroup International Treasury Bond Index.

The S&P/ISDA Eurozone Developed Nation Sovereign CDS Index. The reference entities have the same country constituents and approximate weightings as the S&P Eurozone Sovereign Bond Index.

S&P/ISDA U.S. 150 Credit Spread Index. The index includes those reference entities in the S&P 500 equity index that have a combined investment grade rating as determined in *Eligibility Criteria*, that have long-term outstanding senior debt and that have CDS spreads provided by CMA. Reference entities are each assigned a US$ 5 million notional amount so that the index has a total value of US$ 750 million.

Sub-indices include:

- S&P/ISDA U.S. Corporate 120 Credit Spread Index
- S&P/ISDA U.S. Financial 30 Credit Spread Index

This methodology was created by S&P Dow Jones Indices to achieve the aforementioned objective of measuring the underlying interest of each index governed by this methodology document. Any changes to or deviations from this methodology are made in the sole judgment and discretion of S&P Dow Jones Indices so that the index continues to achieve its objective.

Eligibility Criteria

Additions to the S&P/ISDA CDS U.S. Benchmark Indices

Ratings. All reference entities added to a new series of the Investment Grade Index must have public debt or issuer ratings assigned by two of Standard & Poor's, Fitch, and Moody's. The lowest rating from the agencies is used to determine membership within the index and sub-index, and must be BBB-, BBB- and Baa3 or higher, respectively, at the time they are added to the index.

All reference entities added to a new series of the High Yield Index must have public debt or issuer ratings assigned by two of Standard & Poor's, Fitch, and Moody's. The highest rating from the agencies is used to determine membership within the index and sub-index, and must be lower than BBB-, BBB- and Baa3, respectively; at the time they are added to the index.

Although most reference entities added to a new series of the S&P/ISDA 100 CDS Index are investment grade, there is no minimum ratings criterion for inclusion in this index.

Liquidity. When a new index series is launched, adequate liquidity for reference entities in the five-year CDS market is assessed by looking at various measures of current and historical secondary market activity including (but not limited to) the market depth on a given name, the bid/offer spread, and the number and continuity of quotes over a selected time period.

Domicile. All reference entities are U.S. companies.

Sector Classification. For the Investment Grade and High Yield indices, reference entities are chosen with the intent of contributing to a sector balance representative of the broader CDS market.

Additions to the S&P/ISDA CDS Select Sector Indices

Ratings. There is no minimum ratings criterion for inclusion in the indices.

Liquidity. When a new index series is launched, adequate liquidity for reference entities in the five-year CDS market is assessed by looking at various measures of current and historical secondary market activity including (but not limited to) the market depth on a given name, the bid/offer spread, and the number and continuity of quotes over a selected time period.

Sector Classification. The following table details the sector classification of the indices.

Replacement index constituents are chosen based on their respective GICS codes and are ranked by size and liquidity.

S&P/ISDA CDS Select Sector Indices	GICS (GICS Code)
U.S. Homebuilders Select 10	Homebuilding (25201030) *Supplementary sub-industries:* Building Products (20102010) Home Furnishings (25201020) Home Improvement Retail (25504030)
U.S. Consumer Discretionary Select 20	Consumer Discretionary (25)
U.S. Consumer Staples Select 10	Consumer Staples (30)
U.S. Energy Select 10	Energy (10)
U.S. Financials Select 10	Banks (4010) Diversified Financials (4020)
U.S. Health Care Select 10	Health Care (35)
European Banks Select 15	Banks (4010)

Additions to the S&P/ISDA Sovereign CDS Indices

Ratings. A reference entity does not need to be rated nor are there any minimum ratings criteria for inclusion in the indices.

Liquidity. When a new index series is launched, adequate liquidity for reference entities in the five-year CDS market is assessed by looking at various measures of current and historical secondary market activity including (but not limited to) the market depth on a given name, the bid/offer spread, and the number and continuity of quotes over a selected time period.

Inclusion. The reference entities in the indices are based on the countries included the S&P/Citigroup International Treasury Bond ex-U.S. and S&P Eurozone Government Bond Indices.

