Credit Derivative Instruments
Part I

In Chapter 1 we considered the concept of credit risk and credit ratings. Credit derivatives, introduced in 1993, isolate credit as a distinct asset class, much like how interest-rate derivatives, such as swaps and futures, isolated interest rates in the 1980s. This isolation of credit has improved the efficiency of the capital markets, because market participants can now separate the functions of credit origination and credit-risk bearing. Banks have been able to spread their credit risk exposure across the financial system, which arguably reduces systemic risk. They also improve market transparency by making it possible to price specific types of credit risk better.\(^1\) In this chapter, we consider the various unfunded credit derivative instruments.\(^2\) We will go on later to look at various applications of the instruments and their pricing and valuation. We begin with some observations on market participants and applications.

\(^1\)Some commentators have suggested that credit derivatives have reduced market transparency because it may not be possible to track where credit risk has gone after it has been removed from bank balance sheets. It has also been suggested that use of credit derivatives increases systemic risk because they spread risk and hence increase the risk of contagion. This debate is ongoing.

\(^2\)This term is explained in this chapter. The next chapter looks at funded credit derivatives.
2.1 CREDIT RISK AND CREDIT DERIVATIVES

Credit derivatives are financial contracts designed to reduce or eliminate credit risk exposure by providing insurance against losses suffered due to credit events. A payout under a credit derivative is triggered by a credit event associated with the credit derivative’s reference asset or reference entity. As banks define default in different ways, the terms under which a credit derivative is executed usually include a specification of what constitutes a credit event. The principle behind credit derivatives is straightforward. Investors desire exposure to non-default-free debt because of the higher returns this offers. However, such exposure brings with it concomitant credit risk. This can be managed with credit derivatives. Alternatively, the credit exposure itself can be taken on synthetically if, for instance, there are compelling reasons why a cash market position cannot be established. The flexibility of credit derivatives provides users with a number of advantages, and as they are over-the-counter (OTC) products they can be designed to meet specific user requirements.

In Chapter 4 we will look further at the main applications for which credit derivatives are used. Some of the most common reasons for which they are used include:

- hedging credit risk (this includes credit default risk, dynamic credit risks and changes in credit quality);
- reducing credit risk with a specific client (obligor) so that lending lines to this client are freed up for further business;
- diversifying investment options.

We focus on credit derivatives as instruments that may be used to manage risk exposure inherent in a corporate or non-AAA sovereign bond portfolio, and to manage the credit risk of commercial bank loan books. The intense competition amongst commercial banks, combined with rapid disintermediation, has meant that banks have been forced to evaluate their lending policy with a view to improving profitability and return on capital. The use of credit derivatives assists banks with restructuring their businesses, because they allow banks to repackage and parcel out credit risk while retaining assets on balance sheet (when required) and thus maintain client relationships. As the instruments isolate credit risk from the underlying loan or bond and transfer them to another entity, it becomes possible to separate the ownership and management of credit risk from the other features of ownership associated with the assets in question, such as customer franchise. This means that illiquid assets such as bank loans, and illiquid bonds, can have their...
credit risk exposures transferred; the bank owning the assets can protect against credit loss even if it cannot transfer the assets themselves.³

The same principles carry over to the credit risk exposures of portfolio managers. For fixed-income portfolio managers, some of the advantages of using credit derivatives include the following:

- They can be tailor-made to meet the specific requirements of the entity buying the risk protection, as opposed to the liquidity or term of the underlying reference asset.
- They can be ‘sold short’ without risk of a liquidity or delivery squeeze, as it is a specific credit risk that is being traded. In the cash market it is not possible to ‘sell short’ a bank loan, for example, but a credit derivative can be used to establish synthetically the economic effect of such a position.
- As they theoretically isolate credit risk from other factors such as client relationships and interest-rate risk, credit derivatives introduce a formal pricing mechanism to price credit issues only. This means a market is available in credit only, allowing more efficient pricing, and it becomes possible to model a term structure of credit rates.
- They are off-balance-sheet instruments,⁴ and as such incorporate a certain flexibility and leverage, exactly like other financial derivatives. For instance, bank loans are not particularly attractive investments for certain investors because of the administration required in managing and servicing a loan portfolio. However, an exposure to bank loans and their associated return can be achieved using credit derivatives while simultaneously avoiding the administrative costs of actually owning the assets. Hence credit derivatives allow investors access to specific credits while allowing banks access to further distribution for bank loan credit risk.

Thus credit derivatives can be an important instrument for bond portfolio managers, as well as commercial banks, who wish to increase the liquidity of their portfolios, gain from the relative value arising from credit pricing anomalies, and enhance portfolio returns.

³As we note, the bank may not wish to transfer the assets, to maintain client relationships. It can also transfer the assets in a securitization transaction, which can also bring in funding (cash securitization).

⁴When credit derivatives are embedded in certain fixed-income products, such as structured notes and credit-linked notes, they are then off-balance-sheet but part of a structure that will have on-balance-sheet elements. Funded credit derivatives are on-balance-sheet.
2.1.1 Credit Events

The occurrence of a specified credit event will trigger the termination of the credit derivative contract, and transfer of the default payment from the protection seller to the protection buyer. The following may be specified as credit events in the legal documentation between counterparties:

- a downgrade in S&P and/or Moody’s credit rating below a specified minimum level;
- financial or debt restructuring, for example occasioned under administration or as required under US bankruptcy protection;
- bankruptcy or insolvency of the reference asset obligor;
- default on payment obligations such as bond coupon and continued non-payment after a specified time period;
- technical default, for example the non-payment of interest or coupon when it falls due;
- a change in credit spread payable by the obligor above a specified maximum level.

The International Swaps and Derivatives Association (ISDA) has compiled standard documentation governing the legal treatment of credit derivative contracts. The standardization of legal documentation promoted the ease of execution and was a factor in the rapid growth of the market. The 1999 ISDA credit default swap documentation specified bankruptcy, failure to pay, obligation default, debt moratorium and restructuring to be credit events. Note that it does not specify a rating downgrade to be a credit event.\(^5\)

A summary of the credit events as set forth in the ISDA definitions is given in Appendix 2.1.

The precise definition of ‘restructuring’ is open to debate, and has resulted in legal disputes between protection buyers and sellers. Prior to issuing its 1999 definitions, ISDA had specified restructuring as an event or events that resulted in making the terms of the reference obligation ‘materially less favourable’ to the creditor (or protection seller) from an economic perspective. This definition is open to more than one interpretation, and caused controversy when determining if a credit event had occurred. The 2001 definitions specified more precise conditions, including any action that resulted in a reduction in the amount of principal. In the European market, restructuring is generally retained as a credit event in contract documentation, but in the US market it is less common to see it included. Instead, US contract documentation tends to include as a credit event a form of modified restructuring, the impact of

\(^5\)The ISDA definitions from 1999, the restructuring supplement from 2001 and the 2003 and 2009 definitions are available at [www.ISDA.org](http://www.ISDA.org).
which is to limit the options available to the protection buyer as to the type of assets it could deliver in a physically settled contract. Further clarification is provided in the 2003 ISDA definitions.6

2.2 CREDIT DERIVATIVE INSTRUMENTS

Before looking at the main types of credit derivative, we consider some generic details of all credit derivatives.

