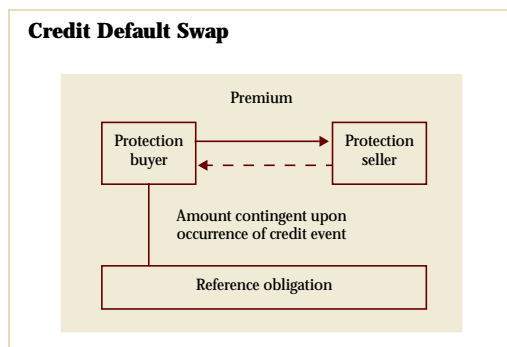


Credit Default Swaps and the Canadian Context

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A significant aspect of the evolution of credit markets has been the development of credit-risk transfer through the use of derivatives.¹ Globally, one of the fastest-growing derivative products is the credit default swap (CDS). This article describes the basic mechanics of a CDS, assesses the impact of CDSs on market efficiency, and considers the implications of the growing market for CDSs for financial stability. Finally, the current state of the CDS market in Canada is assessed, together with the outlook for the future.

The Mechanics of a Credit Default Swap

A credit default swap can be thought of in simple terms as default insurance on a loan or bond (the “reference obligation”). A CDS provides the buyer with compensation should a prespecified credit event occur.² In return for this protection, the seller receives a premium in the form of an annuity until the time of the credit event or the maturity date of the swap (see diagram). In theory, a CDS premium represents a pure measure of the underlying credit risk that can be either bought or sold. It should, therefore, be closely related to a bond yield spread or to the excess yield over a risk-free rate.³

1. A derivative, in the broadest sense, is a financial instrument whose payoff depends on another financial instrument. A credit derivative is a specific contract that transfers credit risk between counterparties without transferring ownership of the underlying asset (unless a “credit event” occurs).
2. Credit events include failure to pay, bankruptcy, reputation/moratorium, obligation acceleration, and restructuring. Credit events applicable to a CDS contract vary depending on region and on the credit rating of the reference obligation.
3. This relationship ignores the differences in funding risk.

A CDS allows investors who hold a pre-existing amount of marketable corporate debt to alter their exposure to credit risk without altering the underlying portfolio. However, as is discussed below, a pre-existing position is not necessary, and a CDS can be used to create a synthetic exposure to credit risk.

As is discussed later, altering credit-risk exposure through the use of a CDS can be more cost-effective than transacting in the secondary market. As a result, the use of CDSs is becoming a universal mainstay of portfolio management.

Impact of CDSs on Market Efficiency

Theory suggests that the presence of an active market for credit derivatives should add to the overall liquidity of the credit market, since derivatives are linked to the underlying security by an arbitrage condition, rendering the two products substitutes (albeit imperfect ones). An increase in liquidity should translate into efficiency-related gains, such as lower transactions costs and greater price discovery. The reality of the Canadian market, however, is that efficiency gains from CDSs have likely been modest to date.

It is important to note that a CDS is not simply an insurance product that pays if a credit event occurs. A CDS also represents a market price on the probability of such an event (and the associated recovery rate) and as such is a dynamic and tradable asset. More specifically, investors would be willing to buy a CDS without owning the underlying asset if they expected the credit risk of the underlying asset to increase, hence raising the value of the insurance against default. Adopting a long CDS position without owning the reference obligation, in addition to lending at the risk-free rate, is akin to selling short a bond of the same reference entity but without the need to borrow the security in the repurchase market.⁴ Shorting corporate bonds can be difficult, since they typically trade infrequently and because the market for corporate debt is relatively small compared with govern-

ment or agency markets. The CDS market thus represents an attractive alternative for an investor who wants to short a corporate bond in a cost-effective manner. CDSs enable participants to take alternative views (long or short) on the fundamental value of a corporate bond. This, in turn, implies that more information is captured in corporate bond prices, hence increasing the efficiency of the corporate bond market.

CDSs addressed two shortcomings of the market for credit derivatives: a lack of standardization and a lack of price transparency. Kiff and Morrow (2000) suggest that the complexity and lack of standardization of credit risk have resulted in credit derivatives being less of a commodity than, for example, interest rate derivatives. This has been an impediment to the growth of this market. The lack of standardization might therefore suggest that credit derivatives may not garner the efficiency gains associated with other derivative products. To overcome this obstacle, CDSs have been designed with the specific purpose of creating a standardized instrument. As a result, credit default swaps are now the most actively traded credit derivative product. In 2003, \$1.9 trillion in gross notional amount was sold globally (Fitch Ratings 2004a), and they have become a benchmark in pricing credit.⁵ Furthermore, CDSs now represent a building block for a new generation of products, such as synthetic collateralized debt obligations (CDOs), single-tranche CDOs,⁶ and CDS indexes (Box 1).