Weighting. The weights of the reference entities in the S&P/ISDA Sovereign CDS Indices are based on the weights in the underlying bond indices three business days prior to the Rollover Date. If the weight of a constituent in a given underlying bond index is less than 0.5%, it is not included in the relevant Sovereign CDS Index and that weight is equally distributed among the remaining reference entities. Additionally, if a constituent in the underlying bond index does not have liquidity in the CDS market, then the weight of that reference entity is equally distributed among the remaining reference entities. The weights in the S&P/ISDA Sovereign CDS Indices are rounded to the nearest whole percent. If the initial rounded weights do not sum to 100%, then the Index Committee decides which weighting scheme (rounding) to employ so that the weights sum to 100%.

Weighting changes in the S&P/ISDA Sovereign CDS Indices only occur on the Rollover Date.

Additions to the S&P/ISDA U.S. 150 Credit Spread Index and Sub-indices

Rebalancing. The indices are rebalanced on the fifth business day prior to the IMM dates of: March 20th, June 20th, September 20th and December 20th. Index constituents are selected based on data that is available five business days prior to the rebalancing date.

Ratings. A reference entity must possess a "Combined" Investment Grade rating. The criteria used to determine whether a reference entity possesses a "Combined" Investment Grade rating is as follows:

1. If all three of S&P, Moody's and Fitch rate the reference entity, then at least two of these must assign an investment-grade rating.
2. If only two of S&P, Moody's and Fitch rate the reference entity, then both of these must assign an investment-grade rating.
3. If only one of S&P, Moody's and Fitch rate the reference entity, then this rating must be investment-grade.

Inclusion. At each selection date, the starting universe for the reference entities in the S&P/ISDA U.S. 150 Credit Spread Index and sub-indices is the S&P 500 equity index. Each constituent in the S&P 500 is mapped to its primary corporate issuer so as to accurately be reflected in the sub-indices.

The S&P/ISDA U.S. Corporate 120 Credit Spread Index includes reference entities whose primary corporate issuer has a sector description that is not financial. In addition, each reference entity must have outstanding long-term senior public debt, must have a "Combined" Investment Grade Rating (as defined above) and have CDS priced by CMA. The top 120 qualified entities sorted by long-term senior debt are included in the index.

The S&P/ISDA U.S. Financial 30 Credit Spread Index includes reference entities whose primary corporate issuer has a financial sector description. In addition, each reference entity must have outstanding debt, must have a "Combined" Investment Grade Rating (as defined above) and have CDS priced by CMA. The top 30 qualified entities sorted by long-term senior debt are included in the index.

The S&P/ISDA U.S. 150 Credit Spread Index consists of all the reference entities in the S&P/ISDA U.S. Corporate 120 Credit Spread Index and the S&P/ISDA U.S. Financial 30 Credit Spread Index. In the event that there are not enough names that qualify for the sub-indices, then the Index Committee will take the appropriate action and publish an announcement.

Weighting. The members of each index are assigned a notional value of US$ 5 million. It is expected that the index notional amount for each index will be as follows:

1. S&P/ISDA U.S. 150 Credit Spread Index – $750 million
2. S&P/ISDA U.S. Corporate 120 Credit Spread Index – $600 million
3. S&P/ISDA U.S. Financial 30 Credit Spread Index – $150 million

Moreover, the spread of each reference entity is adjusted by its PV01 as detailed in *Index Pricing*.