2.2.1 Introduction

Credit derivative instruments enable participants in the financial market to trade in credit as an asset, as they isolate and transfer credit risk. They also enable the market to separate funding considerations from credit risk. A number of instruments come under the category of credit derivatives, and in this and the next chapter we consider the most commonly encountered of these. Irrespective of the particular instrument under consideration, all credit derivatives can be described by the following characteristics:

- the reference entity, which is the asset or name on which credit protection is being bought and sold;7
- the credit event (or events) that indicate that the reference entity is experiencing or about to experience financial difficulty and act as trigger events for termination of and payments under the credit derivative contract;

6The debate on restructuring as a credit event arose out of a number of events, notably the case involving a corporate entity, Conseco, in the USA in 2000. It concerned the delivery option afforded the protection buyer in a physically settled credit derivative, and the cheapest-to-deliver. Under physical settlement, the protection buyer may deliver any senior debt obligation of the reference entity. When the triggering credit event is default, all senior obligations of the reference entity generally trade at roughly equal levels, mainly because of the expected recovery rate in a bankruptcy proceeding. However, where the triggering event is restructuring, short-dated bank debt, which has been restructured to give lending banks better pricing and collateral, will trade at a significant premium to longer-dated bonds. The pricing differential between the short-dated, restructured obligations and the longer-dated bonds results in the delivery option held by the protection buyer carrying significant value, as the protection buyer will deliver the cheapest-to-deliver obligation. Under the modified restructuring definition, where the triggering event is restructuring, the delivered obligation cannot have a maturity that is longer than the original maturity date of the credit derivative contract, or more than 30 months after the original maturity date.

7Note that a contract may be written in relation to a reference entity, which is the corporate or sovereign name, or a reference obligation, which is a specific debt obligation of a specific reference entity. Other terms for reference obligation are reference asset and reference credit. We will use these latter terms interchangeably in the book.
the settlement mechanism for the contract, whether cash-settled or physically settled; 
(under physical settlement) the deliverable obligation that the protection buyer delivers to the protection seller on the occurrence of a trigger event.

2.2.2 Funded and Unfunded Contracts

Credit derivatives are grouped into funded and unfunded instruments. In a funded credit derivative, typified by a credit-linked note (CLN), the investor in the note is the credit-protection seller and is making an upfront payment to the protection buyer when it buys the note. This upfront payment is the price of the CLN. Thus, the protection buyer is the issuer of the note. If no credit event occurs during the life of the note, the redemption value (par) of the note is paid to the investor on maturity. If a credit event does occur, then on maturity a value less than par will be paid out to the investor. This value will be reduced by the nominal value of the reference asset that the CLN is linked to. The exact process will differ according to whether cash settlement or physical settlement has been specified for the note. We will consider this later.

In an unfunded credit derivative, typified by a credit default swap, the protection seller does not make an upfront payment to the protection buyer. Thus the main difference between funded and unfunded contracts is that in a funded contract, the insurance protection payment is made to the protection buyer at the start of the transaction; if there is no credit event, the payment is returned to the protection seller. In an unfunded contract, the protection payment is made on termination of the contract on occurrence of a triggering credit event. Otherwise it is not made at all. When entering into a funded contract transaction, therefore, the protection seller must find the funds at the start of the trade.

Compared to cash market bonds and loans, unfunded credit derivatives isolate and transfer credit risk. In other words, their value reflects (in theory) only the credit quality of the reference entity. Compare this to a fixed-coupon corporate bond, the value of which is a function of both interest-rate risk and credit quality, and whose return to the investor will depend on the investor’s funding costs. The interest-rate risk

8Funding refers to the cost of funds of the investor. For an AA-rated bank it should be Libid. For a traditional investor such as a pension fund it is more problematic, as the funds are, in theory, invested directly with the pension fund and so acquired ‘free’. However, for economic purposes such funds are valued at what rate they could be invested in the money markets. For other investors it will be Libor plus a spread, except for very highly rated market participants, such as the World Bank, which can fund at sub-Libor.
element of the bond can be removed by combining the bond with an interest-rate swap, to create an asset swap. An asset swap removes the interest-rate risk of the bond, leaving only the credit quality and the funding aspects of the bond. With an unfunded credit derivative the funding aspect is removed as well, leaving only the credit element. This is because no upfront payment is required, resulting in no funding risk to the protection seller. The protection seller, who is the investor, receives a return that is linked only to the credit quality of the reference entity.

We now consider the individual credit derivative instruments in turn.

### 2.3 CREDIT DEFAULT SWAPS

We describe first the credit default swap (CDS), the most commonly-traded credit derivative instrument.

#### 2.3.1 Structure

The most common credit derivative is the credit default swap, credit swap or default swap. This is a bilateral contract that provides protection on the par value of a specified reference asset, with a protection buyer that pays a periodic fixed fee or a one-off premium to a protection seller, in return for which the seller will make a payment on the occurrence of a specified credit event.

The fee is usually quoted as a basis point multiplier of the nominal value, and is generally paid quarterly in arrears. The swap can refer to a single asset, known as the reference asset or underlying asset, a basket of assets, or a reference entity. The default payment can be paid in whatever way suits the protection buyer or both counterparties. For example, it may be linked to the change in price of the reference asset or another specified asset, it may be fixed at a pre-determined recovery rate, or it may be in the form of actual delivery of the reference asset at a specified price. The basic structure is illustrated in Figure 2.1.

The CDS enables one party to transfer its credit risk exposure to another party. Banks may use CDS to trade sovereign and corporate credit spreads without trading the actual assets themselves; for example, someone who has gone long on a CDS (the protection buyer) will gain if the reference asset obligor suffers a rating downgrade or defaults, and can sell the CDS at a profit if he can find a buyer.

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The author prefers the first term, but the other two are observed also.
counterparty.\textsuperscript{10} This is because the cost of protection on the reference asset will have increased as a result of the credit event. The original buyer of the CDS need never have owned a bond issued by the reference asset obligor.

The maturity of the CDS does not have to match the maturity of the reference asset, and often does not. On occurrence of a credit event, the swap contract is terminated and a settlement payment made by the protection seller or guarantor to the protection buyer. This termination value is calculated at the time of the credit event, and the exact procedure that is followed to calculate the termination value will depend on the settlement terms specified in the contract. This will be either cash settlement or physical settlement. We look at these options later.

For illustrative purposes, Figure 2.2(a) shows investment-grade credit default swap levels during 2001 and 2002 for US dollar and Euro reference entities (average levels taken). Figures 2.2(b) and (c) show the picture for 2010–2012 for US and European investment-grade banks (average levels).

A sample CDS term sheet is given in Appendix 2.2.

