

The Barra Credit Series:  
**Improving Performance  
with Credit Default Swaps**

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Tim was also vice president, senior financial engineer at Bankers Trust in New York where he gained extensive experience from both the buy and sell sides in measurement and management of integrated risks, as well as derivatives engineering and trading risk control. While at Bankers Trust, he was involved in the development and extension of the RAROC risk model. Tim's expertise covers all aspects of pricing and managing risk of FX, equity and IR derivatives as well as industry leadership in the modeling of asset and portfolio credit risk.

Tim holds the FRM designation from GARP, the CRM designation from PRMIA, a BSc from Warwick University, England in pure mathematics and financial engineering.

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The credit default swap (CDS) market is one of the purest and most responsive indicators of corporate financial health. Since the release of ISDA's "Master Agreement," CDS transactions have become simpler and CDS markets have become available to a whole new universe of investors. As Goldman Sachs expressed in a bulletin published in May 2001: "...use of default swaps will increasingly become a necessary component of any successful portfolio management strategy." The purpose of this article is to illuminate the structure of these new instruments and to highlight their potential for credit asset managers.

Credit default swaps originated as a means to provide simple insurance to lenders. However, they have evolved into actively traded securities and building blocks of structured instruments such as collateralized debt obligations, credit linked notes and first-to-default baskets. As we discuss below, they offer a great deal of information that can be profitably used by asset managers.

We offer five tactical uses for CDS in the credit investment process. Taken together, they provide fixed income managers with new opportunities and means to enhance performance.

We start with a brief introduction to the issues facing credit asset managers and then continue to discuss five tactical uses for CDS in the investment process. We follow with a general health warning that provides some insight into pitfalls commonly associated with CDS, and conclude with some practical suggestions and a look into the future of credit derivative engineering.

## Introduction to CDS

### Credit Derivative Market Size and Growth

Since its inception early in the 1990s, the credit default swap market has evolved into a major component of the capital markets. Lack of regulation makes it difficult to assess the growth of this market class in the early days. However, as exchange trading has increased relative to over-the-counter transactions, information about the size of the market

In its third-quarter 2002 review, the Office of the Comptroller of the Currency reported that the notional amount of credit derivatives outstanding globally increased by more than 16% over the previous year. This is consistent with the forecast made by the British Bankers Association (BBA) in early 2002 that the notional amount of the credit derivatives market will reach \$4.8 trillion by the end of 2004.

Figure 1 illustrates the growth of the credit derivatives market since 1997. The rate of growth is expected to increase dramatically if and when various uncertainties about the market and legal impediments to its expansion are removed. "Regulatory uncertainty, for instance, over the outcome of the Basel II negotiations constitutes one of the major constraints to the growth of the credit derivatives market," noted the BBA. In sharp contrast to the market for interest rate and currency swaps, the potential for the addition of new

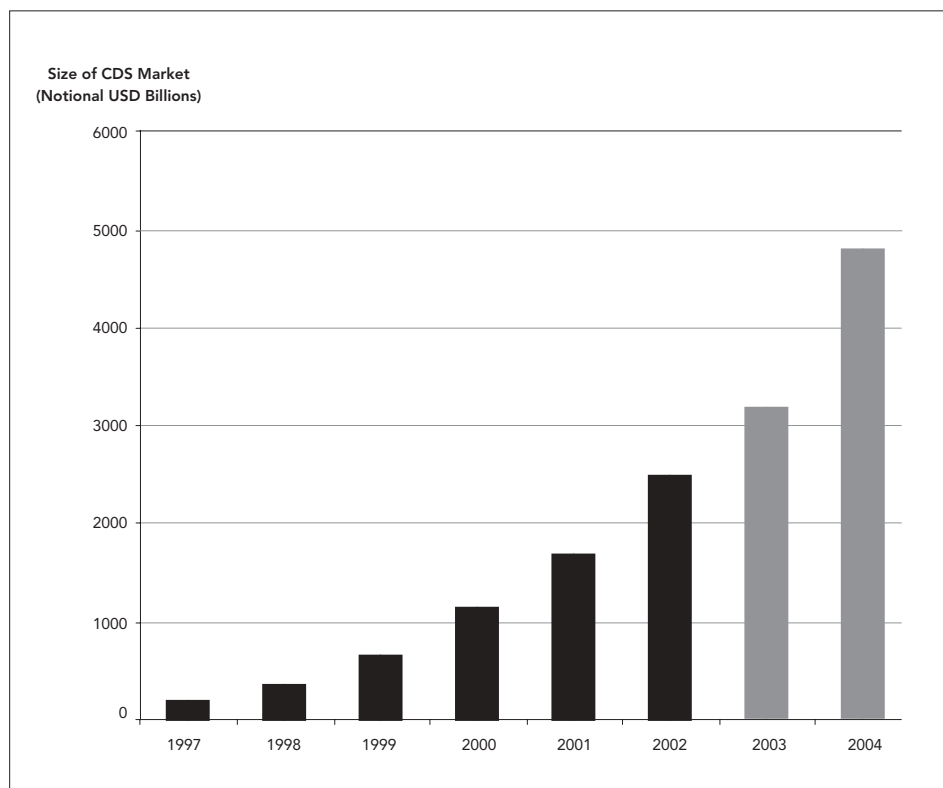
reference entities in the credit derivatives market is virtually unlimited. A CDS can be written on any borrower and the universe of borrowers is expanding.

Figure 1

The Size of the Global Credit Derivative Market

Source: British Bankers Association, Office of the Comptroller of the Currency

Forecast Market size for 2003 and 2004 is shown in gray.



The global credit derivative and cash markets are decentralizing as they grow. As shown in Table 1, the US and Europe markets became approximately equal in size in 2002 and Asia seems to be catching up quickly. Market differences become apparent, however, when corporate bonds are distinguished from bank loans.

Asset Class	US	Europe	Asia	Global	Source
Corporate Bonds	2,928	1,518	1,052	5,498	LB Index 7/31/02
High Yield Bonds	454	163		617	LB Index 7/31/02
Emerging Markets	11	61	12	184	LB Index 7/31/02
CP	1,439	270	135	1,844	FRB, ECB, BoJ
C&I Loans	1,019	3,073	3,098	7,190	FRB, ECB, BoJ
Credit Derivatives	1,021	1,124	409	2,554	BBA, OCC survey
CDO	469	400	10	879	Lehman Brothers estimate
<b>Total</b>	<b>7,341</b>	<b>6,609</b>	<b>4,716</b>	<b>18,766</b>	

The US capital markets are currently more accessible than European capital markets with almost twice the notional amount of corporate debt and roughly one third the volume of bank loans. However, these differences are diminishing as BIS II and the push for profitability bring more credits into the capital markets. In response to the increased pressure

on bank loan books, the size CDS market in Europe is already approaching the cash corporate bond market.