Deletions from the S&P/ISDA CDS Indices

- A specific reference entity in the index may experience what is defined by the International Swaps and Derivatives Association ("ISDA") as a "Succession Event." [1] According to ISDA Credit Derivatives Definitions, a Succession Event means "an event such as a merger, consolidation, amalgamation, transfer of assets or liabilities, demerger, spin-off or other similar event in which one entity succeeds to the obligations of another entity, whether by operation of law or pursuant to any agreement." The occurrence of a Succession Event results in (1) the replacement of a reference entity in the affected S&P/ISDA CDS U.S. or S&P/ISDA CDS Select Sector Index with a new successor entity(s) or (2) a split in the index weighting between a new successor entity(s) and the original reference entity. The Index Committee is solely responsible for determining whether and when a Succession Event affects an index and how the event is treated.
- A specific reference entity in the index may experience what is defined by ISDA as a "Credit Event."[1] According to ISDA Credit Derivatives Definitions, a Credit Event means "one or more of Bankruptcy, Failure to Pay, Obligation Acceleration, Obligation Default, Repudiation/Moratorium, or Restructuring." For purposes of the indices, S&P Dow Jones Indices will treat the following as Credit Events that may result in the removal of a reference entity from the index: (1) Bankruptcy and (2) Failure to Pay. The Index Committee may decide to include, in its sole discretion, other ISDA definitions that are treated as Credit Events for the purposes of the S&P/ISDA CDS indices. The Index Committee is solely responsible for determining whether and when a Credit Event affects an index and how the event is treated
  - Public sources of information are monitored by S&P Dow Jones Indices on a daily basis for potential Succession and Credit Events.
- If a reference entity company that is a member of the S&P/ISDA U.S.150 Credit Spread Index or its sub-indices experiences a default, the weights are automatically adjusted to exclude the name from the index.
- If a reference entity company is removed from the S&P 100 equity index or the S&P 500 equity index, the entity is not deleted from the existing S&P/ISDA 100 CDS Index series or the S&P/ISDA U.S. 150 Credit Spread Index series; however, the entity does not appear in the next series of the index. If a company added to the S&P 100 equity index is deemed to have sufficient CDS liquidity, the new company is added to the next series of the S&P/ISDA 100 CDS Index. If a company that is added to the S&P 500 equity index meets the criteria established in the eligibility requirements then the new company is added to the next series of the S&P/ISDA U.S.150 Credit Spread Index and sub-indices.
- If a reference entity has a ratings change subsequent to inclusion in a specific series of an index, the entity remains in the existing index series but may not appear in the

[1] The definitions of "Succession Event" and "Credit Event" excerpted in this section appear in the *ISDA Credit Derivatives Definitions*, as amended or supplemented from time to time, and the excerpts are reproduced with ISDA's permission. These definitions may not be reproduced without the express written permission of ISDA. The ISDA Credit Derivatives Definitions are available from ISDA through their web site, at *www.isda.org*.

next series of the index according to the ratings eligibility criterion outlined earlier in the document.

- The Index Committee, in its sole discretion, may replace a reference obligation or reference entity, at any time, if it believes it is necessary for the proper maintenance of the index.

Timing of Changes

Changes to the S&P/ISDA CDS Indices are made at S&P Dow Jones Indices' sole discretion, when deemed appropriate by the Index Committee. In the case of a Succession Event, a change is made upon the confirmed completion of the relevant corporate action, as defined above. In the case of a Credit Event, a change is made at the end of the business day upon which the event has been confirmed by the ISDA Determinations Committee and CMA, as mentioned in Data Sources.

A "business day" is defined as a day on which the Securities Industry and Financial Markets Association (SIFMA®) declares the U.S. fixed income markets open.

Changes to S&P/ISDA CDS Indices, which are implemented as a result of the occurrence of any of the events listed above, result in the publication of a new index version. S&P Dow Jones Indices releases information concerning any new index versions via its Web site at *www.spdji.com*.

Index Construction

Approaches

The reference entities of S&P/ISDA CDS Indices are selected with a focus on liquidity and with the goal of supporting the investment community's needs.

Index Calculations

S&P Dow Jones Indices publishes a daily weighted average spread for each index.

All S&P/ISDA CDS U.S. indices follow a no-restructuring (XR) convention.

All S&P/ISDA CDS Select Sector indices are equally weighted.

Each S&P/ISDA CDS Select Sector index series has a given number of reference entities.

All S&P/ISDA CDS U.S. Select Sector indices follow a no-restructuring (XR) convention. The S&P/ISDA CDS European Banks Select 15 may follow other restructuring conventions.

All S&P/ISDA Sovereign CDS indices follow a complete restructuring (CR) convention.

Index Pricing

The index spread formula is:

$$IndexSpread = {\sum_i W_i * PV01_i * ParSpread_i} \Big/ {\sum_i W_i * PV01_i}$$

where:

W_i	=	The weight of the entity in the index
$PV01_i$	=	Price Value of one basis point for constituent *i* in the index
$parSpread_i$	=	CDS par spread of constituent *i* in the index

The weight of a constituent, W_i, is as defined in *Index Family*.

If the current CDS spread on the constituent widens, then the perception of credit conditions for that entity in the marketplace has worsened (See the *Appendix* for single name CDS pricing overview).

On-the-run Series

The on-the-run series compiles the weighted average spreads for each successive index series, resulting is a historical time series of the most current index series.

Prior to July 23, 2009, the on-the-run-series for the S&P/ISDA CDS Investment Grade, High Yield and 100 CDS indices show theoretical spreads.