\textsuperscript{10}Be careful with the terminology here. To ‘go long’ on an instrument generally is to purchase it. In the cash market, going long on the bond means one is buying the bond and so receiving coupon; the buyer has therefore taken on credit risk exposure to the issuer. In a CDS, going long is to buy the swap, but the buyer is purchasing protection and therefore paying premium; the buyer has no credit exposure on the name and has in effect ‘gone short’ on the reference name (the equivalent of shorting a bond in the cash market and paying coupon). So buying a credit default swap is frequently referred to in the market as ‘shorting’ the reference entity. To avoid confusion, it is always best to speak of either ‘buying protection’ or ‘selling protection’.
EXAMPLE 2.1: CREDIT DEFAULT SWAP EXAMPLE

XYZ plc credit spreads are currently trading at 120 bps over government for 5-year maturities and 195 bps over for 10-year maturities. A portfolio manager hedges a $10 million holding of 10-year paper by purchasing the following credit default swap, written on the 5-year bond. This hedge protects for the first 5 years of the holding, and in the event of XYZ’s credit spread widening will increase in value and may be sold on before expiry at profit. The 10-year bond holding also earns 75 bps over the shorter-term paper for the portfolio manager.

Term 5 years

<table>
<thead>
<tr>
<th>Reference credit</th>
<th>XYZ plc 5-year bond</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit event</td>
<td>The business day following occurrence of specified credit event</td>
</tr>
<tr>
<td>Default payment</td>
<td>Nominal value of bond $\times [100 – \text{price of bond after credit event}]$</td>
</tr>
<tr>
<td>Swap premium</td>
<td>3.35%</td>
</tr>
</tbody>
</table>

Assume now that midway into the life of the swap there is a technical default on the XYZ plc 5-year bond, such that its price now stands at $28. Under the terms of the swap the protection buyer delivers the bond to the seller, who pays out $7.2 million to the buyer.

2.3.2 Basket Default Swaps

The simplest CDS is the single-name credit default swap, which references one reference entity or the specific asset of an entity. A basket default swap is linked to a group of reference entities. There may be five, ten, twenty or more reference names in the basket. While it is possible to buy a CDS that covers all the named assets in the event of default, this is rare, and the most common basket CDS provides protection on a selection of the names in the basket only. For instance, if there are $q$ names in the basket, the basket CDS may be one of the following:

- first-to-default, which provides credit protection on the first default in the basket only;
- second-to-default, which provides credit protection on the second default in the basket (but not the first);
- $n$th-to-default, which provides protection on the first $n$ (out of $q$) defaults in the basket;
- last $p$th-to-default, which provides protection on the last $p$ (out of $q$) defaults.
Basket default swaps are the main building blocks for other types of more complex structured product such as synthetic collateralized debt obligations. These often feature a portfolio of reference assets, all of which are the reference names in one basket CDS.

2.3.3 Unwinding a CDS Position

The CDS should be viewed primarily as an investment instrument. This is subtly different from viewing it as a risk management or risk mitigation tool. The terminology used in the market is a throwback to the days when CDS was considered the same way as an insurance contract. Hence dealing in a CDS is known as buying or selling protection. From an investor viewpoint of course one is either buying a product (to ‘go long’) or selling a product (to ‘go short’). So ‘buying a CDS’ is often used to refer to buying protection, which is equivalent to going short the asset. Table 2.1 makes the meanings clear.

The best approach to avoid any confusion is to always speak in terms of buying or selling protection, rather than simply buying or selling or going long or short.

A CDS is better viewed as a credit asset in its own right because its value moves in line with credit spreads generally and it is marked-to-market in a bank’s trading book. This is unlike an insurance contract and more like a corporate bond floating-rate note (FRN). The premium in a CDS contract, like the spread over Libor in an FRN coupon payment, is fixed at trade inception; however, in the secondary market this premium will change as the credit risk perception of the reference asset changes. In an FRN the coupon spread does not change; rather, the actual price of the bond in the secondary market rises or falls as credit perception improves or worsens.

In the cash bond market there is no issue with ‘unwinding’ a position. If one is long a bond, one will simply sell it. A short position is

<table>
<thead>
<tr>
<th>TABLE 2.1 Comparing Cash and Synthetic Markets</th>
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<tbody>
<tr>
<td><strong>CDS Market</strong></td>
</tr>
<tr>
<td>Buying protection</td>
</tr>
<tr>
<td>Selling protection</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Bond Market</strong></th>
<th><strong>Bond Cashflow</strong></th>
<th><strong>Investment Position</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Buying the bond</td>
<td>Receive fixed or floating coupon</td>
<td>Long the cash market</td>
</tr>
<tr>
<td>Selling the bond</td>
<td>Pay fixed or floating coupon</td>
<td>Short the cash asset</td>
</tr>
</tbody>
</table>
flattened out by buying it back. For a CDS, the unwind can be carried out in one of three ways:

- Entering into an offsetting CDS position: a bought/sold protection position is effectively closed out buy entering into a new sold/bought protection CDS position of matching tenor. This crystallizes the mark-to-market profit/loss on the original trade, but note that both trades remain live until maturity on occurrence of a credit event. If the second trade has been entered into with a different counterparty, then the bank will have counterparty exposure in both cases; however, if a credit event does occur, the bank will have counterparty exposure with regard to the bought protection position. This type of offset does not truly unwind the original position.

- Terminate the CDS: the trader will cancel the position with the existing counterparty. The present value of the contract, based on its current mark-to-market value vis-à-vis the original trade price, is paid or received by the trader. This closes out the position and the contract, which terminates.

- Novation or assignment: the trader hands the CDS contract to a third-party, which takes over the position of the trader. The trader will pay or receive the current mark-to-market value of the contract, which continues in existence.

Only termination of a contract actually unwinds it; as we observe above, the other two options result in the exposure being retained, albeit in hedged form or residing with another entity.

2.4 ASSET SWAPS

Asset swaps pre-date the introduction of ‘credit derivatives’ in the market but have subsequently been viewed as part of it. They are really interest-rate swaps (IRS) combined with a cash bond.

2.4.1 Description

An asset swap is a combination of an interest-rate swap and a bond, and is used to alter the cash flow profile of a bond. The asset swap market is an important information point for the credit derivative market since it explicitly sets out the price of credit as a spread over Libor. Pricing a bond by reference to Libor is commonly used and the spread over Libor is a measure of credit risk in the cash flow of the underlying

For a background on interest-rate swaps, the reader can look up any number of sources, for instance Das (1994), Kolb (1999), Decovny (1999), Choudhry (2001), and so on.
bond. This is because Libor itself — the rate at which banks lend cash to each other in the inter-bank market — is viewed as representing the credit risk of banks. As such it can be viewed as having a generic A-credit rating. The spread over Libor therefore represents additional credit risk over and above that of bank risk. The main reason for entering into an asset swap is to enable the investor to take exposure to the credit quality of a bond with (in theory) zero interest rate risk.

Asset swaps are used to transform the cash flow characteristics of a bond, either fixed-rate into floating-rate or floating-rate into fixed-rate. This enables investors to hedge the currency, credit and interest rate risks to create investments with more suitable cash flow characteristics for themselves. An asset swap package involves transactions in which the investor acquires a bond position and then enters into an interest rate swap with the bank that sold him the bond. If it is a fixed-rate bond, the investor will pay fixed and receive floating on the interest-rate swap. This transforms the fixed coupon of the bond into a Libor-based floating coupon. The generic structure is shown in Figure 2.3.

