

Development of Credit Default Swap Market Indexes and Their Relationship to the Corporate Bond Market

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1. Introduction

On July 26, 2004, two indexes of the domestic credit derivatives market were integrated into the Dow Jones iTraxx C.J. (DJ iTraxx CJ) index, and distribution of the index was begun by media services. Though less prominent than domestic stock indexes such as the Nikkei average and TOPIX, and bond indexes like the NRI-BPI, the new index represents an important step for risk managers and dealers engaged in credit risk.

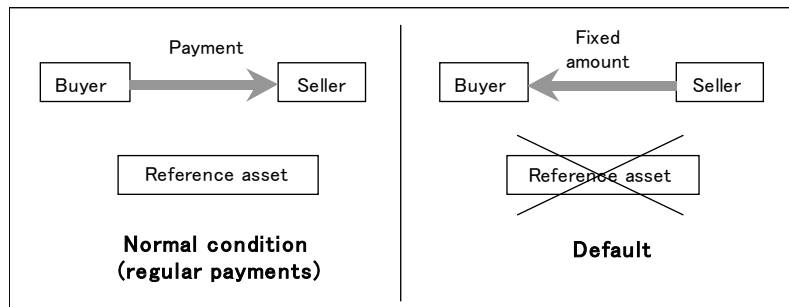
Unlike transactions of exchange-listed securities, credit derivatives are traded by over-the-counter transactions. This means that actual transaction prices are not readily available in the market. One way to overcome this difficulty is to use pricing models to calculate theoretical prices. While such models exist for extremely simple products, the model parameters are difficult to estimate. Moreover, pricing models are still in the research and development stages for more complex products. The new index applies only to very simple products, but nonetheless represents a significant step forward in disseminating market price information.

2. The Credit Derivatives Market

Credit derivatives are agreements to transfer the credit risk of underlying assets from one party to another. Investors often buy them to hedge against portfolio credit risks, or sell them to invest in credit risk. In this paper, we focus on a leading type of credit derivative called the credit default swap (CDS).

With a CDS, when certain prescribed credit events occur to the reference asset during the agreement term (often five years), the CDS buyer receives a cash flow from the seller (Figure 1). Usually, the CDS buyer pays the seller a regular fee called the CDS premium on a periodic basis (for example, semiannually). Though essentially insurance, it is called a credit default swap because it resembles the swap between fixed and variable interest rates. By matching CDS reference assets to their portfolio assets, investors can hedge against credit risk.

Figure 1 Credit Default Swap



The main ingredients of a credit default swap are: (1) reference asset, (2) credit events, (3) fixed amount, (4) term, and (5) settlement method. CDS instruments have grown more uniform due to the adoption of standardized contracts developed by the ISDA (International Swaps and Derivatives Association). The first CDS instruments that appeared in the late 1990s were mainly single-name, meaning that the reference asset was that of a single company.¹ A basket-type CDS was soon developed containing reference assets of multiple companies. Of these, a well-known type is the first-to-default basket, which pays out a fixed amount if a credit event occurs at any of the companies in the basket. CDS instruments range from short terms of one month or six months, to long terms of five or ten years. There are two settlement methods, physical settlement and cash settlement, of which the former is the standard practice in Japan.² Commonly prescribed credit events (CE) are bankruptcy, failure to pay, and restructuring. Leaving aside ISDA fine print, the definitions of bankruptcy and failure to pay resemble what credit rating agencies refer to as default, while restructuring refers to debt restructuring such as interest waiver and extension of payment. Although most CDS instruments contain all three credit events, some contain only bankruptcy and failure to pay.

Since credit derivatives are traded over the counter, the market size is difficult to estimate accurately, but appears to be growing each year. For example, according to the BOJ's regular derivatives market statistics (Yoshikuni statistics), after outstanding credit derivatives (notional principal, reference value) fell from 17.48 billion dollars in December 2001 to 13.95 billion dollars in December 2002, they surged to 24.59 billion in December 2003 and 30.47 billion in June 2004.

However, Japan's market is still small compared to the U.S. and European markets. Moreover, market participants are lopsided, and the market often moves for reasons unrelated to credit risk, such as investment strategy decisions by certain securities firms and funds. If present conditions persist, it will be difficult to develop new participants and invigorate the market.

¹ Recently, single-name CDS instruments of 70 to 80 investment grade companies always have bid and offer prices.

² Refers to reference assets for which a credit event has occurred.

3. Credit Derivative Indexes

In addition to adopting contract formats developed by ISDA, another effective way to improve the transparency and liquidity of the credit derivatives market is to develop index-based derivative trading. This has led to the price indexing of credit default swaps, the most basic type of credit derivative.