Prior to October 25, 2010, the on-the-run-series for the S&P/ISDA Sovereign CDS Indices show theoretical spreads.

The calculation for theoretical index spreads can be found in the *Appendix*.

Credit Events

After a Credit Event occurs in an underlying reference entity, a new index version is created. The entity is dropped from the new index version with its weight redistributed across remaining reference entities. For clarification, weights of the remaining reference entities of an existing index series launched prior to the Credit Event are not reweighted. Index weighted average spread calculations are then done using the formula described above, excluding the weight and spread of the entity removed from each index series.

Succession Events

Using the relevant criteria set forth in the ISDA Credit Derivatives Definitions (noted in *Eligibility Criteria*), once a Succession Event has occurred, the index's constituents and weightings are adjusted according to the guidelines set forth in the criteria.

Data Sources

Mid spread CDS pricing on all reference entities are received at 05:00 PM New York Time each business day from Credit Market Analysis® (CMA). Other data sources may be added at the discretion of the Index Committee. If a spread for a reference entity is not received on a given day, S&P Dow Jones Indices attempts to obtain an alternate source of pricing. If a spread for a reference entity is not received by CMA or an alternate source on a given business day, then the prior day's spread for that reference entity is used in the daily index calculation.

If no spread is received on a reference entity for five consecutive business days, the Index Committee, in its sole discretion, may replace the reference entity if it believes it is necessary for the proper maintenance of the index.

The credit event and succession event are confirmed by the ISDA Determinations Committee as published on their Web site, *dc.isda.org*. The successor named by the Determinations Committee is used to replace the departing reference entity from the index.

Index Maintenance

The S&P/ISDA CDS Indices are maintained in accordance with the following rules:

With the exception of the S&P/ISDA U.S. 150 Credit Spread Index and related sub-indices, a new series of a given index begins on a Rollover Date of March 20th and September 20th (or the next business day, if March 20th or September 20th is not a business day) and have maturity dates of June 20th and December 20th, respectively, in the fifth calendar year following the rollover. For the S&P/ISDA U.S. 150 Credit Spread Index and related sub-indices, a new series of a given index begins five business days prior to the IMM dates of March 20th, June 20th, September 20th and December 20th (or the next business day, if March 20th, June 20th, September 20th or December 20th is not a business day) and have maturity dates of March 20th, June 20th, September 20th and December 20th, in the fifth calendar year following the rollover.

With the exception of the S&P/ISDA U.S. 150 Credit Spread Index and related sub-indices, Rollover Dates occur every six months to allow for the issuance of a new series that considers the current credit market, and follows and maintains all criteria, as noted, for additions. For the S&P/ISDA U.S. 150 Credit Spread Index and related sub-indices, Rollover Dates occur every three months.

All index reference entities are, otherwise, maintained in their respective index series until the maturity of that index series, absence the occurrence of the exceptions already noted above.

The announcement date is defined as 10 business days prior to the Rollover Date for the S&P/ISDA U.S. 150 Credit Spread Index and related sub-indices and three business days for all other S&P/ISDA CDS Indices.

On the announcement date, S&P Dow Jones Indices posts an announcement on its Web site listing the entities which will not appear in the upcoming index series as determined by the following criteria: (a) a Credit Event has occurred; (b) entities that may be involved in a future Succession Event as previously defined; (c) whether outstanding debt or credit default swap contracts have become illiquid as to impede the daily pricing of the index; (d) a reference entity has undergone a change in its GICS® classification making it no longer eligible for inclusion in a new specific Select Sector index series (for clarification, the change of a GICS classification does not remove a reference entity from an index series launched prior to the reclassification); (e) a reference entity has been removed from the respective underlying bond index; or (f) the reference entity no longer meets the ratings eligibility criteria outlined in *Eligibility Criteria*. S&P Dow Jones Indices additionally identifies the new reference entities, along with their respective reference obligations, that are included in the upcoming index series.

- S&P Dow Jones Indices issues an announcement on its Web site noting any weight or constituent change prior to the implementation of such changes.

All non-current index series ("off-the-run") continue to be priced and maintained until the maturity of the series is reached and, accordingly, follow all relevant procedures and guidelines set forth above for deletions, events, and weightings.