In an asset swap the asset swap buyer takes on the credit risk of the bond. If the bond defaults, the asset swap buyer has to continue paying on the swap — which can no longer be funded with the coupon from the bond — or the swap can be closed out at market value. The asset swap buyer also loses the par redemption of the bond, receiving whatever recovery rate the bond issuer pays. As a result the buyer has a default contingent exposure to the mark-to-market on the swap and to the redemption on the asset. The buyer is exposed to the loss of the coupons and redemption on the bond — the difference between the bond price and recovery value. In economic terms the purpose of the asset swap spread is to compensate the asset swap buyer for taking these risks.

![Asset Swap Diagram](image-url)
2.4.2 Illustration Using Bloomberg

We can illustrate the asset swap spread for a credit-risky corporate bond using Bloomberg screens. In Figure 2.4(a) we show the 7.5% 2016 bond issued by British Telecom plc, a UK telecoms company, in January 2001. The bond is denominated in GBP, and is a form of ‘credit-linked note’, because its coupon increases by 25 basis points each time the issuer credit rating is downgraded by 1 notch. On issue the bond was rated A-/A3, as at April 2012 it was rated Baa2/BBB. Figure 2.4(a) is Bloomberg’s YA page for yield analysis, which is obtained by typing:

Britel 7.5 016 < corp > ya < go >

and shows the bond as at 26 April 2012, at an offered price of 122.21, which represents a gross redemption yield of 3.22%. Combining this with an interest-rate swap to create an asset swap will convert the bond’s fixed coupon to a floating-rate coupon for the bondholder, who pays fixed and receives floating in the associated interest-rate swap.

To see what the return spread for this bond would be in an asset swap, we call up screen ASW. This is shown in Figure 2.4(b) and we see that the asset swap spread for the bond is 181.4 basis points. The bond price on the screen is user-input at 122.21 as before.

2.5 TOTAL RETURN SWAPS

A total return swap (TRS), sometimes known as a total rate of return swap or TR swap, is an agreement between two parties that exchanges the total return from a financial asset between them. This is designed to transfer the credit risk from one party to the other. It is one of the principal instruments used by banks and other financial institutions to manage their credit risk exposure, and as such is a credit derivative. One definition of a TRS is given in Francis et al. (1999), which states that a TRS is a swap agreement in which the total return of a bank loan or credit-sensitive security is exchanged for some other cash flow, usually tied to Libor or some other loan or credit-sensitive security.

The TRS trade itself can be to any maturity term — that is, it need not match the maturity of the underlying security. In a TRS, the total return from the underlying asset is paid over to the counterparty in return for a fixed or floating cash flow. This makes it slightly different to other credit derivatives, as the payments between counterparties to a TRS are connected to changes in the market value of the underlying asset, as well as changes resulting from the occurrence of a credit event. So, in other words, TRS cash flows are not solely linked to the occurrence of a credit event; in a TRS the interest-rate risk is also transferred. The transaction enables the complete cash flows of a bond to be received without the
FIGURE 2.4  (a) Bloomberg screen YA for British Telecom 7.5% 2016 bond, as at 26 April 2012. (b) Bloomberg screen ASW for British Telecom 7.5% 2016 bond as at April 2012. © Bloomberg L.P., reproduced with permission. Visit: www.bloomberg.com
recipient actually buying the bond, which makes it a synthetic bond product and therefore a credit derivative. An investor may wish to receive such cash flows synthetically for tax, accounting, regulatory capital, external audit or legal reasons. On the other hand, it may be easier to source the reference asset synthetically — via the TRS — than in the cash market. This happens sometimes with illiquid bonds.

In some versions of a TRS the actual underlying asset is actually sold to the counterparty, with a corresponding swap transaction agreed alongside; in other versions there is no physical change of ownership of the underlying asset. The first would make TRS akin to a synthetic repo transaction. This is discussed in Choudhry (2004).

Figure 2.5 illustrates a generic TR swap. The two counterparties are labelled as banks, but the party termed ‘Bank A’ can be another financial institution, including cash-rich fixed-income portfolio managers such as insurance companies, and hedge funds. In the figure, Bank A has contracted to pay the ‘total return’ on a specified reference asset, while simultaneously receiving a Libor-based return from Bank B. The reference or underlying asset can be a bank loan such as a corporate loan or a sovereign or corporate bond. The total return payments from Bank A include the interest payments on the underlying loan, as well as any appreciation in the market value of the asset. Bank B will pay the Libor-based return; it will also pay any difference if there is depreciation in the price of the asset. The economic effect is as if Bank B owned the underlying asset, as such TR swaps are synthetic loans or securities. A significant feature is that Bank A will usually hold the underlying asset on its balance sheet, so that if this asset was originally on Bank B’s balance sheet, this is a means by which the latter can have the asset removed from its balance sheet for the term of the TR swap.\footnote{Although it is common for the receiver of the Libor-based payments to have the reference asset on its balance sheet, this is not always the case.}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{fig2_5.png}
\caption{Total return swap.}
\end{figure}
If we assume Bank A has access to Libor funding, it will receive a spread on this from Bank B. Under the terms of the swap, Bank B will pay the difference between the initial market value and any depreciation, so it is sometimes termed the ‘guarantor’ while Bank A is the ‘beneficiary’.

The total return on the underlying asset is the interest payments and any change in the market value if there is capital appreciation. The value of an appreciation may be cash-settled, or alternatively there may be physical delivery of the reference asset on maturity of the swap, in return for a payment of the initial asset value by the total return ‘receiver’. The maturity of the TR swap need not be identical to that of the reference asset, and in fact it is rare for it to be so.

The swap element of the trade will usually pay on a quarterly or semi-annual basis, with the underlying asset being re-valued or marked-to-market on the re-fixing dates. The asset price is usually obtained from an independent third-party source, such as Bloomberg or Reuters, or as the average of a range of market quotes. If the obligor of the reference asset defaults, the swap may be terminated immediately with a net present value payment changing hands according to what this value is, or it may be continued with each party making appreciation or depreciation payments as appropriate. This second option is only available if there is a market for the asset, which is unlikely in the case of a bank loan. If the swap is terminated, each counterparty will be liable to the other for accrued interest plus any appreciation or depreciation of the asset. Commonly under the terms of the trade, the guarantor bank has the option to purchase the underlying asset from the beneficiary bank, and then deal directly with the loan defaulter.

The TRS can also be traded as a funded credit derivative, and we look at this in Chapter 3.

Banks have employed a number of methods to price credit derivatives and TR swaps. Essentially, the pricing of credit derivatives is linked to that of other instruments; however, the main difference between credit derivatives and other off-balance-sheet products such as equity, currency or bond derivatives is that the latter can be priced and hedged with reference to the underlying asset, which can be problematic when applied to credit derivatives. Credit product pricing uses statistical data on likelihood of default, probability of payout, level of risk tolerance and a pricing model. With a TR swap, the basic concept is that one party ‘funds’ an underlying asset and transfers the total return of the asset to another party in return for a (usually) floating return that is a spread to Libor. This spread is a function of:

- the credit rating of the swap counterparty;
- the amount and value of the reference asset;
- the credit quality of the reference asset;
• the funding costs of the beneficiary bank;
• any required profit margin;
• the capital charge associated with the TR swap.

The TR swap counterparties must consider a number of risk factors associated with the transaction, which include:

• the TR beneficiary may default while the reference asset has declined in value;
• the possibility that the reference asset obligor defaults, followed by default of the TR swap receiver before payment of the depreciation has been made to the payer or ‘provider’.