In Japan, the indexation of CDS prices (premiums) began in September 2002 when Morgan Stanley Securities developed the MSJ-CDS index with 25 constituents. Then in January 2003 J.P. Morgan Securities developed JANICE, an index with 45 constituents, while BNP Paribas and others developed the CJ50 with 50 constituents in February. In July 2003, MSJ-CDS and JANICE combined to form TRAC-X Japan, and in July 2004, CJ50 and TRAC-X Japan combined into the Dow Jones iTraxx CJ.

As of December 2004, thirteen major dealers in the domestic credit derivatives market participate in DJ iTraxx CJ, including BNP Paribas Securities, Goldman Sachs Japan, Mitsubishi Securities, J.P. Morgan Securities, Morgan Stanley Japan, and Mizuho Securities. Every day at 4 p.m., participating dealers report CDS prices of five-year and ten-year maturities with three credit events to QUICK Corp. Average individual prices are calculated, and the weighted average of the 50 constituent CDS prices is released to the media as the DJ iTraxx CJ index at 5:30 p.m.³ To ensure neutrality (so that a single dealer's prices do not exert undue influence), arithmetic averages are calculated for each issue after omitting a certain number of high and low values depending on the number of data points collected from dealers.⁴ Constituents must satisfy liquidity and other criteria, and may be replaced if necessary. When replacement occurs, data continuity is preserved using methods similar to the Nikkei stock average, and the distribution of constituents by industry and credit rating is also maintained.⁵

An index like the DJ iTraxx CJ not only improves market transparency and liquidity, but provides a new tool for risk hedging. For example, some securities firms offer swaps and order-made indexes based on the CJ50 index. Since a CJ50 swap with a principal of 1 billion yen is equivalent to 50 separate 20-million yen trades for each constituent of the CJ50 (if each constituent is equally weighted), the former enjoys a cost advantage by at least the average bid-offer spread. With an order-made index, buyers can create their own index from the CJ50 constituents, which is highly convenient for risk hedging.

³ For example, using the ITRX001 display code on the QUICK display, average individual CDS prices (including non-constituents) can be viewed on pages CDSQ001-CDSQ006. The CJ50 and TRAC-X Japan data can be viewed at the web sites of securities firms.

⁴ Suppose prices for a particular CDS are collected from twelve dealers. Data from two dealers with the highest and lowest prices are omitted, and the arithmetic average is calculated using data from the remaining eight dealers.

⁵ Constituents were equally weighted at the start of the index. When constituents are replaced, a divisor is used to ensure the time series continuity of the index.

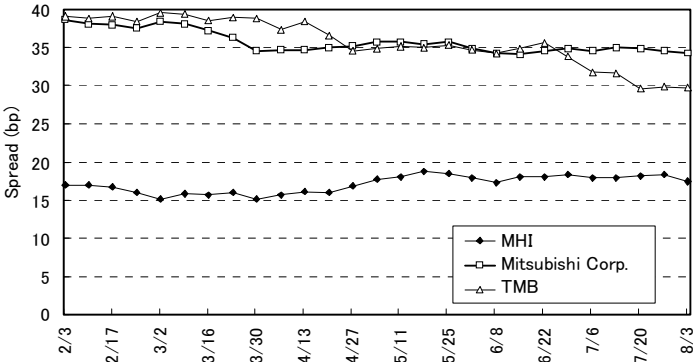
To enable market participants to trade more freely, the DJ iTraxx CJ index introduced four sub-indexes in September 2004: financials, technology, capital goods, and high volatility. The index developer plans to introduce new products based on the index, which will be followed with keen interest.

4. Relationship of CDS Market to Corporate Bond Market

When thinking about credit risk, the first asset that comes to mind is the corporate bond. Below we examine the relationship between the domestic corporate bond market and credit derivatives market, using the bailout of Mitsubishi Motors Corporation by group companies as a case study.

