# Introduction to Credit Derivatives[1]

Vinod Kothari

Life is either a daring adventure or nothing. Security does not exist in nature, nor do the children of men as a whole experience it. Avoiding danger is no safer in the long run than exposure.

**Helen Keller**
*US blind & deaf educator (1880 - 1968)*

Credit derivatives, an instrument that emerged around 1993-94, is a part of the market for financial derivatives. Since credit derivatives are presently not traded on any of the organised exchanges, they are a part of the over-the-counter (OTC) derivatives market. Though still a relatively small part of the huge market for OTC derivatives, credit derivatives are growing faster than any other OTC derivative, the reasons for which are not difficult to understand.

Credit derivatives are derivative contracts that seek to transfer defined credit risks in a credit product or bunch of credit products to the counterparty to the derivative contract. The counterparty to the derivative contract could either be a market participant, or could be the capital market through the process of securitisation. The credit product might either be exposure inherent in a credit asset such as a loan, or might be generic credit risk such as bankruptcy risk of an entity. As the risks, and rewards commensurate with the risks, are transferred to the counterparty, the counterparty assumes the position of a *virtual* or *synthetic* holder of the credit asset.

The counterparty to a credit derivative product that acquires exposure to the risk synthetically acquires exposure to the entity whose risk is being traded by the credit derivative product. Thus, the credit derivative trade allows people to trade in the generic credit risk of the entity, without having to trade in a credit asset such as a loan or a bond. Given the fact that the synthetic market does not have several of the limitations or constraints of the market for cash bonds or loans, credit derivatives have become an alternative parallel trading instrument that is linked to the value of a firm – similar to equities and bonds.

Coupled with the device of securitisation, credit derivatives have been rendered into investment products. Thus, investors may invest in credit linked notes and gain credit exposure to an entity, or a bunch of entities. Securitisation linked with credit derivatives has led to the commoditization of credit risk.

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[1] Extracted from Vinod Kothari's *Credit Derivatives and Synthetic Securitisation*

Apart from commoditization of credit risk by securitisation, there are two other developments that seem to have contributed to the exponential growth of credit derivatives – index products and structured credit trading.

In the market for equities and bonds, investors may acquire exposure to either a single entity's stocks or bonds, or to a broad-based index. The logical outcome of the increasing popularity of credit derivatives was credit derivatives indices. Thus, instead of gaining or selling exposure to the credit risk of a single entity, one may buy or sell exposure to a broad-based index, or sub-indices, implying risk in a generalized, diversified index of names.

The idea of tranching or structured credit trading is essentially similar to that of seniority in the bond market – one may have senior bonds, *pari passu* bonds, or junior bonds. In the credit derivatives market, this idea has been carried to a much more intensive level with tranches representing risk of different levels. These principles have been borrowed from the structured finance market. Thus, on a bunch of 100 names, one may take either the first 3% risk, or the 4% to 6% slice of the risk, or the 7% to 10% slice, and so on.

The combination of tranching with the indices leads to trades in tranches of indices, opening doors for a wide range of strategies or views to take on credit risk. Trades may trade on the generic risk of default in the pool of names, or may trade on correlation in the pool, or the way the different tranches are expected to behave with a generic upside or downside movement in the credit spreads, or the movement of the credit curve over time, etc.

Quite often, the development of the hedge fund industry has been associated with the development of credit derivatives. Hedge funds are prominent in credit derivatives trades, particularly in case of the lower tranches of the structured credit spectrum. The hedge fund industry represents the segment of investor capital that is least regulated, risk neutral, out to seize opportunities arising out of mispricing, etc. As the credit derivatives trades are almost completely unregulated and offer opportunities of short trades in credit not permitted by the bond market, the credit derivatives industry provides an excellent playing ground to the hedge funds.

## Credit risk: the challenge of our times:

This book is about credit derivatives, and credit derivatives are devices that provide for trading in generic credit risk of an entity, asset, or bunch of entities, or bunch of assets. Credit risk is the risk inherent in credit, and credit is the very basis of our present society.

Our present society lives on credit, and rests (this word might be quite a misnomer!) on credit. From governments to the marginal consumer, every one increases current spending power based on credit. Credit allows us to consume far more than our current earnings sustain. Therefore, credit is the very basis of consumerism. Credit is the driving force of the World economy.

Credit is parting with value today against a promise for value in future. Credit risk is the risk that the promise may be broken. Obviously therefore, credit risk is the most important economic risk facing the society. Over the post 10 years or so, the global economy has seen ballooning of credit.

Corporate defaults are reaching never-before dimensions, and have assumed far reaching impact. In USA alone, in 2001, 211 debt issuers defaulting on $115 billion in debt. In January 2002, corporate defaults reached new monthly highs, with 41 issuers defaulting on $31billion in debt. The year has some bankruptcies and defaults questioning the very information system on which we rely – accounting and auditing. What is special is not the increasing number of defaults but the increasing backlash of each such default - in terms of magnitude, loss of jobs, loss of investments, loss of taxpayers' money, and finally, the loss of confidence in the corporate system.