Table 2 shows breakdowns of the credit derivatives markets along several dimensions.

Table 2 Selected Credit Derivative Market Statistics	Aggregate Notional Outstandings (%)		CDS by Origin of Underlying Credit		End-User Breakdown (%)	
Source: 2002 Risk Magazine Credit Derivative Dealer Survey	CDS	67.0	North America	44	Banks	47
	Balance Sheet CLO	12.0	Europe	40	Reinsurance	14
	Static CSO	9.0	Asia	12	Insurance	9
	Repacks	4.0	Emerging Markets	5	Hedge Funds	8
	Asset Swaps	3.0			Banks (securitization)	8
	Spread Options	2.0			Asset Managers	6
	Managed CSO	2.0			SPV/SIVs	4
	Total Return Swap	1.0			Corporates	4
	Hybrid CD	0.2				

By far, CDS are the most prevalent asset class and banks constitute the largest group of end-users. The buy-side of the market, including hedge funds, asset managers, insurance, and corporates, constitutes 27% of the market with hedge funds and asset managers growing at the fast pace. CDS origination is predominantly in the US and Europe and it is evenly split between the two.

The number of active market participants is also increasing. In 2000, only 10 market participants provided five-year CDS prices on roughly 100 names. Today, more than 30 banks and brokers are CDS market makers on over 300 global credits. Some houses cover as many as 700 credits.

The growth in the CDS market has been fuelled by market standardization. Credit event settlements occurred smoothly in high profile cases including Enron, WorldCom, Railtrack and Xerox. Market transparency and functionality has increased the confidence of existing players and further broadened the investor base.

Although transparency and understanding of CDS has increased significantly, a clear understanding of what is a CDS and what factors are involved in its trading, risk control, and valuation is necessary before we embark on the five tactical uses of CDS.

### What is a CDS?

In a nutshell, a credit default swap (CDS) is similar to an everyday insurance contract. A key difference between a CDS and an insurance policy is those buying a CDS can trade in and out of their contracts in a way that is not possible in the insurance market.

In other words, a CDS is a privately negotiated bilateral contract in which one party **A**, usually known as the protection buyer (or 'risk shedder' in the parlance of the BIS), pays a fee or premium to another **B**, generally referred to as the protection seller (described by the BIS as the 'risk taker'), to protect himself against the loss that may be incurred on his exposure to an individual loan or bond as a result of an unforeseen development. This

development is usually known as a 'credit event', indicating that the borrower (known as the reference entity C) on which the CDS has been written is unable (or is rapidly likely to become unable) to pay its debts. If a credit event occurs, the seller of protection will make a payment to the buyer of the contract. CDS can differ in the specification of the default payment. Possible alternatives are:

- **Physical Delivery** of one or several of the reference assets against repayment at par
- Notional minus post-default market value of the reference asset (**Cash Settlement**)
- A pre-agreed fixed payoff, irrespective of the recovery rate (**Digital CDS**)

Although the number of possible variations is large, the majority of traded CDS follow the common specification defined by ISDA (1999). To identify a CDS, the following information must be provided:

1. **The reference obligor and its reference assets**—in our example above the reference obligor is C, and his default risk is the asset in the CDS contract. It is, however, necessary to specify which assets are concerned. Usually a set of bonds of a given seniority class (e.g., senior unsecured) are selected.
2. **The definition of the credit event that is to be insured (default definition)**—this is the most controversial area of the specification and is defined by ISDA as one or more of:
  - Bankruptcy, filing for protection (Chapter 11 in the US)
  - Failure to Pay
  - Obligation default, or acceleration
  - Repudiation or moratorium, and
  - Restructuring (which has frequently been omitted)
3. **The notional of the CDS**—vary from USD 1mm up to several hundred million, with smaller sizes for lower credit quality. Typical trades for CDS are in the USD 10–100mm range.
4. **The start date of the CDS** (start of the protection)—this is typically three days after the trading date but can be further out in which case the deal is referred to as a forward CDS.
5. **The maturity date**—the most common maturity (and most liquid) is five years. For the most common names, though, dealers will quote from 1 to 10 years.
6. **The CDS spread**—this is the price of the default protection to be paid annually and it is often misleading as it is not a spread over anything. Other market parlance refers to the CDS spread as a rate or price.
7. **The frequency and day count convention** for the spread payments—typical payment terms are quarterly or semi-annually with an actual/360 day count convention. The fees are paid at the end of each period, hence the first fee is paid in 3 or 6 months after the deal is struck.
8. **The payment at the credit event and its settlement**—payment terms were mentioned above but due to the complications and logistics of getting market quotes for post-default debt, physical settlement is much more popular than cash settlement. Payments in default normally settle quickly with 4 to 6 weeks as an average.

Market terminology relies on the fact that the asset that is traded in a CDS is default protection. This means:

- A **long position** in a CDS is a position as protection buyer
- A **short position** in a CDS is a position as protection seller
- A **bid** of xx bp on a CDS means that the bidder is willing to enter a CDS as protection buyer at a spread of xx bp.
- An **offer** of xx bp on a CDS means that the offerer is willing to enter a CDS as protection seller at a spread of xx bp.

Hence, the bid quotes will always be below the offer quotes, as is usual in other markets. There is also a market jargon where “to go long defaults” can mean long the credit, i.e., selling the protection. Simply put, if you are a CDS buyer, you are buying protection, shorting the credit, and hoping credit risk increases and CDS spreads rise. If you are a CDS seller, you are selling protection, long the credit, and hoping credit risk decreases and CDS spreads drop. To compare to bond markets, long a corporate bond is equivalent to short the CDS, in credit terms, and long the CDS is equivalent to short the corporate bond.