The first risk measure is a function of the probability of default by the TR swap receiver and the market volatility of the reference asset, while the second risk is related to the joint probability of default of both factors, as well as the recovery probability of the asset.

EXAMPLE 2.2: THE TRS AS A FUNDING INSTRUMENT

TRS contracts are used in a variety of applications by banks, other financial institutions and corporates. As we noted in the main body of the text, they can be written as pure exchanges of cash flow differences - rather like an interest-rate swap - or the reference asset can be actually transferred to the total return payer, which would then make the TRS akin to a synthetic repo contract.  

We describe here the use of TRS as a funding instrument, in other words as a substitute for a repo trade. Consider a financial institution such as a regulated broker-dealer that has a portfolio of assets on its balance sheet that it needs to obtain funding for. These assets are investment-grade rated structured finance bonds such as credit card ABS, residential MBS and CDO notes, and investment-grade rated convertible bonds. In the repo

13The economic effect may be the same, but they are considered different instruments. TRS actually takes the assets off the balance sheet, whereas the tax and accounting authorities treat repo as if the assets remain on the balance sheet. In addition, a TRS trade is conducted under the ISDA standard legal agreement, while repo is conducted under the Global Master Repurchase Agreement (GMRA) standard repo legal agreement. It is these differences that, under certain circumstances, make the TRS funding route a more favourable one.

14There may be legal, administrative, operational or other reasons why a repo trade is not entered into to begin with. In these cases, provided that a counterparty can be found and the funding rate is not prohibitive, a TRS may be just as suitable.
market, it is able to fund these at Libor plus 6 basis points. That is, it can repo the bonds out to a bank counterparty, and will pay Libor plus 6 bps on the funds it receives.

Assume that for operational reasons the bank can no longer fund these assets using repo. It can fund them using a basket TRS instead, providing a suitable counterparty can be found. Under this contract, the portfolio of assets is swapped out to the TRS counterparty, and cash received from the counterparty. The assets are therefore sold off the balance sheet to the counterparty, an investment bank. The investment bank will need to fund these itself, it may have a line of credit from a parent bank or it may swap the bonds out itself. The funding rate it charges the broker-dealer will depend on what rate it can fund the assets itself. Assume this is Libor plus 12 bps – the higher rate reflects the lower liquidity in the basket TRS market for non-vanilla bonds compared to repo. The broker-dealer enters into a 3-month TRS with the investment bank counterparty, with a one-week interest rate reset. This means at each one-week interval, the basket is revalued. The difference in value from the last valuation is paid (if higher) or received (if lower) by the investment bank to the broker-dealer; in return the broker-dealer also pays one-week interest on the funds it received at the start of the trade. In practice these two cash flows are netted off and only one payment changes hands, just like in an interest-rate swap.

The terms of the trade are shown below:

<table>
<thead>
<tr>
<th>Trade date</th>
<th>22 December 2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value date</td>
<td>24 December 2003</td>
</tr>
<tr>
<td>Maturity date</td>
<td>24 March 2004</td>
</tr>
<tr>
<td>Rate reset</td>
<td>31 December 2003</td>
</tr>
<tr>
<td>Interest rate</td>
<td>1.19875% (this is one-week USD Libor fix of 1.07875 plus 12 bps)</td>
</tr>
</tbody>
</table>

The swap is a 3-month TRS with one-week reset, which means that the swap can be broken at one-week intervals and bonds in the reference basket can be returned, added to or substituted. Assume that the portfolio basket contains five bonds, all US dollar denominated.

Assume these are all investment-grade rated credit card ABS bonds with prices available on Bloomberg. The combined market value of the entire portfolio is taken to be USD 151,080,951.00.

At the start of the trade, the five bonds are swapped out to the investment bank, who pays the portfolio value for them. On the first reset date, the portfolio is revalued and the following calculations confirmed:

<table>
<thead>
<tr>
<th>Old portfolio value USD</th>
<th>151,080,951.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest rate</td>
<td>1.19875%</td>
</tr>
<tr>
<td>Interest payable by broker-dealer</td>
<td>USD 35,215.50</td>
</tr>
</tbody>
</table>
New portfolio value USD 152,156,228.00
Portfolio performance + 1,075,277
Net payment: broker-dealer receives USD 1,040,061.50

The rate is reset for value 31 December 2003 for the period to 7 January 2004. The rate is 12 bps over the one-week USD Libor fix on 29 December 2003, which is 1.15750 + 0.12 or 1.2775%. This interest rate is payable on the new loan amount of USD 152,156,228.00.

### 2.6 INDEX CDS: THE ITRAXX INDEX

The iTraxx series is a set of credit indices that enable market participants to trade funded and unfunded credit derivatives linked to a credit benchmark. There are a number of different indices covering different sectors, for example iTraxx Europe, iTraxx Japan, iTraxx Korea, and so on. The equivalent index in the North American market is known as CD-X. The iTraxx exhibits relatively high liquidity and for this reason is viewed as a credit benchmark, and its bid-offer spread is very narrow at 1–2 basis points. This contrasts with spreads generally between 10 and 30 basis points for single-name CDS contracts. Because of its liquidity and benchmark status, the iTraxx is increasingly viewed as a leading indicator of the credit market overall, and the CDS index basis is important in this regard as an indicator of relative value.

The iTraxx series is a basket of reference credits that is reviewed on a regular basis. For example, the iTraxx Europe index consists of 125 corporate reference names, so that each name represents 0.8% of the basket. Figure 2.6 shows the an extract from a Bloomberg screen for the June 2011 iTraxx Europe index, with the first page of reference names. Figure 2.7 shows additional terms for this index contract.15

The index rolls every 6 months (in March and September), when reference names are reviewed and the premium is set. Hence there is a rolling series of contracts with the ‘front contract’ being the most recent. There are two standard maturities, which are 5.25 years and 10.25 years. Figure 2.8 shows a list of iTraxx indices as at June 2006; the second-listed contract is the current one, with a June 2011 maturity and a premium of 40 basis points (see Figure 2.6). All existing indices can be traded although the most liquid index is the current one. Reference names are all investment-grade rated and are the highest traded names by CDS volume in the past 6 months.

A bank buying protection in EUR 10 million notional of the index has in effect bought protection on EUR 80,000 each of 125 single-name

15The screens for the iTraxx are found by typing ITRX CDS <Corp> <go>.
FIGURE 2.6  List of iTraxx indices as shown on Bloomberg, 19 June 2006.

FIGURE 2.7  Additional terms for June 2011 iTraxx Europe index.
CDS. The premium payable on a CDS written on the index is set at the start of the contract and remains fixed for its entire term; the premium is paid quarterly in arrears in the same way as a single-name CDS. The premium remains fixed but of course the market value fluctuates on a daily basis. This works as follows:

- The constituents of the index are set about one week before it goes live, with the fixed premium being set 2 days before. The premium is calculated as an average of all the premiums payable on the reference names making up the index. In June 2006 the current 5-year index for Europe was the iTraxx Europe June 2011 contract.

- After the roll date, a trade in the iTraxx is entered into at the current market price.

