



Capital Markets Special Report

The **NAIC's Capital Markets Bureau** monitors developments in the capital markets globally and analyzes their potential impact on the investment portfolios of US insurance companies. A list of archived Capital Markets Bureau Special Reports is available via the [index](#)

Credit Derivative Index Products: An Overview and Their Role in Insurer Investment Portfolios

Since its launch in the mid-1990s, the credit derivatives market has grown substantially and has become a useful tool for investors to take a credit view and for risk managers to hedge credit exposure. Over time, the market's rapid growth and widespread acceptance gave rise in the early 2000s to the development and proliferation of credit derivatives indices, providing a broader, macro approach to the credit derivatives market. The NAIC Capital Markets Bureau has written about credit default swaps (CDS)—a credit derivatives market staple—in the past. This special report, however, looks closer at the various credit derivative *index* products and their role in the investment portfolios of U.S. insurance companies.

Historically, the insurance industry has not been deeply involved in the credit derivatives index market. However, insurers' significant involvement in the corporate bond market and their familiarity with CDS as a hedging tool naturally lends itself to participation in the credit derivatives index market. While single-name CDS positions can help manage the credit risk of specific corporate bond exposures, credit derivatives indices provide investors with a more liquid and cost-efficient means of managing credit risk in investment portfolios overall.

According to statistics compiled by the Bank for International Settlements (BIS), the total notional amount outstanding of the global CDS market was about \$14.6 trillion as of June 30, 2015, of which index products—which are categorized as multi-name instruments—comprised \$5.9 trillion (or about 41% of the CDS market). The size of the credit derivatives index market has been steadily shrinking over the last couple of years, together with the size of the overall CDS market. Table 1 shows outstanding credit default swaps declining each year from December 2011 to June 2015; prior to that time period, credit default swaps had peaked at \$58 trillion notional amount outstanding at the end of 2007. Meanwhile, index products' share of the total CDS market has generally increased over time, ranging from approximately 25% in 2010 to just more than 40% as of June 2015.

Table 1: Outstanding credit default swaps in the overall market

Risk Category / Instrument	Notional amounts outstanding					
	Dec 2011	Dec 2012	Dec 2013	Jun 2014	Dec 2014	Jun 2015
Credit default swaps (CDS)	28,626	25,068	21,020	19,462	16,399	14,596
Single-name instruments	16,865	14,309	11,324	10,845	9,041	8,205
Multi-name instruments	11,761	10,760	9,696	8,617	7,358	6,391
Index products	10,514	9,656	8,746	7,939	6,747	5,909
Index products as % of CDS	36.7%	38.5%	41.6%	40.8%	41.1%	40.5%