Once the contract is correctly specified and positions taken it is clearly necessary to value and manage risk on the CDS positions. The pricing of CDS is becoming more and more standardized, with Hull and White (2000)<sup>1</sup> being the most frequently implemented, but remains a much larger topic than this short article can do justice to. There are a few key methods, which are worth getting to know in order to better understand the drivers of CDS value. These include:

- Ratings-based Approaches
- Structural (or Firm-Value) model based Approaches
- Reduced Form model based Approaches
- Asset Swap-Replication-based Approaches

An excellent paper by Giesecke (2001)<sup>2</sup> provides a great deal of detail on the default models of the first three approaches. A recent book by Schonbucher (2003)<sup>3</sup> offers the most complete taxonomy and practical insight into the use of these default models for CDS pricing. However, the two key components of all of these models are:

- Probability of Default (PD)<sup>4</sup>, and
- Expected Loss Given Default (LGD)

<sup>1</sup> Hull, John and Alan White (2000), “Valuing Credit Default Swaps I” and “Valuing Default Swaps II”, working papers, available online at <http://www.rotman.utoronto.ca/finance/papers/CredDefSw1.pdf>, and <http://www.rotman.utoronto.ca/finance/papers/CredDefSw2Dec211.pdf> respectively.

<sup>2</sup> Giesecke, Kay (2001), “Credit Risk Modeling and Valuation: An Introduction”, working paper, available online at [http://www.barra.com/support/library/credit/credit\\_risk\\_introduction.pdf](http://www.barra.com/support/library/credit/credit_risk_introduction.pdf) provides a complete and succinct overview of these models, and a discussion of other more innovative incomplete-information-based models.

<sup>3</sup> Schonbucher, Philipp (2003), *Credit Derivatives Pricing Models*. See [http://www.amazon.com/exec/obidos/tg/detail/-/0470842911/qid=1043027522/sr=1-1/ref=sr\\_1\\_1/104-2647376-7797501?v=glance&s=books/defaultrisk.com](http://www.amazon.com/exec/obidos/tg/detail/-/0470842911/qid=1043027522/sr=1-1/ref=sr_1_1/104-2647376-7797501?v=glance&s=books/defaultrisk.com).

<sup>4</sup> Giesecke, Kay and Lisa Goldberg (2002), “Forecasting Default in the Face of Uncertainty”, Barra Research Insights, <http://www.barra.com/support/library/credit/uncertainty.pdf> provides an analysis of default probability models.

It is the understanding of these parameters that is most crucial in pricing. To gain this better understanding, market participants often use aspects of the asset swap market as a proxy for the CDS market and this leads to the approach commonly referred to as the asset swap replication-based approach, the fourth model above.

An Asset Swap is a derivative security (some might say the precursor to the CDS market) that, in its simplest version, is a portfolio of a fixed rate note and interest rate swap of the same notional that pays fixed and receives floating to the stated maturity of the underlying fixed rate note. At the origination of the asset swap, the swap is constructed so as to match the face value of the fixed rate note and so a spread is required to ensure zero initial value for the package. This spread is the asset swap spread and has become benchmark for CDS pricing and hedging, because of its pre-default similarities to CDS cashflows. We will discuss this in more detail below.

It is the combination of CDS and asset swap markets that makes the credit markets what they are today. They are becoming more and more liquid in an increasing number of names and there are a number of ways to make use of these interesting instruments within the credit investment process.

## 6

### Five Uses of CDS

Active management of cash credit portfolios produces significantly less return than investors' views of the credit asset class would have us believe. There are a number of reasons for this, including:

**A manager who wants to take a long position** cannot find enough of the bond to buy in the secondary market, receives insufficient allocations in the primary market, or else finds himself constrained by his own risk limits.

**A manager who wants to go short** cannot find bonds to repo, and hence is constrained by his benchmark weightings. But these are usually too small to allow capitalization on the analyst's views. Further, the problem becomes worse with increased diversification.

Finally, **when a manager shifts allocations**, he can seldom shift enough to have a meaningful short-term impact. The shift becomes a telegraph for the rest of the cash market that demand and supply are changing.

Therefore, a "cash credit only" mandate severely constrains a manager's ability to outperform. The following five tactical applications of CDS can make a big difference.

#### 1. Bi-Directional Trading in Credit

A manager can go short or long credit exposure to an entity synthetically by trading protection on a name through a credit default swap. Initial concerns about whether CDS would provide the protection they promised in the case of a default have been allayed by numerous recent examples such as Swissair and Railtrack. These examples, and the

similarities between CDS and bond spreads, impel more and more managers to consider substituting CDS for bonds.

CDS have several advantages for portfolio managers over the cash market.

- A broader range of names can be traded (including names that have debt outstanding only in foreign currencies). This makes it easier to build diversified portfolios.
- It tends to be easier to find liquidity in CDS because any dealer can make a market without having bonds to trade. This supports larger trades: a standard CDS trade size is around \$10mm.
- An investor can choose his maturity. Although liquidity is greatest around five years, an investor can buy short maturities for their better breakevens.
- An investor can just as easily go short (buying protection) as long (selling protection), because there is no need to borrow bonds on repo. As such, it is much easier to build a balanced portfolio of longs and shorts. Thus, the asymmetric return distribution works in an investor's favor when he is bearish.
- CDS provide much more leverage than cash positions. This funded/non-funded advantage is of great use to the typical hedge fund and may become more useful to traditional asset managers as mandated restrictions are relaxed.

Not all portfolio managers are allowed to use CDS. Increasingly, however, managers are persuading their investors in favor of CDS. Some start by wrapping CDS positions into a bond-like structure called a "credit-linked note" (CLN). Others start running dummy CDS portfolios to show their managers and investors the advantages. But all are realizing the competitive disadvantage they face if restricted to cash only.

## 2. Default Timing Risk

When a credit is sufficiently distressed, the CDS market stops behaving as a tool for quantifying and transferring likelihood of default risk. It becomes a measure of the timing of the default event itself. A simple example illustrates the difference.

Suppose Company ABC is found to be involved in an accounting fraud. The result is broad uncertainty about the actual level of the company's liabilities. The market's view and most importantly, your analyst's, is that ABC will definitely default within the next five years.

The Five-Year CDS for ABC is trading at 2000bp.

Given the company's sector and quality, the market's expectation is that the bondholder will recover 50% of the company value in the event of default.