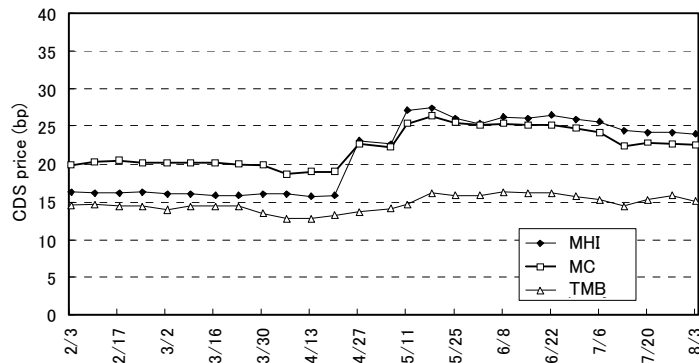
For a six-month period last year, we tracked the yield spread between long-term government bonds and corporate bonds of three Mitsubishi group companies involved in the bailout (Figure 2). We also tracked CDS prices (premiums) for the same companies and time period (Figure 3).⁶ When DaimlerChrysler AG announced on April 23 its intent to divest its stake in Mitsubishi Motors Corporation, CDS prices for Mitsubishi Heavy Industries (MHI) and Mitsubishi Corporation (MC) rose sharply, while bond spreads did not change. The CDS market then regained composure following the May 21 announcement that the Mitsubishi group would lead the MMC restructuring. These price movements indicate that arbitrage-based pricing does not necessarily occur across the corporate bond market and CDS market due to market segmentation. One reason is that the two markets have different participants—the bond market caters to domestic investors, and the CDS market to foreign investors.⁷

Figure 2 Yield Spread Between JGB and Corporate Bonds



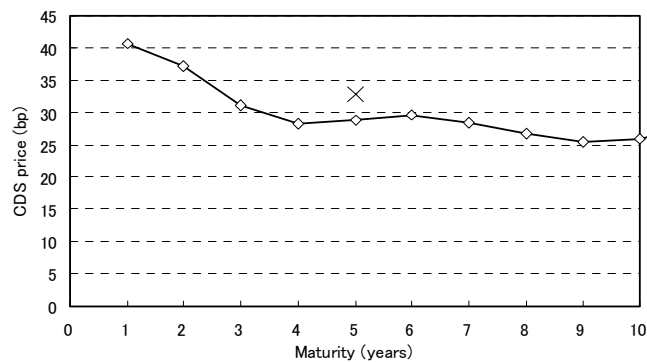
⁶ Reactions in the two markets are not always different. For example, in March 2004, when Acom Co. announced a capital alliance with MTFG, the corporate bond spread and CDS prices both plummeted together. In MMC's case, the overall impact on the Mitsubishi group was assessed differently by participants in the two markets.

Figure 3 CDS Price (premium)



For a closer look at differences between the two markets, we examine the term structure of theoretical CDS prices estimated from Mitsui Trading Co.'s bond price (Figure 4). The average price of the CJ50 index on that particular day (marked "x" in the figure) does not deviate significantly from the theoretical price, indicating that the estimate is fairly accurate. But the problem is that the term structure shows the short-term price to be higher than the long-term price. This downward-sloping term structure rarely occurs in the actual CDS market. While CDS prices for companies with low credit ratings theoretically have a downward-sloping term structure, all index constituents are supposed to have a good credit rating.

Figure 4 CDS Price Estimate Using Corporate Bond Price Data (Mitsui Trading Co.)



We interpreted the downward slope to mean that something other than credit risk causes the spread to increase for bonds with short maturities. To verify this, we performed another estimate after isolating two components with opposite effects on the corporate bond spread. For over 70% of the constituent companies in the CJ50, the component that decreases the spread nearly disappears for maturities of two or more years. The downward component (short-term component) might be regarded as the liquidity premium, and the upward component (long-term component) as the credit risk premium. However, this matter will be left for future discussion. In any case, the corporate bond market and CDS market have differently shaped term structures of premiums, a point that needs to be considered when valuing CDS prices using corporate bond price data.

5. Conclusion

We discussed the latest trend in the credit derivatives market—the development of CDS price indexes—and the relationship between the CDS market and corporate bond market. The integration of indexes last July and events since then are expected to contribute significantly to the future development of the credit derivative market. Finally, we note the significance of the fact that the DJ iTraxx CJ releases data for both five-year and ten-year CDS prices.

In the past, indexes had released data only for five-year CDS prices, which are the most heavily traded. However, since CDS prices (premiums) tend to increase with maturity, the available data was insufficient for estimating CDS prices of different maturities. In this sense, the release of ten-year data by the DJ iTraxx CJ represents a large step forward in releasing the term structure data of CDS prices.⁸ Considering the transition to mark-to-market accounting rules, market valuation of CDS holdings for hedging purposes will be unavoidable. To prepare for this eventuality, the market itself needs to develop the capacity to provide neutral data.

⁸ In the past, some securities firms have provided customers with bid and offer price data for 3-year, 5-year and 10-year maturities. What is important about the 10-year price data released by the DJ iTraxx CJ is the data's neutrality.