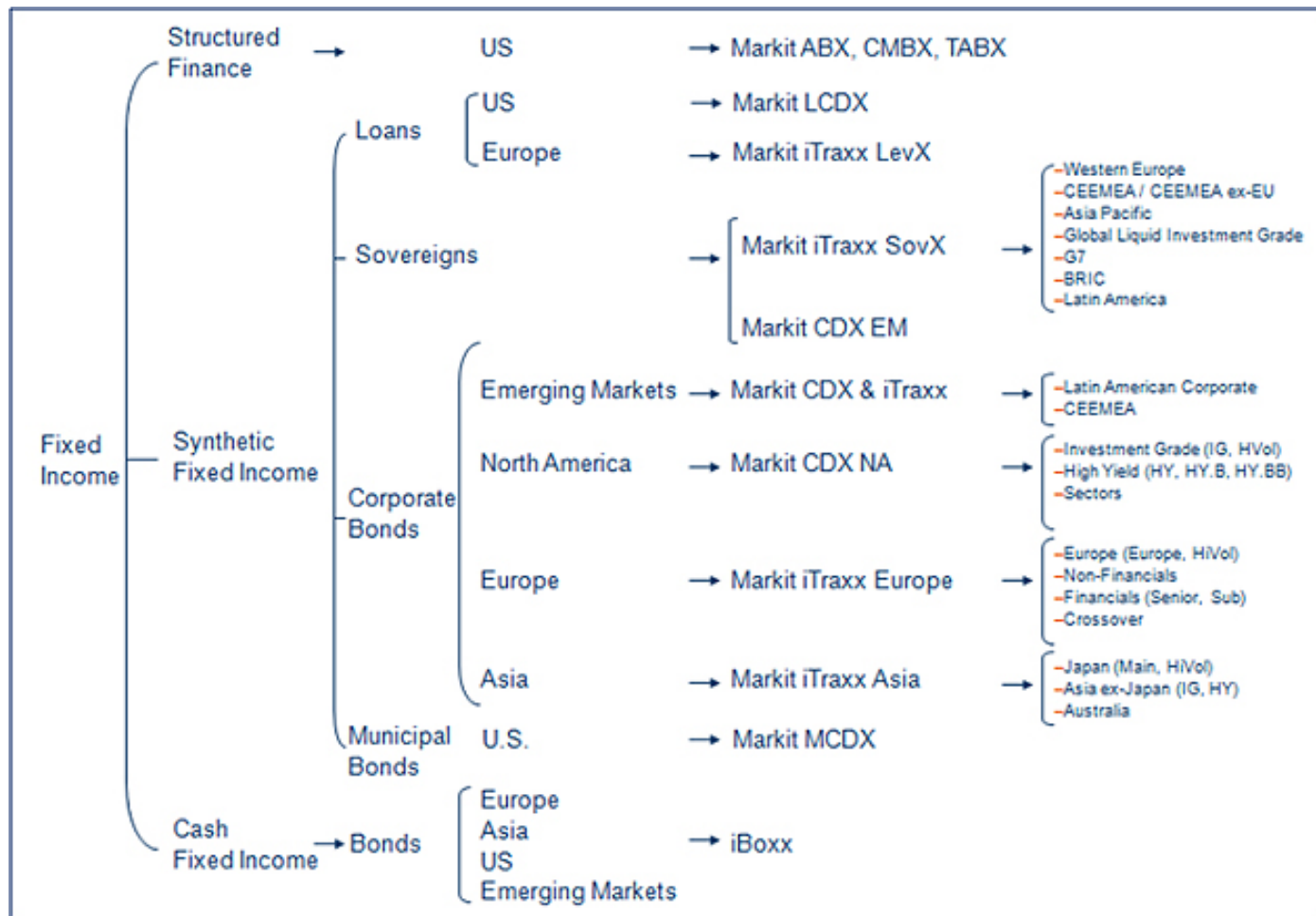
One significant reason for the declining size of the CDS market is trade compression, which is a process engaged in periodically for early termination of economically redundant derivatives trades without changing each party's net position. Trade compression, or portfolio compression, involves terminating existing trades that are offsetting contracts between counterparties and replacing them with a smaller number of new trades with smaller notional amounts. This reduces the gross notional amount and the

number of outstanding contracts of credit derivative portfolios without changing the risk profile or net cash flows. Compression reduces operational risk given the smaller number of trades outstanding, and it might also result in lower capital and collateral requirements given less gross notional amount outstanding.

Overview of Credit Derivatives Indices and Their Benefits

Credit derivative indices, created in 2001, reflect the performance of a *basket* of credits and are typically used by investors to establish long or short positions in specific credit markets or market segments. As shown in Chart 1, credit derivative indices cover a wide variety of fixed income asset classes—loans, sovereigns, corporate bonds, municipal bonds and structured finance—as well as geographic areas—the U.S., Europe, Asia and emerging markets.

Chart 1: Markit Credit and Loan Indices Overview



Source: Markit Group Limited

Credit derivative indices are standardized contracts with generally standard terms and legal documentation. They, therefore, are more liquid and more easily traded than single-name CDS, which can be tailored to a specific investor’s needs. Credit derivative index prices are publicly available daily from standard sources and, therefore, are more transparent to market participants. Given these market dynamics, credit derivative indices generally have high volumes of trading activity, allowing for ample pricing transparency. In contrast, the single-name CDS market lacks a comparable level of pricing transparency. Although traded over-the-counter like the credit derivative indices, single-name CDS transactions typically trade less frequently, through fewer brokers and at lower volumes than credit derivative indices.