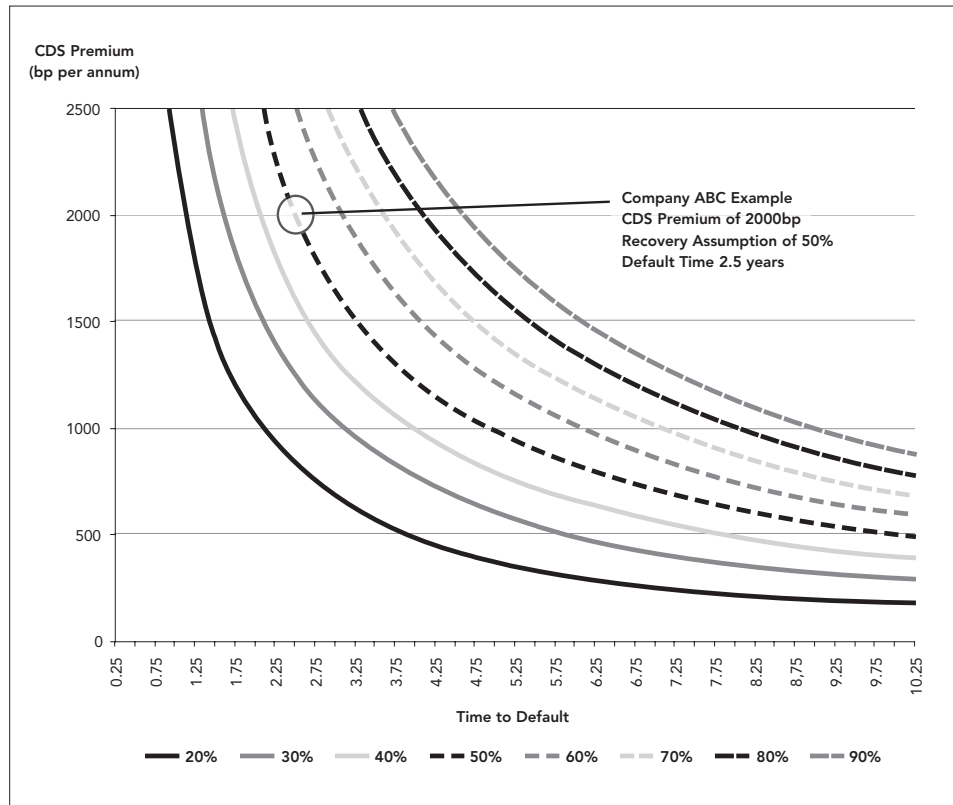
So, for a \$10mm position, we would pay \$2mm per annum (\$0.5mm per quarter) for default protection, ignoring discounting, over five years to receive an expected \$5mm in the event of default.

Hence, the market's expectation, conditional on the recovery expectation, is that ABC will default within ten quarters, or two and a half years.

A credit analyst could arrive at a view of the default timing by understanding the cash-flow and reserves left to meet debt demands and may feel that default is definitely going to occur within five years but not before three years.

In this case, the manager should sell the CDS, contrary to his belief in the “guaranteed” nature of the default, to take advantage of the premium payments until default. By selling the CDS, he can gather the premiums and, as long as the company defaults after two and a half years, then a significant profit can be made. Figure 2 shows the CDS-Implied default time across the x-axis versus the CDS premium on the y-axis. This is illustrated for a number of different recovery assumptions. The company ABC example is highlighted and it is clear that as the expected recovery in the event of default increases then the implied default time increases for a given CDS premium.

Figure 2  
CDS-implied time to default for various recovery assumptions



This situation has been regularly seen over the past few years, notably among Latin American Sovereigns. Here, an asset manager with a strong fundamental analyst group can further capitalize on its views by using default timing risk as a diversifying trade within a portfolio.

### 3. Basis Trading

Both Efficient Market Theory and the status of asset swaps (ASW) as a benchmark in CDS pricing indicate that an asset swap spread should approximately equal the CDS rate for a given name. This is, however, the exception rather than the rule in credit markets. Table 3

highlights the state of the market for a few selected names as of August 2003. Most names trade at a positive basis and most investment banks trade at a negative basis.

Table 3	Reference Credit	CDS Spread	Asset Swap Spread (LIBOR)	Basis
Selected reference name	<b>Financials (Sen)</b>			
5-year CDS and ASW spreads,	JP Morgan Chase (USD)	39.5	54.0	-14.5
August 2003	Goldman Sachs (USD)	42.0	58.0	-16.0
Source: Barra Credit	Commerzbank (EUR)	50.5	35.8	+14.7
	HBOS (EUR)	16.0	25.2	-9.2
	<b>TMT</b>			
	AT&T (USD)	144.0	134.5	+9.5
	IBM (USD)	30.4	11.5	+18.9
	Deutsche Telekom (EUR)	80.5	94.4	-13.9
	Telefonica (EUR)	43.5	37.2	+6.3
	<b>Utilities</b>			
	Waste Management (USD)	105.0	80.4	+24.6
	EDF (USD)	48.0	24.4	+23.6
	E.ON (EUR)	38.0	11.4	+26.6
	RWE (EUR)	49.0	40.2	+8.8

The difference between the CDS rate and the asset swap spread is known as the Cash-CDS basis<sup>5</sup>, or simply the basis. The basis exists for a number of reasons that can be divided into two classes—fundamental and technical factors.

**Fundamental factors**, based on market conditions and contractual issues, include liquidity, differences in market participants, difficulties in the repo market, and systemic market issues such as the crossover market (BBB/BB rated debt) where market participants are mandated not to hold assets.

**Technical factors**, based on pricing and arbitrage issues, include delivery options on default<sup>6</sup>, counterparty risk differentials and bonds trading above or below par. These will skew the asset swap to CDS comparison, create a smile effect from funding cost asymmetries across high and low rated reference assets<sup>7</sup>, and generate technical defaults in the CDS market.

<sup>5</sup> For clarity, the basis is defined as the CDS rate–Asset Swap spread, and in practical terms the bid and offer side of each market should be taken into account.

<sup>6</sup> The delivery option is similar to the cheapest-to-deliver option in US Treasury Futures arbitrage. In a CDS, the delivery of a specific reference bond in the event of physical settlement is in the hands of the protection seller, and therefore they will choose the bond with the lowest cost to deliver.