Although CDSs trade on an over-the-counter basis, a number of brokers provide quotes, thus providing a medium for price discovery. Price transparency is less of an issue with CDSs than with other forms of credit-risk transfer. For example, collateralized debt obligations and asset-backed securities are usually aimed at buy-and-hold investors, making it difficult to find accurate pricing in the secondary market.

Continued improvements in liquidity and product development should translate into further efficiency gains. Global liquidity in CDSs

4. In practice, this arbitrage relationship does not strictly hold because of differences in the liquidity of the various components. This difference is referred to as the "basis" and is typically small.

5. Rather than using a corporate bond spread to price a CDS, the information flow is increasingly in the other direction. That is, CDS spreads are now used, more so in Europe and increasingly in the United States, to express indicative levels in marketing new debt offerings.

6. For more details on synthetic and single-tranche collateralized debt obligations, see Armstrong and Kiff on page 53 of this *Review*.

Box 1**A New Product: CDS Indexes**

The introduction of CDS indexes allows investors to buy and sell exposure to a basket of CDS contracts, making it easier to take a position in specific credit markets or market segments.

Owning a CDS index is similar to owning a portfolio of single-name CDSs. The price of the index reflects an equally weighted average of CDS spreads for a predetermined basket of CDS contracts (usually 100 to 125 names per portfolio). The indexes are first grouped by geography and exist for North America, Europe, Japan, and emerging markets. They are then broken down further by the credit quality of the reference obligation (e.g., North American High-Yield). Unlike perpetual equity indexes, CDS indexes have a fixed composition and maturity date, with a new index launched twice a year.

Initially, there were two major CDS indexes: iBoxx and Dow Jones TRAC-X. Both provided products for Europe, the United States, and Asia. The presence of two competing platforms hampered liquidity and was viewed as limiting the growth of the CDS-index market. In April of 2004, a merger was announced between iBoxx and TRAC-X's European and Asian index products. The merged indexes are now referred to as the Dow Jones iTraxx. The North American credit indexes were not included in this initial arrangement but were later merged and now trade as the Dow Jones CDX indexes.

Both the iTraxx and CDX indexes are supported by the dealer community as a way for investors to gain access to diversified credit exposure. The strong support of the dealer community has created liquidity, which is, in turn, cited as a key reason for this product's success. A study by the BIS states that the liquidity of CDS indexes has remained robust even when the markets for the underlying single-name CDSs are less liquid. Not surprisingly, the depth of the market and speed of transaction are given as key reasons for the success of this product. However, the current volume of notional trades in the North American indexes remains relatively small compared with the volume of more established interest rate derivative products.

A CDS index does not currently exist for Canada, and only eight Canadian reference entities are included in the various North American indexes. The universe of liquid CDSs on Canadian-based entities is too small to create a diversified index.

with a single underlying reference obligation has improved significantly over the past two years.⁷ However, some challenges remain. Liquidity in distressed names⁸ has been problematic in the past, with liquidity evaporating even in the top names (Fitch Ratings 2004b). This suggests that the CDS market is still in its developing stage and continues to suffer from structural demand/supply imbalances.

The range of single-name CDS products, while growing, still remains limited. Globally, the market for CDSs remains predominately focused on investment-grade corporate entities despite growth in other areas. In addition, CDS contracts are based on standard time frames, which facilitate liquidity, but this usually results in a duration mismatch between the derivative and the underlying asset. The market for CDSs is most liquid in the five-year sector, although there has been some effort to expand the maturity spectrum to 10 years.

Implications for Financial Stability

The impact of credit derivatives on the financial system has been the subject of some debate. While CDSs clearly add to the stability of the financial system in some areas, they present a potential risk in others.

The efficiency gains associated with CDSs should allow for more accurate pricing of credit risk, which should improve a financial institution's overall risk management. CDSs may even increase the willingness of lenders to take on credit risk, thus reducing the probability of possible credit crunches. More directly, the benefits of CDSs to stability are related to the increased ability to hedge, the possibility of greater diversification, and the ability to transfer risk to those most willing to bear it.

CDSs enable financial-asset managers to better hedge and alter credit risk. Altering credit risk by buying and selling corporate debt in the secondary market can be expensive and difficult to accomplish on a timely basis. CDSs can reduce portfolio volatility by allowing greater access to hedging of credit risk. In Canada, however,

7. A CDS can also be written on a basket of underlying securities.

8. This refers to the liquidity of CDSs written on companies with deteriorating credit positions.

liquid CDS contracts currently exist only for companies whose debt is already liquid and actively traded. Therefore, the contribution that CDSs can make to the stability of the Canadian financial system by allowing easier hedging of credit risk is probably fairly small at this stage. But if Canada's CDS market continues to grow, the increasing ability to hedge credit risk could contribute to the stability of the Canadian financial system.