Abiding to rules above, the S&P/ISDA 100 CDS Index is additionally maintained in accordance with the following rules:

- The weighting of the entities in each S&P/ISDA 100 CDS Index series is based upon their weighting in the S&P 100 equity index when the series is launched. However, not all members of the S&P 100 have an actively traded CDS market on them. This accounts for a difference in membership and weights between the two indices. The initial weights of reference entities in each S&P/ISDA 100 CDS Index series are set and announced two business days prior to the Rollover Date. The weights of those constituents in the S&P 100 that do not have a liquid CDS market are redistributed evenly over the remaining reference entities. For example:

S&P 100 Equity Index	Weight (%)	Liquid CDS	Missing Weight (%)	S&P 100 CDS Index	Weight (%) 15/4 = 3.75% to each Entity
Entity1	25	Yes		Entity 1	28.75
Entity2	20	Yes		Entity 2	23.75
Entity3	15	No	15		
Entity4	20	Yes		Entity 4	23.75
Entity5	20	Yes		Entity 5	23.75

- Constituents in the S&P 100 that did not have sufficient liquidity in the CDS market to justify inclusion in the S&P/ISDA 100 CDS Index may exhibit greater liquidity in the CDS market in the future. These reference entities may subsequently be added to a new S&P/ISDA 100 CDS Index series at a future Rollover Date.

Effective Date

The first series of the S&P/ISDA CDS U.S. Investment Grade, S&P/ISDA CDS U.S. High Yield and S&P/ISDA 100 CDS Indices were priced with an effective date of September 22, 2008. The indices were launched on January 21, 2009.

The first series of the S&P/ISDA CDS U.S. Homebuilders Select 10 index was priced with an effective date of March 22, 2010. The index was launched on April 15, 2010.

The first series of the S&P/ISDA CDS U.S. Consumer Discretionary Select 20, S&P/ISDA CDS U.S. Consumer Staples Select 10, S&P/ISDA CDS U.S. Energy Select 10 and S&P/ISDA CDS U.S. Healthcare Select 10 indices were priced with an effective date of March 22, 2010. The indices were launched on June 30, 2010.

The first series of the S&P/ISDA CDS U.S. Financials Select 10 and S&P/ISDA CDS European Banks Select 15 indices were priced with an effective date of September 20, 2011. The indices were launched on March 20, 2012.

The first series of the S&P/ISDA International Developed Nation Sovereign CDS and S&P Eurozone Developed Nation Sovereign CDS indices were priced with an effective date of March 22, 2010. The indices were launched on October 25, 2010.

The first series of the S&P/ISDA U.S. 150 Credit Spread, S&P /ISDA U.S. Corporate 120 Credit Spread and S&P/ISDA U.S. Financial 30 Credit Spread indices were priced with an effective date of March 13, 2013. The indices were launched on March 13, 2013.

Index Governance

Index Committee

S&P/ISDA CDS Indices are maintained by S&P Dow Jones Indices' Fixed Income Index Committee. All members of the Committee are full-time professionals at S&P Dow Jones Indices. The Committee meets quarterly. The Committee also may meet when any issues arise that may be pertinent to the relevant indices. These include, but are not limited to, discussions involving potential replacements in the indices and Succession Event and Credit Event declarations. The Committee may revise index policy for the S&P/ISDA CDS Indices at any time. All Index Committee discussions are confidential.

For information on Quality Assurance and Internal Reviews of Methodology, please refer to S&P Dow Jones Indices' Fixed Income Policies & Practices document located on our Web site, www.spdji.com.

Index Policy

Announcements

Announcements of additions, deletions, Credit Event declarations, and any other relevant information pertaining to the S&P/ISDA CDS Indices are made at approximately 05:30 PM New York Time. Press releases are posted on S&P Dow Jones Indices' Web site at *www.spdji.com*.

Holiday Schedule

The S&P/ISDA CDS Indices are calculated when the Securities Industry and Financial Markets Association (SIFMA®) declares the U.S. fixed income markets to be open.

A complete holiday schedule for the year is available at www.spdji.com.

End-of-Day Calculation

The index weighted average spreads are calculated at the end of each business day, at approximately 05:15 PM New York Time. The current day's spreads are published via S&P Dow Jones Indices' Web site. On business days that SIFMA® recommends closing the U.S. fixed income markets early, spreads may be calculated at a time in accordance with the recommended early close time (usually 02:00 PM New York Time) set for that day.