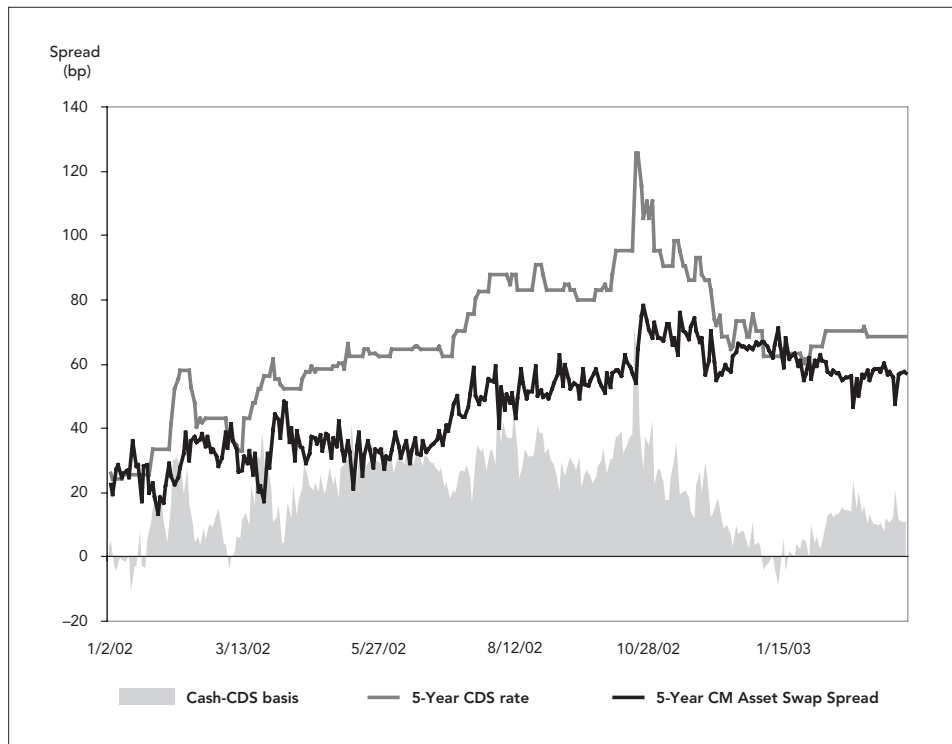
<sup>7</sup> If one views the basis grouped by Agency Rating of reference credit, a pronounced smile is seen—this is due to the differences in funding costs in the asset swap market for highly rated names (i.e. sub-LIBOR) versus the buyer of protection on the highly rated name paying above LIBOR.

These factors pull and push the basis from negative to positive. However, the biggest driver of the basis is the technical difference between the payoffs of each instrument.

A positive basis means that the default risk of a specific name is priced higher in the CDS market than in the bond market. In the GE example below, the CDS market views the default risk to be much higher.

In Figure 3, the gray area indicates the positive basis. This indicates that potential protection sellers in the GE CDS market demand a high premium, while there are investors in the bond market who are willing to pay a higher price (i.e., receive a low asset swap spread and a lower compensation for the embedded default risk) for GE bonds.

**Figure 3**  
Cash-CDS basis history for General Electric (5-year USD)  
Source: Barra Credit

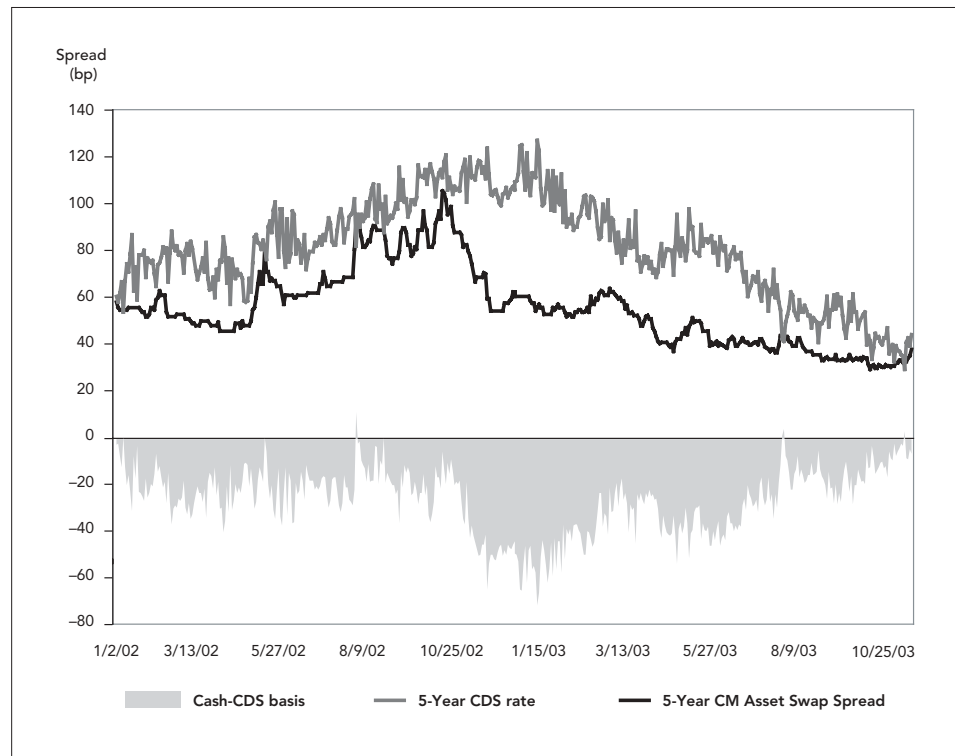


In contrast to the rest of the market, most major US investment banks trade with a significant negative basis. This is primarily because investment banks can fund sub-LIBOR.

Figure 4 shows Goldman Sachs with a systematically negative basis, meaning that the CDS market views the default risk to be much lower. Potential protection sellers in the Goldman Sachs CDS market will accept a lower premium, while other investors in the bond market are only willing to pay a lower price (i.e., receive a higher asset swap spread and therefore demand more compensation for the embedded default risk) for Goldman Sachs bonds.

Investors who take on GE risk in the bond market at the current prices are either unaware of the CDS market or unable to participate in it.

**Figure 4**  
Cash-CDS basis history for  
Goldman Sachs (5-year USD)  
Source: Barra Credit



The basis represents a significant opportunity for credit asset managers to generate additional returns by leveraging existing research and analytic skills. On a market-wide scale, the basis is dramatically uncorrelated with both the equity and fixed income asset classes. It provides return while efficiently diversifying risk.