The use of CDSs can also improve the management of credit risk by allowing greater diversification and an increased ability to take on credit risk. This is particularly true for banks, whose credit exposure would otherwise reflect their loan books and who, as a result, may not be optimally diversified. Credit derivatives have also been used in Canada to achieve diversification on an international basis without contravening foreign-content rules for pension plans. This increase in diversification added to stability by reducing the unsystematic risk of investor portfolios. However, the proposal in the February 2005 federal budget that the foreign-content rule will be eliminated, would imply a reduction in the demand for CDSs to achieve this kind of diversification.

Finally, CDSs make it easier to transfer credit risk. This allows greater dispersion of credit risk to a wider range of investors and to those most willing to bear it. In the wake of several high-profile defaults in 2002 (e.g., Enron and Worldcom), Alan Greenspan, Chairman of the U.S. Federal Reserve Board, argued that credit derivatives helped diversify the losses across a greater number of stakeholders, thereby reducing the amount of stress on the financial system (Greenspan 2002).

Despite their benefits, CDSs also pose potential risks to the stability of the financial system. Credit derivatives are by design highly leveraged, which can lead to concentration of risk. The immediacy and magnitude of this risk are, moreover, hard to quantify because of a lack of transparency. Market participants have acknowledged these shortcomings and are actively working towards mitigating these risks.

The ability to establish a leveraged position means that risk positions can be accomplished without a large investment in the underlying financial asset. This, in turn, implies a greater ability to easily take on a large amount of risk,

which may translate into a significant loss. In the past, highly leveraged products, particularly new products that may not be well understood by all investors, have led to some notable financial stresses.⁹

The ability to establish a leveraged position using credit derivatives implies not only that risk can be more widely dispersed, but equally that it can also become more concentrated. CDSs effectively increase the amount of outstanding long and short credit positions. Since these increases are directly proportional to each other (shorts equal longs), the net amount of credit risk in the financial system remains unchanged. But the overall increase in credit positions in the financial system could lead to a greater concentration of risk among a few participants, which could potentially exacerbate the impact of a credit event on the financial system.

Market participants have been trying to lessen this risk by improving collateral and netting arrangements. In a recent assessment of global credit derivatives markets, the Bank for International Settlements (BIS) concluded that there does not seem to be any evidence that the transfer of credit risk has led to an increase in the concentration of risk (BIS 2004). The BIS notes, however, that there is insufficient information to assess the impact of credit-risk transfer on the stability of the financial system.

The BIS concluded that balance sheets and financial statements do not provide a sufficiently clear assessment of a firm's activities in transferring credit risk, and it is therefore not possible to track the redistribution of risk or to properly identify concentrations. This lack of transparency is particularly acute for risk taken on by unregulated market participants, such as hedge funds, which are increasing their presence in the credit derivatives market. The lack of transparency may limit the ability of the market to discipline publicly traded companies that use leverage in an inappropriate manner.

The CDS Market in Canada

Quantifying the growth of CDS activity in Canada remains difficult, because CDSs are private bilateral contracts, and participation in data collection is voluntary. Notional amounts of CDS

9. One example would be interest rate derivatives and the bankruptcy of California's Orange County.

Table 1

Notional Amounts of Outstanding Credit Default Swaps for Three Participating Canadian Banks (as at year-end 2004)

US\$ millions

Counterparty	Bought	Sold
With reporting dealers	20,465	26,511
With other financial institutions	41,290	59,626
Banks and securities firms	40,529	48,200
Insurance and pension funds	329	89
Hedge funds	0	0
Other	432	537
Non-financial customers	3,631	10,010
Total	65,386	81,402

contracts outstanding are currently available for only three of Canada's five largest banks, and for only one date: year-end December 2004 (Table 1). Owing to data limitations, this article also draws on informal interviews with market participants and information available from rating agencies. From the available evidence, it can be deduced that Canadian participation in CDSs is currently limited.

Credit default swaps written on Canadian entities trade on a U.S.-dollar basis and over-the-counter (no organized exchange). Therefore, the current state of the CDS market in Canada is based on financial institution transactions in CDSs, as well as on the breadth of contracts written on Canadian-based entities.

North American banks, brokerages, and dealers together held US\$2.7 trillion in outstanding credit derivative positions in 2003, with slightly over a trillion dollars of this total in the form of CDSs (Fitch Ratings 2004a). Although a country-specific breakdown is not available, conversations with Canadian securities dealers suggest that the outstanding positions of Canadian institutions likely represent only a small percentage of these totals. Indeed, for the three Canadian banks for which data are available, only US\$150 billion in single-name CDS contracts outstanding (both long and short) are reported.