Credit derivative indices consist of a basket of credits in a corresponding market (all equally weighted); such as, for example, a large number of single-name corporate bond issuers are represented in the

CDX indices, and the same is true for commercial mortgage-backed securities (CMBS) bonds in the CMBX index. The constituents of the indices must meet certain criteria related to credit ratings, total debt outstanding and liquidity, or collateral in the case of CMBS bonds, to ensure they are an accurate reflection of the credit markets. Typically, credits with the most liquidity in their respective markets are included in the index. The index composition remains static for the life of the fixed maturity contract, unless there is a credit event in an underlying credit, in which case that particular credit falls out of the index, and the remaining credits are equally re-weighted.

A new series of indices are created approximately every six months—typically for the CDX indices but less often for other indices—with a new underlying basket of credits and maturity date to reflect any dynamic changes in the credit market and to allow investors to maintain a fairly constant duration if needed. When a new index is launched, it becomes the “on-the-run” index, and the existing indices continue to trade “off-the-run” until their maturity. Although investors are not forced to close out their “off-the-run” positions and enter into “on-the-run” positions, many choose to do so since the “on-the-run” indices are more liquid.

The terminology for index derivatives is similar to that for single-name derivatives in that *selling protection* on an index results in going long, or taking on, the credit risk of the index constituents, and *buying protection* on the index is akin to shorting, or reducing, credit risk of the index constituents. The seller of protection receives a periodic fee from the buyer of protection. (See *A Recap of CDS Basics* in the appendix for a brief discussion on single-name derivatives.) Buying the index (or selling protection) is similar to buying a portfolio of loans or bonds, and selling the index (or buying protection) can be compared to selling a portfolio of loans or bonds. In other words, a *buyer* of the index takes on credit exposure (along with the corresponding credit and default risks to the index constituents), and a *seller* of the index passes on the credit exposure to another party.



Insurance Industry Exposure

Preliminary year-end 2015 data shows that the U.S. insurance industry owns \$14 billion in notional

value of credit derivative index products (Table 2), a 2% decline compared to year-end 2014 exposure. While notional value is generally not a good measure of risk for other kinds of swaps, it is an accurate measure of risk for CDS and credit derivative index products, especially when the insurer is assuming credit risk. Since year-end 2012, the industry's exposure to credit derivative index products has been below 1% of overall derivatives exposure and is expected to remain so as of year-end 2015. As in the overall derivatives market, where only approximately 300 insurers out of 4,800 participate, there is limited participation in the credit derivative index market, with only 19 insurers participating. Within the insurance industry, life insurance companies are the primary users of credit derivative index products, accounting for 17 of the 19 insurers with exposure and almost 81% of the preliminary year-end 2015 notional amount. P/C insurance companies were the only other insurer type participating in the credit derivative index market over the past five years, having significantly increased their participation (as measured by notional amount outstanding) since year-end 2011. However, their participation remains relatively limited. Life insurance companies' exposure has declined over the same time period—along with the shrinking credit derivatives index market—likely due to trade compression. Health, fraternal and title insurance companies had no credit derivative index holdings in the time period analyzed.

Table 2: Historical Year-End Insurance Industry Credit Derivative Index Holdings

Notional Value (\$)	2015*	2014	2013	2012	2011
Life	11,356,091,276	11,140,736,781	14,006,235,321	13,407,985,321	16,071,492,356
Property/Casualty	2,676,053,380	2,654,465,664	1,968,360,000	2,071,730,000	1,009,895,000
Total	14,032,144,656	13,795,202,445	15,974,595,321	15,479,715,321	17,081,387,356
% of Total Derivatives Exposure	n/a	0.7%	0.9%	0.9%	1.2%

* Preliminary year-end 2015 data

Approximately 70% of the industry's exposure involved selling protection on the credit derivative indices, whereby insurers assumed credit risk. The majority of these trades were made in connection with replication (synthetic asset) transactions—or RSATs, which are defined as derivative transactions entered into in conjunction with other investments (typically, a highly-rated bond) in order to reproduce, either fully or in part, the investment characteristics of otherwise permissible investments. An RSAT with a credit derivative index results in an insurer adding exposure to the constituents of that particular index. Life insurers were responsible for all of the industry's RSATs with a credit derivative index as of year-end 2015. Also note that there are cases where insurers sold protection on an index to offset a transaction where they had bought protection, or vice versa. At times, instead of unwinding, or closing out, the existing transaction, entering into an offsetting transaction makes more economic sense if that position is no longer needed or warranted—in other words, entering into a new transaction in the opposite direction of the existing position for the same notional amount, coupon, maturity date, etc. An offsetting transaction might make sense if there is a wide bid-ask spread or no liquidity to unwind the existing transaction. In these offsetting transactions, credit risk is neutral.