#### 4. Trading Signal

The credit default swap market is recognized as one of the most responsive financial indicators. In some cases, it foreshadows the equity markets. From Ahold to WorldCom, the CDS market has priced concerns ahead of other asset classes.

The use of the CDS market in quantifying opportunities and threats in the credit markets falls into three broad categories. These are:

- A leading indicator of creditworthiness
- Fair value misalignment
- Significant basis changes

Taken together these three types of CDS signals provide depth of understanding into market perceptions of credit.

#### *Leading Indicator*

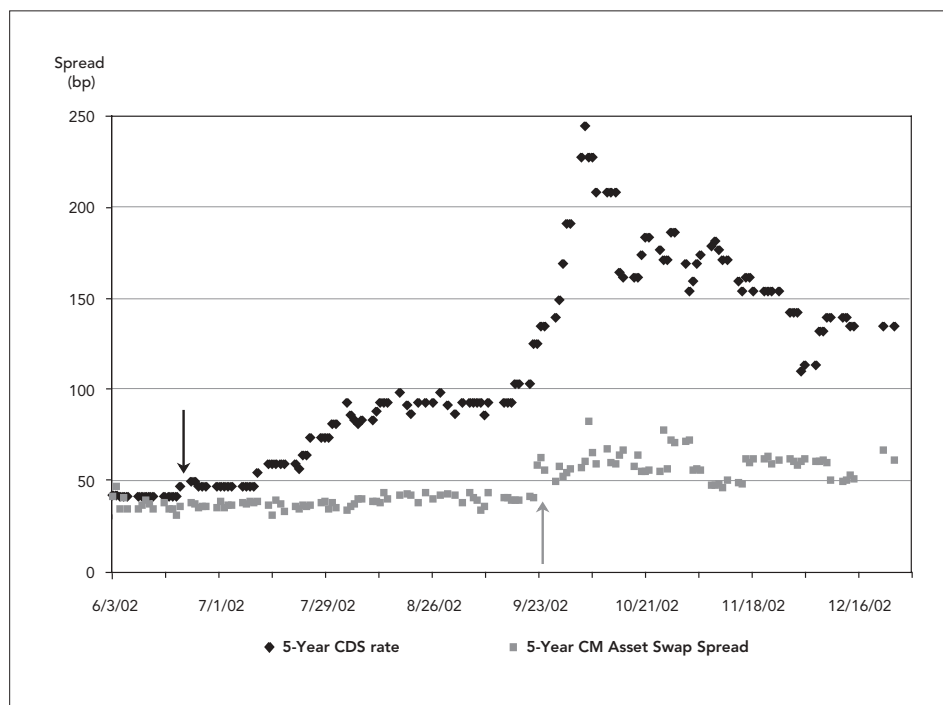
The CDS market often leads the bond market into rally and crisis. Figure 5 illustrates the CDS market leading the bond market by roughly three months in June of 2002.

Commerzbank was in crisis over a large number of loan provisions and disappointing results. The CDS market reacted more quickly to the information than the bond market.

Figure 5

Commerzbank 5-year CDS rate and asset swap spread history

Source: Barra Credit



A recent paper by Hull, Predescu and White (2003)<sup>8</sup> provides some interesting academic results on the CDS market. Their conclusion states that: "CDS spread changes tend to anticipate negative rating announcements. This is particularly true when extreme declines in credit quality happen within a short period of time. Either credit spread changes or credit spread levels provide helpful information in estimating the probability of negative credit rating changes. We find that 50.6% of downgrades, 41.9% of all reviews for downgrade and 54.5% of negative outlooks come from the top quartile of credit default swap changes."

These are significant findings and lead to the possibility of CDS spread analysis within many areas of the asset management firm, including equity research and signal generation. Of course, the spread is not the only indication of potential opportunities within the credit markets. As more credit market participants use CDS spreads as their credit benchmark, fair value curve misalignments between bonds and CDS occur frequently.

#### Fair Value Misalignment

When interpreting issuer-level spread curves, it is important to account for all sources of credit risky assets. In Figure 6, the 2-year and 5-year CDS are trading in line with the fair

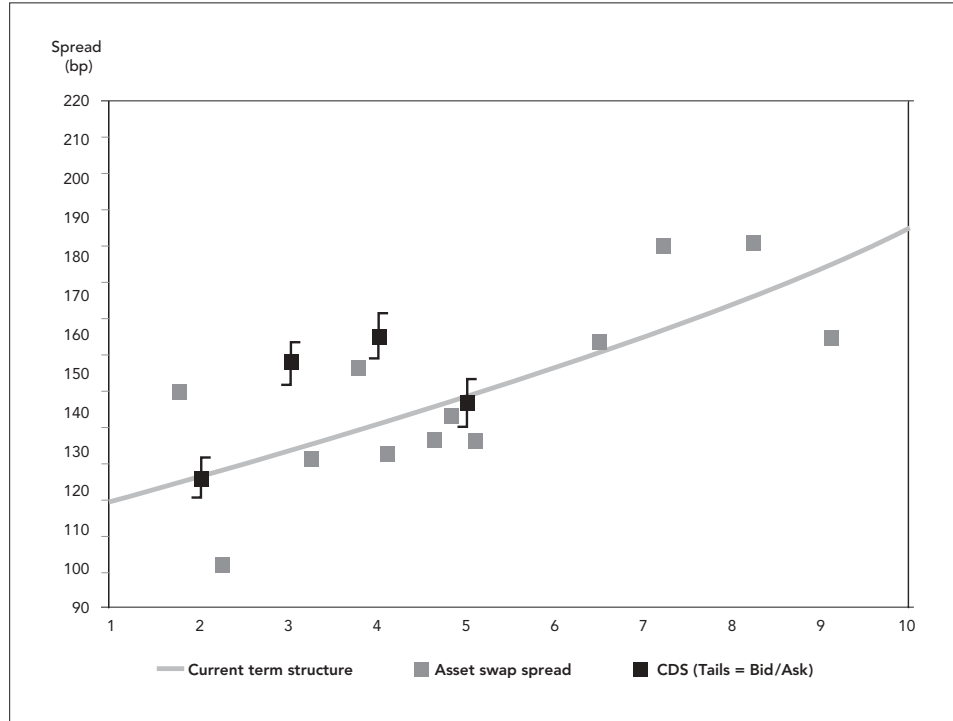
<sup>8</sup> Hull, John, Mirela Predescu and Alan White (2003), "The Relationship between CDS spreads, Bond Yields, and Credit Rating Announcements", Working Paper. This paper is available online and can be downloaded at <http://www.rotman.utoronto.ca/~hull/DownloadablePublications/HPWPaperonCDSspreads.pdf>.

value spread curve but the 3- and 4-year CDS trade systematically cheap to the curve. This kind of mispricing is often due to concern about liquidity and risk premia.<sup>9</sup> These large misalignments provide opportunities for arbitrageurs.