Index Releases

When required, index releases are issued by S&P Dow Jones Indices at the end of the business day. The release time is generally 05:30 PM New York Time.

Recalculation Policy

S&P Dow Jones Indices reserves the right to recalculate an index under certain limited circumstances. S&P Dow Jones Indices may choose to recalculate and republish an index if it is found to be incorrect or inconsistent within two trading days of the publication of the index level in question for one of the following reasons:

1. Index methodology event
2. Late announcement
3. Revised source data

Any other restatement or recalculation of an index is only done under extraordinary circumstances to reduce or avoid possible market impact or disruption as solely determined by the Index Committee.

For more information on the recalculation policy please refer to S&P Dow Jones Indices' Fixed Income Policies & Practices document located on our Web site, www.spdji.com.

For information on Calculations and Pricing Disruptions, Expert Judgment and Data Hierarchy, please refer to S&P Dow Jones Indices' Fixed Income Policies & Practices document located on our Web site, www.spdji.com.

Index Dissemination

S&P/ISDA CDS Indices on-the-run series' weighted average spreads are available through S&P Dow Jones Indices' Web site at *www.spdji.com*, major quote vendors (see codes below), numerous investment-oriented Web sites and various print and electronic media.

Tickers

Index	Bloomberg
S&P/ISDA CDS U.S. Investment Grade	SPCDZR50
S&P/ISDA CDS U.S. Investment Grade A and Above	SPCDCR50
S&P/ISDA CDS U.S. Investment Grade BBB	SPCDAR50
S&P/ISDA CDS U.S. High Yield	SPCDYR50
S&P/ISDA CDS U.S. High Yield BB	SPCDBR50
S&P/ISDA CDS U.S. High Yield B and Below	SPCDWR50
S&P/ISDA 100 CDS	SPCDXR50
S&P/ISDA CDS U.S. Homebuilders Select 10	SPCDVR50
S&P/ISDA CDS U.S. Consumer Discretionary Select 20	SPCDUR50
S&P/ISDA CDS U.S. Consumer Staples Select 10	SPCDRR50
S&P/ISDA CDS U.S. Energy Select 10	SPCDQR50
S&P/ISDA CDS U.S. Financials Select 10	SPCDFR50
S&P/ISDA CDS U.S. Health Care Select 10	SPCDPR50
S&P/ISDA CDS European Banks Select 15	SPCDGR50
S&P/ISDA International Developed Nation Sovereign CDS	SPCDMR50
S&P/ISDA Eurozone Developed Nation Sovereign CDS	SPCDKR50
S&P/ISDA U.S. 150 Credit Spread Index	SPCD5R50
S&P/ISDA U.S. Corporate 120 Credit Spread Index	SPCD2R50
S&P/ISDA U.S. Financial 30 Credit Spread Index	SPCD3R50

FTP

Daily index levels and index data are available via FTP subscription.

For product information, please contact S&P Dow Jones Indices, www.spdji.com/contact-us.

Web site

For further information, please refer to S&P Dow Jones Indices' Web site at www.spdji.com.

Appendix

Single Name CDS Pricing Overview

A typical CDS contract consists of two legs: one that corresponds to the fixed premium payments that are made until the maturity of the contract or until a default occurs and the other to the contingent payment that is made if a default occurs, represented by (*1-R*), where *R* is the recovery rate expressed as a percentage. The present value (*PV*) of a CDS contract can be viewed as the algebraic sum of the *PVs* of its two legs (fixed and contingent). For a CDS trading at par, the theoretical net present value of the two legs must equal zero.

To calculate the values necessary for pricing a CDS contract, the following are needed:

1. Default intensities (survival probabilities) for the reference entity
2. Recovery rate assumptions in the case of default
3. Risk-free discount factors derived from standard yield curve convention using a combination of deposit rates, implied futures rates, and the relevant swap curve

The fixed premium payment in a CDS is only paid when the reference entity has not defaulted. To account for this risk, the survival probability (*SP*) that the reference entity has not defaulted by the payment date must be considered.

A default intensity (λ) and, subsequently, survival probability ($1-\lambda$) to any time period are implied by observable spreads on the CDS curve and can be backed out.