As of year-end 2015, the majority of the insurance industry's exposure, \$12.1 billion in notional value or 86.4% of total exposure, is with the CDX North American Investment Grade Index, which consisted of 125 investment grade-rated corporate credits. The industry's second largest exposure was \$1.1 billion in notional value (or 7.8% of total exposure) of the CMBX—a synthetic index that generally references 25 CMBS and allows investors to gain or hedge exposure to CMBS collateral. The insurance industry has limited exposure to the CDX North America High Yield Index (consisting of 100 high-yield corporate credits), the MCDX (or the municipal credit derivative index, which is comprised of 50 U.S. municipal issuers) and the CDX Emerging Market Index (consisting of 14 emerging market credits).

Central clearing—a key element in reducing systemic risks in the over-the-counter derivatives markets—is becoming more prevalent. According to the BIS, the share of outstanding contracts cleared through central counterparties rose from less than 10% in 2010 to 26% at year-end 2013 and 31% at June 2015. The share of central counterparties is higher for index products at 39% compared to single-name products at 24%, likely because the contracts on index products are more standardized and more amenable to central clearing. Central counterparties rely on the standardization of cleared contracts to manage their risk profile. Based on insurers' year-end reporting, life companies centrally clear 50% of their credit derivative index transactions, while P/C companies centrally clear only 18%. The percentage of centrally cleared transactions is expected to rise for all market participants (including insurance companies) over the next few years given the transition to central clearinghouses as mandated by derivatives reform efforts. Central clearing carries strict rules on margin, or collateral requirements, that all parties must adhere to, and will, therefore, likely increase the overall costs of hedging for insurers. The margin requirements are intended to reduce risk associated with bilateral counterparty risk. The Capital Markets Bureau published a report on Aug. 26, 2015, titled "Developments in the Derivatives Market with Respect to Hedging Costs and Practices in the U.S. Insurance Industry" that provides further discussion on this topic.

Investment Rationale for Insurers

Credit derivative index products provide investors the ability to establish general credit views and to take on broad exposure to a specific asset class, or particular segment within an asset class, with a single transaction rather than many individual and separate transactions. They, therefore, provide an efficient means of investing in terms of both costs and time. In addition, given they are relatively liquid, insurers can use credit derivative indices for working capital management purposes when they need to invest large sums of money for a short period of time, or until better investment opportunities arise. In either case, insurance companies would likely enter into RSATs with credit derivative index products to assume such broad credit exposure.

Market participants, including insurance companies, also use credit derivative index products to manage risk. Insurance companies in particular are highly active in hedging their investment portfolios, with almost 95% of all derivative transactions entered into for hedging purposes. Credit derivative index products are one of the tools used by insurance companies to hedge the credit risk inherent in their investment portfolios overall; single-name CDS are typically used to manage credit risk for a specific asset within the portfolio.

Investment Risks

Hedging is not typically a perfect science, and mismatches between the hedged asset and the derivative instrument generally arise, especially when standardized derivative contracts are used instead of bilateral derivative contracts that can be tailored to an investor's specific needs. Credit derivative index products are standardized contracts and, therefore, will likely not perfectly match—for example, the constituents or the duration of the investment portfolio. So, the price of the underlying, or hedged asset, and the price of the derivative contract may not move in exactly equal and opposite directions from each other as expected. This imperfect correlation is called "basis risk" and exposes the portfolio to potential losses.

The use of derivatives also introduces counterparty risk—or the risk faced by one party that the other party will not satisfy the obligations of the derivatives contract. Many standardized contracts, such as credit derivative index products, already utilize central clearinghouses, with an increasing amount going that route over the next few years. Although central clearinghouses do not eliminate counterparty risk completely, the risk of a counterparty not meeting its obligations is minimal given the strict collateral requirements. Market participants are required to post collateral when a contract is opened (initial margin); thereafter, daily or intraday mark-to-market payments (variation margin) are made depending

on the trade's daily performance. Although counterparty risk should be significantly reduced by moving settlement to central clearinghouses, hedging costs will likely increase for insurers because of the strict collateral requirements.