Figure 6

Issuer-level spread term structure for Deutsche Telekom (EUR)

Source: Barra Credit



It is misalignments like this that produce significant changes in the basis of varying maturity CDS. These basis changes can be dramatic, as market participants pour in to take advantage, and provide significant insight into differing perspectives within the credit markets.

**Basis Changes**

As discussed above, the basis is an important part of the CDS market, providing participants with a benchmark from which to price CDS. Analyzing the basis for significant changes often highlights opportunities.

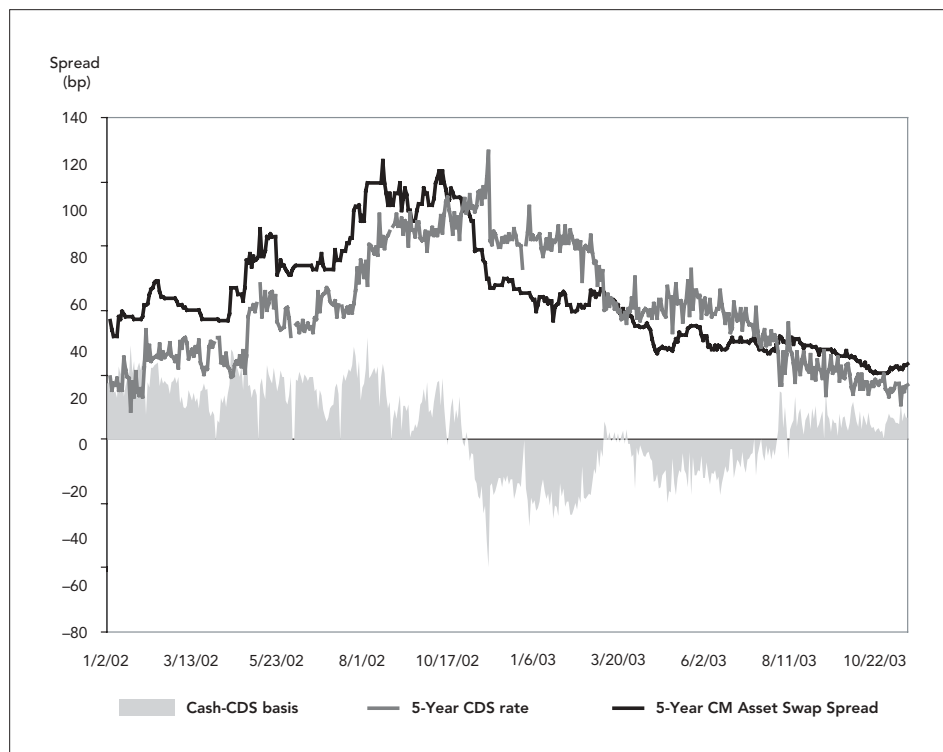
A systematic basis shift is often a precursor to changes in the cash and derivative markets. As seen in Figure 7, Merrill Lynch in the US had a long-term positive basis that swung dramatically negative in the fall of 2002 and remained there. CDS market sentiment had swung from a higher probability of default than the cash market to a lower one. It may not be possible to deduce the reason for the change in market perceptions. However, the reason for the change is much less important than the change itself and the opportunity it represents.

<sup>9</sup> See [http://www.barra.com/support/library/credit/market\\_price\\_of\\_credit\\_risk.pdf](http://www.barra.com/support/library/credit/market_price_of_credit_risk.pdf) for a detailed discussion of credit risk premia.

Figure 7

Cash-CDS basis history for  
Merrill Lynch (5-year USD)

Source: Barra Credit



## 5. Building Blocks

Credit default swaps are building blocks for an ever-growing number of instruments designed to improve risk-return characteristics or to increase liquidity in the global credit markets.

The earliest use of CDS as a building block was as a yield enhancer for vanilla bonds, resulting in compound instruments known as Credit Linked Notes (CLN). These are commonplace in Europe's capital markets. A CLN can increase return either from a rating downgrade or from a significant spread widening. The embedded CDS provides some coverage for the increase in credit risk of the bond's issuer.

CLNs are often used to disguise CDS exposure, allowing traditional asset managers to circumvent restricted mandates. The importance of this may diminish as benchmark providers recognize the advantages of CDS, leading to changes in index construction methods.

### *Index Construction*

CDS facilitate the construction of baskets and indices that trade as liquid instruments. These baskets allow managers to move quickly from long to short in credit and vice versa. There are quite a few index structures and all of them have exotic acronyms such as JECI, TRAINs, TRAC-X, CINDI, and LQD. Some baskets are based on cash bonds, though it tends to be harder to short them.

In choosing a basket, an investor's principal concerns are transaction costs, liquidity and diversification. Most baskets have guaranteed bid-offer spreads in significant size, allowing even the largest asset managers to build highly diverse credit portfolios quickly. The main benefits of using CDS to construct indices include:

- The lack of constraints due to outstanding amounts of bonds
- The ability to constrain the maximum weighting of individual names
- A broad selection of names

These are all absent in cash-based indexes. The market is signaling a preference for CDS-based indexes to manage against or total return mandates in credit.

The increase in total return mandates has led investors to take advantage of traditionally tricky areas of investment such as the crossover market. Here, typical fixed income asset managers are mandated to drop fallen angels or rising stars based on investor appetite. The Collateralized Debt Obligation (CDO) market has provided a perfect area for the total return mandated investor to rest his money (even though recent downgrades in HY CDO have dampened spirits somewhat).

Increasingly, CDOs are constructed from synthetic exposures to credit rather than the underlying cash credits, generating the Collateralized Synthetic Obligation (CSO). The CSO market adds to the liquidity and volume of the CDS market. CSOs allow an investor to take advantage of apparent mispricing of liquidity in the crossover credit market and garner increased returns with little perceived increase in risk. Further, through the use of CSOs, specifically the more standardized TRAC-X tranches, managers now have a liquid means of trading correlation<sup>10</sup>.