With a flat credit curve assumption, $S/(1-R)$, gives a measure of (λ) where:

S = CDS Current Spread

R = Recovery Rate Assumption (expressed as a percentage)

Using continuous time to derive survival probabilities, the survival probability over time period (0, t) is $S(t)$

$$S(t) = e^{-\int_0^t \lambda(u)(du)}$$

Contingent Leg. If the reference entity defaults, the payment of *(1-R)* is made to the protection buyer. This payment is only made if there is a default and, consequently, has to be adjusted by $SP_{i-1} - SP_i$, the probability that default occurs in this interval. The contingent leg is valued as it is in the prior equation:

$$PV\ of\ contingent\ leg = (1-\mathrm{R}) \sum_{\mathrm{i}=1}^{\mathrm{n}} (DF_i) * (SP_{i-1} - SP_i)$$

where:

R = Recovery rate assumption

DF_i = Risk-free discount factor from the USD swap curve for time T_0 to T_i

SP_i = Survival probability from T_0 to T_i

d_i = Accrual period from T_{i-1} to T_i (in years) calculated on an Actual/360 basis

n = Number of time periods

Fixed Leg. The fixed coupon on the CDS (C) is the premium that is made on each payment date (if no default has occurred) until the maturity of the CDS.

This first component of the fixed leg is valued as:

$$C * \sum_{i=1}^{n} (DF_i * SP_i * d_i)$$

where:

C = CDS Coupon (premium)

DF_i = Risk-free discount factor from the USD swap curve for time T_0 to T_i

SP_i = Survival probability from T_0 to T_i

d_i = Accrual period from T_{i-1} to T_i (in years) calculated on an Actual/360 basis

n = Number of time periods

The other component of the fixed leg is the accrual value of the premium paid up until the day of default, when the default occurs between the set payment dates. The accrued payment is calculated under the assumption that the default, were it to happen, would occur in the middle of the payment dates (i.e. $d_i/2$). As such, the accrual has to be further adjusted by the probability that default occurs after payment date *i-1*, but before payment date *i*.

Adding this second component of the fixed leg, we value the PV of the fixed leg as:

$$PV\ of\ fixed\ leg = C * \sum_{i=1}^{n} (DF_i * SP_i * d_i) + C * \sum_{i=1}^{n} (DF_i * (SP_{i-1} - SP_i) * d_i/2)$$

Bootstrapping. In practice, a bootstrapping procedure is used to derive the default intensities for a given period of time and, hence, build a curve of survival probabilities when the credit curve is not flat. Bootstrapping a credit curve starts with year 1, then year 2, etc. Data points for 1, 2, 3, 4, 5, 7 and 10 year maturities are used. Default intensities for intermediate maturities are derived from interpolation.

Equating the net present value (NPV) of the fixed and contingent legs to zero, the fair (par) spread or premium on a CDS is derived as:

$$S_{par} = \frac{(1 - \mathrm{R}) \sum_{\mathrm{i}=1}^{\mathrm{n}} (DF_i) * (SP_{i-1} - SP_i)}{\sum_{\mathrm{i}=1}^{\mathrm{n}} (DF_i * SP_i * d_i) + \sum_{\mathrm{i}=1}^{\mathrm{n}} (DF_i * (SP_{i-1} - SP_i) * d_i/2)}$$

A default intensity *λ(1)* for $T=0$ to $T=1$ is derived from using the data point (CDS spread) for period 1 as the par spread and using the assumed recovery rate. After finding *λ(1)*, take the CDS spread for period 2 and derive the *λ(2)* that sets the NPV of the two legs to zero for that period. Continuing this exercise for each subsequent period builds a curve of survival probabilities.

Theoretical Index Spread. The theoretical spread of the index, $Index_{spread}$, can be derived by solving for the following equation:

$$\sum (C-S) * Constituent\ Risky\ Annuity = (C - Index_{spread}) * Index\ Risky\ Annuity$$

where:

C = Coupon on the Index

S = Current CDS spread on the constituent

$$Risky\ Annuity \approx \sum_{i=1}^{n} (DF_i * SP_i * d_i) + \sum_{i=1}^{n} (DF_i * (SP_{i-1} - SP_i) * d_i/2)$$

where:

DF_i = Risk-free discount factor from the USD swap curve for time T_0 to T_i

SP_i = Survival probability from T_0 to T_i

d_i = Accrual period from T_{i-1} to T_i (in years) calculated on an Actual/360 basis

n = Number of time periods

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