- Because this is different to the fixed premium, an up-front payment is made between the protection seller and protection buyer, which is the difference between the present values of the fixed premium and the current market premium.

So for example, on 21 June 2006 the market price of the June 2011 iTraxx Europe was 34 basis points. An investor selling protection on this contract would receive 40 basis points quarterly in arrears for the
5 years from June 2006 to June 2011. The difference is made up front: the investor receives 40 basis points although the market level at time of trade is 34 basis points. Therefore, the protection seller makes a one-off payment of the difference between the two values, discounted. The present value of the contract is calculated assuming a flat spread curve and a 40% recovery rate. We can use Bloomberg screen CDSW to work this out, and Figure 2.9 shows such a calculation using this screen. This shows a trade for EUR 10 million notional of the current iTraxx Europe index on 19 June 2006. We see the deal spread is 40 basis points; we enter the current market price of 34 basis points, and assume a flat credit term structure.

From Figure 2.9 we see that the one-off payment for this deal is EUR 27,280. The protection seller, who will receive 40 basis points quarterly in arrears for the life of the deal, pays this amount at trade inception to the protection buyer.\(^\text{16}\)

If a credit event occurs on one of the reference entities in the iTraxx, the contract is physically settled, for that name, for 0.8% of the notional

\(^{16}\)The one-off payment reflects the difference between the prevailing market rate and the fixed rate. If the market rate was above 40 basis points at the time of this trade, the protection buyer would pay the protection seller the one-off payment reflecting this difference.
value of the contract. This is similar to the way that a single-name CDS would be settled. Unlike a single-name CDS, the contract continues to maturity at a reduced notional amount. Note that European iTraxx indices trade under modified-modified restructuring (MMR) terms, which is prevalent in the European market. Under MMR, a debt restructuring is named as a credit event.17

2.7 SETTLEMENT

Credit derivative settlement can follow one of two routes, specified at deal inception. We consider these here.

With all credit derivatives, upon occurrence of a credit event, a credit event notice must be submitted. Typically, the notice must be supported by information posted on public news systems such as Bloomberg or Reuters. When used as part of a structured product, the terms of the deal may state that a credit event must be verified by a third-party verification agent. Upon verification, the contract will be settled in one of two ways: cash settlement or physical settlement.

A report from the British Bankers’ Association (BBA) suggested that between 75% and 85% of credit derivatives written in 2002 were physically settled, while about 10%—20% were cash settled. In 2010, this position had more or less reversed. About 5% of contracts were settled under the fixed amount approach, under which the protection seller delivers a pre-specified amount to the protection buyer ahead of the determination of the reference asset’s recovery value. However, as the fixed amount approach is essentially cash settlement, we will consider it as such and prefer the more technical term for it noted below.

2.7.1 Contract Settlement Options

Credit derivatives have a given maturity, but will terminate early if a credit event occurs. On the occurrence of a credit event, the swap contract is terminated and a settlement payment is made by the protection seller or guarantor to the protection buyer. This termination value is calculated at the time of the credit event, and the procedure that is followed to calculate the termination value will depend on the settlement terms specified in the contract. Credit derivatives specify physical or cash settlement. In physical settlement, the protection buyer transfers to the protection seller the deliverable obligation (usually the reference asset or assets), with the total principal outstanding equal to the

17This contrasts with the North American market, which includes the CDX family of indices, where CDSs trade under no-restructuring terms; this describes only bankruptcy and liquidation as credit events.
nominal specified in the default swap contract. The protection seller simultaneously pays to the buyer 100% of the nominal. In cash settlement, the protection seller hands to the buyer the difference between the nominal amount of the default swap and the final value for the same nominal amount of the reference asset. This final value is usually determined by means of a poll of dealer banks. This final value is in theory the recovery value of the asset; however as the recovery process can take some time, often the reference asset market value at time of default is taken and this amount used in calculating the final settlement amount paid to the protection buyer.

The settlement mechanisms are shown in Figure 2.10 and follow the following process:

- **Cash settlement**: the contract may specify a pre-determined payout value on occurrence of a credit event. This may be the nominal value of the swap contract. Such a swap is known as a *fixed amount* contract or, in some markets, as a *digital credit derivative*. Alternatively, the termination payment is calculated as the difference between the nominal value of the reference asset and either its market value at the time of the credit event or its recovery value. This arrangement is more common with cash-settled contracts.18

- **Physical settlement**: on occurrence of a credit event, the buyer delivers the reference asset to the seller, in return for which the seller pays the face value of the delivered asset to the buyer. The contract may specify a number of alternative assets that the buyer can deliver; these are known as *deliverable obligations*. This may apply when a swap has been entered into on a reference name rather than a

---

18Determining the market value of the reference asset at the time of the credit event may be a little problematic: the issuer of the asset may well be in default or administration. An independent third-party *calculation agent* is usually employed to make the termination payment calculation.
specific obligation (such as a particular bond) issued by that name. Where more than one deliverable obligation is specified, the protection buyer will invariably deliver the asset that is the cheapest on the list of eligible assets. This gives rise to the concept of the **cheapest-to-deliver**, as encountered with government bond futures contracts, and is in effect an embedded option afforded the protection buyer.

In theory, the value of protection is identical irrespective of which settlement option is selected. However, under physical settlement the protection seller can gain if there is a recovery value that can be extracted from the defaulted asset, or its value may rise as the fortunes of the issuer improve.

Swap market-making banks often prefer cash settlement as there is less administration associated with it, since there is no delivery of a physical asset. For a CDS used as part of a structured product, cash settlement may be more suitable because such vehicles may not be set up to take delivery of physical assets. Another advantage of cash settlement is that it does not expose the protection buyer to any risks should there not be any deliverable assets in the market, for instance due to shortage of liquidity in the market – were this to happen, the buyer might find the value of its settlement payment reduced. Nevertheless, physical settlement is widely used because counterparties wish to avoid the difficulties associated with determining the market value of the reference asset under cash settlement.\(^\text{19}\) Physical settlement also permits the protection seller to take part in the creditor negotiations with the reference entity’s administrators, which may result in improved terms for them as holders of the asset.

Cash settlement is sometimes proceeded with even for physically settled contracts when, for one reason or another, it is not possible to deliver a physical asset, for instance if none is available.

### 2.7.2 Market Requirements

Various market participants have different requirements, and so may have their own preferences with regard to the settlement mechanism. A protection seller may prefer physical settlement for

\(^\text{19}\)Credit derivative market makers may value two instruments written on the same reference entity, and with all other terms and conditions identical except that one is cash settled and the other physically settled, at the same price. This is because while the protection buyer has a delivery option and will deliver the cheapest bond available, an option that carries value, in a cash-settled contract the protection buyer will nominate this same bond to be used in the calculation of the settlement of the contract. So the value of the delivery option may not result in a higher price quote from a market maker for a physically delivered contract.
particular reference assets if it believes that a higher recovery value for the asset can be gained by holding onto it and/or entering into the administration process. A protection buyer may have different interests. For instance, unless the protection buyer already holds the deliverable asset (in which case the transaction he has entered into is a classic hedge for an asset already owned), he may prefer cash settlement if he has a negative view of the reference obligation and has used the CDS or other credit derivative to create a synthetic short bond position. Or the protection buyer may prefer physical settlement because he views the delivery option as carrying some value.