#### *Arbitrage Enhancements*

Without CDS, the credit risk transfer market would still be in the doldrums. CDS provide a link between risk and return in credit. They also connect the liabilities of an issuer's capital structure, as convertible arbitrage and capital structure arbitrage players can more cleanly hedge and trade their exposures.

Figure 8 illustrates how CDS have extended the possibilities for asset managers and arbitrageurs by providing more opportunities and "stronger" arbitrage capabilities, with the increased ability to short credit. This means that CDS are critical to efficient risk transfer and provide the missing link between items on the capital structure of a company.

CDS continue to grow in popularity. However, CDS must be handled with care. A complete understanding of the potential concerns must be considered before making use of them.

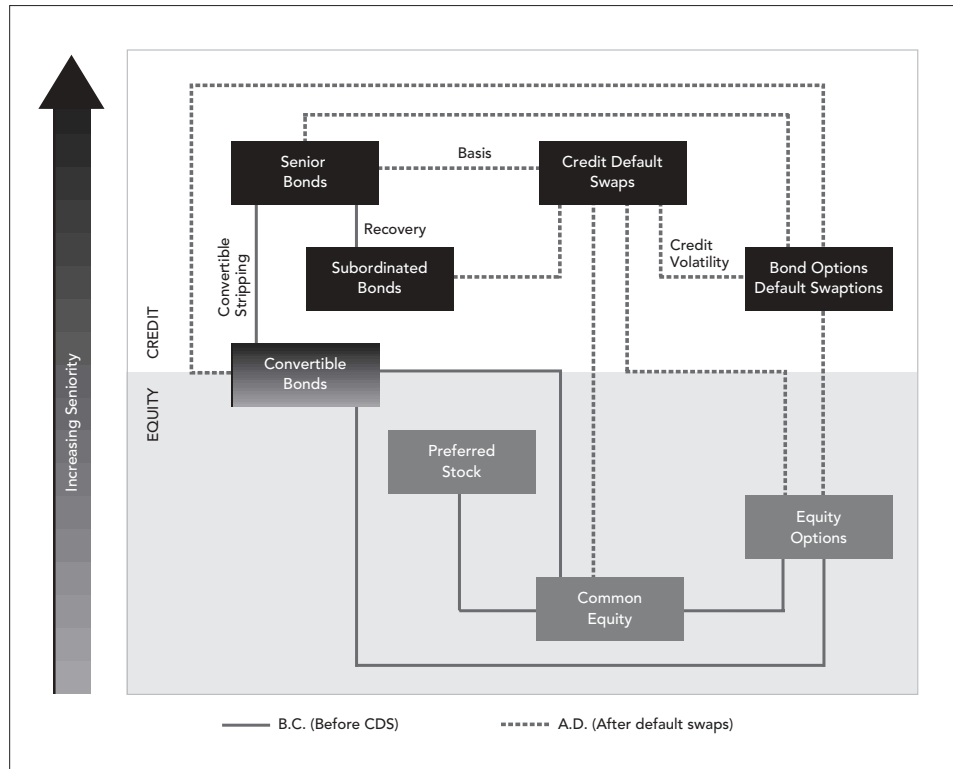
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<sup>10</sup> This is useful, for example, to a senior tranche holder who is short correlation and hopes that correlation will decrease, and to a junior tranche holder who is long correlation and hopes that correlation will increase.

Figure 8

Relative value opportunities  
before and after CDS

Source:  
Adapted from Lehman Brothers



**Health Warning**

*Caution: Using CDS in credit asset management may damage your financial health.*

CDS contain hidden traps that the user must be aware of. These can be divided into three specific areas:

- **Liquidity:** the 5-year maturity (followed by the 1-, 3- and 10-year) is the most liquid and offers a great deal of market depth. However, the market does not yet actively trade off-the-run maturities<sup>11</sup>. This means that a manager may not easily find a buyer for a 6-month-old 5-year CDS.
- **Counterparty:** generally, the quality of the counterparty to the CDS is better than the quality of the CDS reference credit. However, this does not mean that the CDS counterparty cannot default. Contagion is a vital part of the CDS equation, especially for CDS on Financials. The knock-on effect of a large financial default will resonate through all brokers and dealers. Further many counterparties require extensive collateral arrangements, which can involve extensive time and paperwork.
- **Documentation:** since ISDA released its latest “Master Agreement” many of the issues associated with settling and transacting CDS have disappeared. However, it is still possible (mainly for a European reference credit) that a technical default, such as restructuring of debt, could trigger a payout on the CDS but not on the underlying

<sup>11</sup> Although there is a growing amount of liquidity surrounding the so-called convert dates or event dates related to convertible bond arbitrage.

cash bonds. This leaves the pricing of a CDS in a difficult situation since many models do not distinguish between technical and actual defaults.

Further, the master documentation provides the protection seller with a delivery option since CDS are based on classes of debt rather than specific bonds. The delivery will inevitably consist of cheapest-to-deliver bonds (e.g. this could be the 20-year 0% convertibles as illustrated in Nomura vs. CSFB(2003)). This adds yet another level of complexity to pricing and risk control of CDS.

These issues are important but not insurmountable. Most market participants agree that the benefits of CDS far outweigh their drawbacks. A growing number of credit asset managers are using CDS in credit selection, hedging and trading.

## Summary

We have described five tactical applications of CDS to asset management. CDS add a new dimension to active trading in portfolios. They provide liquidity and allow managers to match risks to their strongest views. CDS returns come with minimal additional risk: a balanced long-short portfolio using CDS has a lower VaR than a traditional long-only cash portfolio.

CDS can be used directly in investment process or as overlays. Either way, they provide an efficient tool to reposition an existing bond portfolio—either short or long term—to reflect changing risk requirements or to take advantage of market opportunities.

Over the last few years, credit asset managers have experienced a great deal of pain. However, the losses in cash credit portfolios could have been reduced by better diversification. It is the asymmetric return distribution in cash credit that fundamentally limits the value that portfolio managers can add. A manager can escape these limits only by trading CDS based instruments.

It is critical to understand the nuances and potentials for loss before embarking on an aggressive CDS trading strategy. However, the information and opportunity provided by the CDS market is increasingly vital to an asset manager's survival.

A key insight that should be taken from this article is that credit managers need the right tools to do their jobs. A manager relegated to a traditional long-only cash portfolio faces an uphill battle.