Despite the lower level of activity compared with U.S. financial institutions, the major Canadian banks are increasingly active in all aspects of the credit-risk-transfer market. Recently, Canadian banks have broadened their activity to include the use of the CDS market to manage credit risk in their loan portfolios. CDSs are also becoming a source of revenue from intermediation, since Canadian dealers have increased their participation in trading CDSs.

Non-financial corporations are one of the largest counterparties with the reporting banks. They use CDSs mainly to hedge future funding requirements. If a company's credit conditions worsen, making funding more expensive, this cost may be offset with the protection of a pre-existing CDS position.

Some of the larger Canadian pension funds have also entered the CDS market as a way of gaining synthetic credit exposure. Anecdotal evidence suggests that to further diversify their portfolios, these funds have been most active in the deeper, more liquid credit derivatives,

which are based on foreign rather than domestic companies. As a result, the extent of their participation may be understated by their outstanding positions with reporting banks, which is quite modest.

Interestingly, international insurance companies are, overall, among the most active participants globally in the CDS market, while Canadian insurance companies are only modestly active, either domestically or internationally. Also of note in terms of international comparisons, reporting Canadian banks have no CDS positions with hedge funds, which are large participants in the CDS market in both Europe and the United States.

Over the past two years, dealers have witnessed strong growth in the demand for CDSs by Canadian-based institutions. Dealers express confidence that activity in CDSs outside the interdealer market will continue to increase as new accounts put documentation in place, augment their expertise, and enhance their financial systems in order to be able to deal in this product.

Quotations for CDSs are available for as many as 160 Canadian-based reference entities. Trading activity among these 160 names can be broken down into three tiers. The top tier includes five to ten names that are extremely liquid and in which there is a regular two-sided market. Approximately 20 additional Canadian names trade on a semi-regular basis. The bid/ask spreads of the first and second tiers are typically around 5 basis points (however, this may be indicative only for small volumes). The liquidity of the remaining 130 Canadian-based entities, or the third tier, is essentially nil, with any trade in these names being difficult to find. Approximately 2,100 reference obligations trade globally (Fitch Ratings 2004b); therefore, CDSs written on Canadian-based entities represent only a very small fraction of the global market.

Growth of CDSs in Canada

The Canadian corporate debt market represents about 1.2 per cent of the global corporate market (Merrill Lynch 2004). While CDSs written on Canadian-based entities form a relatively new market that continues to grow, its share of the global CDS market is comparable to Canada's share of the global corporate bond market. The growth of CDSs in Canada should continue

to be closely linked to the global growth of CDSs (in proportion) and to changes in Canada's share of the global corporate market. While Canada's corporate debt market is only a small percentage of the global market, it is important to note that both CDSs and the Canadian corporate debt market have also grown rapidly over the past 5 to 10 years (Anderson, Parker, and Spence 2003).

Key factors in the growth and liquidity of CDSs are the amount of credit information available to investors and the amount of outstanding debt. Both are correlated with the size of the corporate market. The use of CDSs results in the transfer of credit risk to those who often do not share a lending relationship with the underlying entity. Therefore, the new holder of credit risk does not have access to the same level of fundamental credit knowledge as the loan originator. As a result, there is an increase in the dependence on credit-rating agencies and independent analysis to obtain credit information. Since both the rating process and internal analysis are costly, it is not surprising that the most actively traded CDSs on Canadian reference entities include some of Canada's largest companies.

In addition to the impact of the size of the Canadian corporate debt market on the development of a CDS market, its composition may be a factor. The recent global search for yield by investors has, in part, driven the strong growth of CDSs written on high-yield debt. The high-yield market in Canada is much smaller than that of the United States (Anderson, Parker, and Spence 2003), which may further help to explain the difference in the rate of adoption of CDSs.¹⁰

Conclusions

Credit default swaps have become one of the most widely used credit derivatives because they address two shortcomings of the credit derivatives market: a lack of standardization and a lack of price transparency. CDSs also add to the completeness of the corporate debt market by increasing the ability of investors to short corporate bonds, which augments the information content

10. In terms of the reporting banks, the notional amount of CDS positions on debt that is either unrated or rated BB and below was roughly 15 per cent of total positions outstanding.

of corporate bond pricing and the efficiency of the market. Although hard to quantify, CDS activity in Canada to date has probably had a limited but positive effect on market efficiency. Credit derivatives in general should add to the overall liquidity of the credit debt market, which in turn should lead to lower transactions costs and greater price discovery.

CDSs contribute to financial stability by facilitating the ability to hedge credit risk and improve diversification, as well as by allowing credit risk to be held by those most willing to bear it. While CDSs contribute to financial stability, they also pose the risk that leverage will be employed to concentrate rather than diversify credit risk.

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