2.7.3 Cash Settlement Mechanics

Cash settlement requires a Credit Event Notice and if specified in the related confirmation, a Notice of Publicly Available Information. Generally the cash settlement amount is calculated using market prices for defaulted reference obligations, set by a dealer poll or ‘auction’ amongst CDS market makers. The seller pays the buyer the notional amount of the trade (floating rate calculation amount) multiplied by the loss of value of the defaulted reference obligations. By doing so, the seller covers the loss of value of the reference obligation caused by the credit event.

More formally, the cash settlement amount is the floating rate payer calculation amount multiplied by the reference price minus the final price, where the floating rate payer calculation amount is the notional amount of the transaction and the final price is the price of the reference obligation. The final price is determined through a valuation method and the parties choose, at the time of the trade, between methods based on ‘market value’ or ‘highest quotations’.

The most common method used for setting the settlement value of the defaulted reference obligation is via a dealer poll of five dealers, whereby:

- The valuation date is agreed at the time of executing the contract, but could be up to 122 days after the credit event.
- It is also possible to use multiple valuation dates.
- The final price is determined by the highest bid price for a specified notional of bonds, and this price is used to determine the compensation amount.
- This final amount is paid 5 days after the dealer poll.
2.8 RISKS IN CREDIT DEFAULT SWAPS

To conclude this chapter, we consider some risk exposures that investors take on when trading in credit derivatives.

2.8.1 Unintended Risks in Credit Default Swaps

As credit derivatives can be tailored to specific requirements in terms of reference exposure, term to maturity, currency and cash flows, they have enabled market participants to establish exposure to specific entities without the need for them to hold the bond or loan of that entity. This has raised issues of the different risk exposure that this entails compared to the cash equivalent. A Moody’s special report highlights the unintended risks of holding credit exposures in the form of default swaps and credit-linked notes (Tolk, 2001). Under certain circumstances it is possible for credit default swaps to create unintended risk exposure for holders, by exposing them to greater frequency and magnitude of losses compared to that suffered by a holder of the underlying reference credit.

In a credit default swap, the payout to a buyer of protection is determined by the occurrence of credit events. The definition of a credit event sets the level of credit risk exposure of the protection seller. A wide definition of ‘credit event’ results in a higher level of risk. To reduce the likelihood of disputes, counterparties can adopt the ISDA credit derivatives definitions to govern their dealings. The Moody’s paper states that the current ISDA definitions do not unequivocally separate and isolate credit risk, and in certain circumstances credit derivatives can expose holders to additional risks. A reading of the paper would appear to suggest that differences in definitions can lead to unintended risks being taken on by protection sellers. Two examples from the paper are cited below as illustration.

2.8.2 Extending Loan Maturity

The bank debt of Conseco, a corporate entity, was restructured in August 2000. The restructuring provisions included deferment of the loan maturity by 3 months, higher coupon, corporate guarantee and additional covenants. Under the Moody’s definition, as lenders received compensation in return for an extension of the debt, the restructuring
was not considered to be a ‘diminished financial obligation’, although Conseco’s credit rating was downgraded one notch. However, under the ISDA definition the extension of the loan maturity meant that the restructuring was considered to be a credit event, and thus triggered payments on default swaps written on Conseco’s bank debt. Hence this was an example of a loss event under ISDA definitions that was not considered by Moody’s to be a default.

It was the Conseco case that led to the adoption of the modified restructuring ISDA definitions of 2003.

2.8.3 Risks of Synthetic Positions and Cash Positions Compared

Consider two investors in XYZ, one of whom owns bonds issued by XYZ while the other holds CLN referenced to XYZ. Following a deterioration in its debt situation, XYZ violates a number of covenants on its bank loans, but its bonds are unaffected. XYZ’s bank accelerates the bank loan, but the bonds continue to trade at 85 cents on the dollar, coupons are paid and the bond is redeemed in full at maturity. However, the default swap underlying the CLN cites ‘obligation acceleration’ (of either bond or loan) as a credit event, so the holder of the CLN receives 85% of par in cash settlement and the CLN is terminated. However, the cash investor receives all the coupons and the par value of the bonds on maturity.

These two examples illustrate how, as credit default swaps are defined to pay out in the event of a very broad range of definitions of a ‘credit event’, portfolio managers may suffer losses as a result of occurrences that are not captured by one or more of the ratings agencies’ rating of the reference asset. This results in a potentially greater risk for the portfolio manager compared to the position were it actually to hold the underlying reference asset. Essentially, therefore, it is important for the range of definitions of a ‘credit event’ to be fully understood by counterparties, so that holders of default swaps are not taking on greater risk than is intended.

2.9 IMPACT OF THE 2007–2008 FINANCIAL CRASH:
NEW CDS CONTRACTS AND THE CDS ‘BIG BANG’

One of the impacts of the 2007–2008 financial market crisis was that CDS prices rose to hitherto unseen astronomically high levels. The bankruptcy of Lehman Brothers also highlighted the issue of
counterparty risk for those market participants that had bought protection using CDS.

One response to this was that the markets changed the protocol for quoting CDS contracts traded in the USA and Canada (‘Big Bang’) and Europe and Asia-Pacific (‘Small Bang’).

2.9.1 The CDS ‘Big Bang’

ISDA introduced a new supplement and protocol (the ‘Big Bang’ protocol) and a new standard North American corporate CDS contract with effect from 8 April 2009, the Standard North American Contract (SNAC). The ISDA supplement applied to new CDS transactions. It established credit determination committees, added auction settlement provisions and created backstop dates for credit and succession events. The Big Bang protocol applies to existing CDS transactions. The ISDA SNAC, also referred to as 100/500, applies to North American names denominated in any currency. These CDS contracts trade with an upfront payment and fixed coupons of either 100 basis points for investment-grade reference names and 500 basis points for lower-rated names. The new contract is referred to as the ‘SNAC’ or the ‘100/500’ contract.

Investment-grade CDS traded with a 100 bps premium are quoted using a flat credit curve. The high-yield names trading at a 500 bps premium are quoted with points upfront. All trades now have a full first coupon with no long or short stub periods. The first accrual start date no longer coincides with the effective date. The effective date was changed to reflect the ‘look back’ period of 60 days for credit events. The look back periods ensure that offsetting transactions have the same terms and allows positions to be fully hedged.

The ISDA Big Bang protocol applies to existing transactions. It enables market participants to amend outstanding trades so that they can eliminate distinctions between trades entered into before and after 8 April 2009.

2.9.2 CDS and Points Upfront

The 2007–2008 credit crunch resulted in the CDS price for many reference named trading at very high levels; for example Morgan Stanley traded at over 1300 bps and AIG at 1942 bps in September 2008.

20The look back period is 90 days for succession credit events.
For high risk reference names, CDS spreads that have widened to a large extent are quoted by market makers with ‘points upfront’. In this case, if a CDS trades with an upfront fee, a market counterparty buying protection must make an initial payment (a percentage of the notional contract value) as well as a running spread of 500 basis points.