Summary

Although credit derivative index products do not represent a significant exposure within the U.S. insurance industry, they are an important tool for insurance companies to manage credit risks, as well as to assume broad credit exposure when appropriate and warranted. Going forward, it remains to be seen whether the move to central clearinghouses, the corresponding collateral requirements and the likely increase in hedging costs will result in insurance companies reducing their reliance on derivatives, including credit derivative index products, for hedging (or other) purposes.

The Capital Markets Bureau will continue to monitor trends with the use of credit derivative index products in the insurance industry and report on any developments as deemed appropriate.

Appendix: A Recap of CDS Basics

A credit derivative is a financial contract that allows a party to assume or reduce credit exposure to bonds or loans of a certain corporate or government entity (i.e., the reference entity). The contract is between two parties to the trade and does not directly involve the referenced entity. Credit derivatives are primarily used to: 1) express a negative or positive credit view on a single entity or a portfolio of entities; and 2) reduce (or hedge) risk arising from the ownership of bonds or loans of a particular issuer. Given the standardization of documentation and diversity of market participants, many investors seeking to express their credit views might find credit derivatives to be more flexible and easier to trade than the cash instruments, or bonds, themselves.

A buyer of CDS is said to buy protection and is reducing credit risk. Buying protection has a similar return profile to selling a bond short, or "going short risk." The buyer pays a periodic fee (quarterly or semiannually) and profits when the value of the contract increases because the reference entity has a credit event, or if the credit worsens during the life of the swap. The periodic fee is a fixed amount based on the relevant market of the reference entity (i.e., investment grade or high-yield). Differences between the fixed periodic fee and actual market spreads for the reference entity are accounted for with an upfront payment due either the seller or buyer.

A seller of CDS is said to sell, or write, protection. The seller collects the periodic fee and profits if the credit of the reference entity remains stable or improves during the life of the swap. Selling protection has a similar return profile to owning a bond or loan, or "going long risk."

Before trading CDS, the two parties to the contract enter into an ISDA Master Agreement, a standardized document published by the International Swaps and Derivatives Association (ISDA) that sets up the legal framework for derivatives transactions between the two parties. Each contract specifies:

- Reference entity – the underlying entity or issuer on which the party is buying/selling protection.
- Reference obligation – the bond or loan whose credit risk is being transferred, although this does not have to be the deliverable security in a credit event and does not have to have the same maturity as the CDS. Any bond or loan that is "pari passu"—or at the same level in the capital structure—can be delivered in a credit event; most settlements, if there is a credit event, are cash settled and do not involve physical delivery of the security.
- Term/tenor – five-year contracts are the most common and the most liquid.
- Notional principal amount – the amount of credit risk being transferred.
- Credit events – the specific events triggering a contingent payment from the protection seller to the protection buyer. The typical standard credit events include: 1) bankruptcy – the reference entity files for relief under bankruptcy law (or equivalent law); 2) failure to pay – the reference entity fails to

make interest or principal payments when due, after the grace period expires (if applicable); and 3) debt restructuring – the structure of debt obligations is changed, resulting in an unfavorable effect on the debt holder (e.g., reduction of interest or principal, postponement of payment of interest or principal, or maturity extension). Other less common credit events are repudiation/moratorium, obligation acceleration and obligation default. Not all credit events are relevant to a given CDS contract. For example, repudiation/moratorium is applicable to sovereign issuers, while bankruptcy is not; debt restructuring is not a standard credit event for high yield. The CDS contract will specify which credit events are covered.

Questions and comments are always welcome. Please contact the Capital Markets Bureau at CapitalMarkets@naic.org.

The views expressed in this publication do not necessarily represent the views of NAIC, its officers or members. NO WARRANTY IS MADE, EXPRESS OR IMPLIED, AS TO THE ACCURACY, TIMELINESS, COMPLETENESS, MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OF ANY OPINION OR INFORMATION GIVEN OR MADE IN THIS PUBLICATION.

© 1990 – 2018 National Association of Insurance Commissioners. All rights reserved.