The Bloomberg screen CDSW can be used to value CDS that are quoted with upfront fees, as shown in Figure 2.11. The trade example here is a 5-year CDS quoted on 28 May 2009 on Virgin Media Finance plc. The CDS premium is 575 basis points, and if this traded in the US market there is now a ‘points upfront’ fixed fee to be paid on inception. This is shown on the screen as 2.885757%. Note also that the pricing model selected has been changed from the hitherto-standard JPMorgan model to the ‘ISDA standard upfront’ model. Note that in the field ‘SNAC’ the user has selected ‘Y’ for yes, indicating this contract is being traded in the US market and not in Europe.

Another response to the market that can be observed from Bloomberg screen CDSW concerns the recovery rate parameter. Previously this had defaulted to 40%. For a large number of lower-rated names this value has been tailor-set to levels ranging from 5% upwards.

FIGURE 2.11 Bloomberg screen CDSW showing 5-year CDS written on Virgin Media Finance plc name, traded 28 May 2009, with ‘points upfront’ valuation of 2.88%.
Screen UPFR on Bloomberg shows the recovery rate for selected reference names, now that the market no longer defaults automatically to 40%. Page 1 of this screen is shown at Figure 2.12. We see that recovery rates for this group of companies range from 15% to 40%.

2.9.3 Contract Changes

We summarize below the changes made in CDS trading convention after the events of 2007–2008.

<table>
<thead>
<tr>
<th>Contract structure:</th>
<th>Auction settlement</th>
</tr>
</thead>
<tbody>
<tr>
<td>60-day look-back period for credit events</td>
<td></td>
</tr>
<tr>
<td>Maintain quarterly rolls (March, June, September, December)</td>
<td></td>
</tr>
<tr>
<td>Points upfront</td>
<td></td>
</tr>
<tr>
<td>Standard coupons (100/500), with no requirement to reset coupons at each quarterly roll date as both 100 bps and 500 bps are quoted for the life of the contract</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Credit events:</th>
<th>Restructuring no longer a credit event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Note that emerging market (EM) CDS contracts retain restructuring as a credit event</td>
<td></td>
</tr>
</tbody>
</table>
References


APPENDICES

APPENDIX 2.1 ISDA 2002 CREDIT DERIVATIVE DEFINITIONS

**Bankruptcy** A reference entity voluntarily or involuntarily files for bankruptcy or insolvency protection, or is otherwise unable to pay its debts.

**Failure to pay** Failure of a reference entity to make due payments greater than a specified payment requirement (commonly $1 million or more), taking into account a pre-specified grace period to prevent accidental triggering of the contract due to administrative errors.

**Obligation acceleration** Obligations of the reference entity have become due and payable earlier than they would have been due to default, other than a failure to pay.

**Obligation default** Obligations of the reference entity have become capable of being declared due and payable before they otherwise would have due to a default other than a failure to pay.

**Repudiation/moratorium** A reference entity or government authority rejects or challenges the validity of the obligation.

**Restructuring and modified restructuring** A reference entity agrees to a capital restructuring (such as a change in a loan obligation’s seniority), deferral or reduction of loan, change in currency or composition of a material debt obligation such as interest or principal payments.

‘Material’ is generally considered to be $10 million or more. Market
participants may elect an alternative definition of restructuring known as *modified restructuring* to limit the maturity and type of obligations that may be delivered by the protection seller, to reduce the ‘cheapest-to-deliver’ option.

## APPENDIX 2.2 SAMPLE TERM SHEET FOR CREDIT DEFAULT SWAP

### XYZ Bank plc
London branch

**Draft Terms – Credit Default Swap**

1. **General Terms**
   - **Trade Date**: Aug 5, 2003
   - **Effective Date**: Aug 6, 2003
   - **Scheduled Termination Date**: Jul 30, 2005
   - **Floating Rate Payer (‘Seller’)**: XYZ Bank plc, London branch
   - **Fixed Rate Payer (‘Buyer’)**: ABC Investment Bank plc
   - **Calculation Agent**: Seller
   - **Calculation Agent City**: New York
   - **Business Day**: New York
   - **Business Day Convention**: Following
   - **Reference Entity**: Jackfruit Records Corporation
   - **Reference Obligation**: Primary Obligor: Jackfruit Records Corporation
   - **Maturity**: Jun 30, 2020
   - **Coupon**: 0%
   - **CUSIP/ISIN**: xxxxx
   - **Original Issue Amount**: USD 100,000,000
   - **Reference Price**: 100%
   - **All Guarantees**: Not Applicable

2. **Fixed Payments**
   - **Fixed Rate Payer Calculation Amount**: USD 7,000,000
   - **Fixed Rate**: 0.3% per annum
   - **Fixed Rate Payer Payment Date(s)**: Oct 30, Jan 30, Apr 30, Jul 30, starting Oct 30, 2003
   - **Fixed Rate Day Count**: Actual/360
### 3. Floating Payments

**Floating Rate Payer**
- **Calculation Amount**: USD 7,000,000
- **Conditions to Payment**:
  - Credit Event Notice (Notifying Parties: Buyer or Seller)
  - Notice of Publicly Available Information: Applicable (Public Source: Standard Public Sources. Specified Number: Two)

**Credit Events**
- Bankruptcy
- Failure to Pay (Grace Period Extension: Not Applicable. Payment Requirement: $1,000,000)

**Obligation(s)**: Borrowed Money

### 4. Settlement Terms

**Settlement Method**: Physical Settlement

**Settlement Currency**: The currency in which the Floating Rate Payer Calculation Amount is denominated

**Terms Relating to Physical Settlement**
- **Physical Settlement Period**: The longest of the number of business days for settlement in accordance with the then-current market practice of any Deliverable Obligation being Delivered in the Portfolio, as determined by the Calculation Agent, after consultation with the parties, but in no event shall be more than 30 days

**Portfolio**
- Exclude Accrued Interest

**Deliverable Obligations**
- Bond or Loan
- Not Subordinated

**Characteristics**
- Specified Currency – Standard Specified Currencies
- Maximum Maturity: 30 years
- Not Contingent
- Not Bearer
- Transferable
- Assignable Loan
- Consent Required Loan

**Restructuring Maturity Limitation**: Not Applicable

**Partial Cash Settlement of Loans**: Not Applicable
Partial Cash Settlement of Assignable Loans
   Not Applicable
Escrow                  Applicable

5. Documentation
Confirmation to be prepared by the Seller and agreed to by the Buyer. The definitions and provisions contained in the 2003 ISDA Credit Derivatives Definitions, as published by the International Swaps and Derivatives Association, Inc., as supplemented by the May 2003 Supplement, to the 2003 ISDA Credit Derivatives Definitions (together, the ‘Credit Derivatives Definitions’), are incorporated into the Confirmation.

6. Notice and Account Details
Telefon, Telex and/or Buyer:
Facsimile Numbers and Phone:
Contact Details for Notices Fax:
  Seller: A.N. Other
  Phone: +1 212-xxx-xxxx
  Fax: +1 212-xxx-xxxx

Account Details of Seller

Risks and Characteristics

Credit Risk. An investor’s ability to collect any premium will depend on the ability of XYZ Bank plc to pay.

Non-Marketability. Swaps are not registered instruments and they do not trade on any exchange. It may be impossible for the transactor in a swap to transfer the obligations under the swap to another holder. Swaps are customized instruments and there is no central source to obtain prices from other dealers.