## Derivatives: the building block of credit derivatives

The development of credit derivatives is a logical extension of the ever-growing array of derivatives trading in the market. The concept of a derivative is to create a contract that transfers some risk or some volatility. This risk or volatility may relate to the price or performance of a reference asset, event, a market price or any other economic or natural phenomenon. Such trade in risk does not mean a trade in the reference asset. The reference may remain with someone who is a complete stranger to the derivative contract. However, the derivative trade closely mimics and risks and returns of holding the underlying asset, or at least a segment thereof. Thus, derivatives bring about a completely independent trade in the risks/returns of an asset. For example, a trade in options or futures in equities may run completely independent of trades in equity shares.

Credit derivatives apply the same notion to a credit asset. Credit asset is the asset that a provider of credit creates, such as a loan given by a bank, or a bond held by a capital market participant. A credit derivative enables the stripping of the loan or the bond, from the risk of default (or more risks, depending on the nature of the derivative), such that the loan or the bond can continue to be held by the originator or holder thereof, but the risk gets transferred to the counterparty. The counterparty buys the risk obviously for a premium, and the premium represents the rewards of the counterparty.

Thus, credit derivatives essentially use the derivatives format to acquire or shift risks and rewards in credit assets, viz., loans or bonds, to other financial market participants. Like capital market derivatives, credit derivatives make it possible to hold a credit asset, but sack off the risks in holding it and replace the same by either a pure counterparty risk or risk is a safer asset. Reciprocally, credit derivatives make it possible to not hold a credit

asset and yet synthetically[2] create the position of risk and reward in a credit asset or portfolio of assets.

## Securitisation: The other building block

Much of the significance that credit derivatives enjoy today is because of the marketability imparted by securitisation. Credit derivatives would have mostly been a closely-held esoteric market, but for the introduction of securitisation device to commoditise a credit derivative and bring it to the capital market.

Securitised credit derivatives, or synthetic securitisation, is a device of embedding a credit derivative feature into a capital market security so as to transfer the credit risk into the capital markets. In case of synthetic securitisations, the protection against the risk is ultimately provided by the capital markets.

The synthesis of credit derivatives with securitisation methodology has complemented each other. Credit derivatives have acquired a new meaning when they were turned into marketable securities using securitisation techniques; securitisation on the other hand got a new impetus by opening up possibilities of keeping a whole portfolio of credit assets on books and yet transfer the credit risks of the portfolio. Lot of erstwhile securitisers over Europe and Asia are preferring synthetic securitisations to cash transfers.

## Meaning of credit derivatives

### What is a credit derivative?

A credit asset is the extension of credit in some form: normally a loan, accounts receivable, instalment credit or financial lease contract.

Every credit asset is a bundle of risks and returns: every credit asset is acquired to make certain returns on the asset, and the probability of not making the expected return is the risk inherent in a credit asset. The credit asset may, of course, end up in a full or partial loss, which is also a case of volatility of return in that the return is negative.

There are several reasons due to which a credit asset may not end up giving the expected return to the holder: delinquency, default, losses, foreclosure, prepayment, interest rate movements, exchange rate movements, etc.

A credit derivative contract intends to create a trade in either some risk, or all the risk of volatility of return in a credit asset, without transferring the underlying asset. For example, if Bank A enters into a credit derivative with Bank B relating to a loan sitting on the balance sheet of Bank A, Bank B bears the risk, of course for a fee, inherent in the asset held by Bank A.

[2] The words “synthetic transfer”, “synthetic exposure”, “synthetic lending” etc use “synthetic” as opposed to real or natural. For example, a “synthetic transfer” would mean a transfer that is not really a transfer, but achieves the same purpose artificially or *synthetically*.

First, we made a reference to transfer of risk in a loan or portfolio of loans held by Bank A. Credit derivatives are essentially derivative deals, and for any derivative deal, *it is not necessary that the reference asset must actually be held by any of the counterparties*. For example, to buy a put on an equity share, it is not necessary for the put buyer to hold the equity share. Similarly, in order for Bank A to transfer the risk of a loan taken by a particular obligor, it is not necessary for Bank A to have actually given a loan to the obligor. In other words, without Bank A actually holding any credit exposure in the obligor, Bank A may sell the risk (that is, buy protection) and Bank B may buy the rirk (that is, sell protection). The purpose of the protection buyer in a derivatives deal is not necessarily hedging – the protection buyer may be buying protection for trading purposes, that is, to be able to benefit from widening of spreads over time.

Two, in most cases, the transaction of credit derivatives is not referenced to particular loans – it is referenced to the generic risk of default of an entity. In other words, a credit derivative views credit risk as an independent commodity by itself and creates a trade in the credit risk of an entity.

The premium that Bank B earns for selling protection is representative of the, the credit risk premium being priced on the asset. Thus, the protection seller by selling protection is earning the credit spread, and is exposed to the risk of default of the reference entity. The position of the protection seller is equivalent to that of an actual lender.

## A definition of credit derivatives:

Credit derivatives can be defined as arrangements that allow one party (**protection buyer** or **originator**) to transfer, for a premium, the defined credit risk, or all the credit risk, computed with reference to a notional value, of a reference asset or assets, which it may or may not own, to one or more other parties (**the protection sellers**).

**Financial Services Authority**, UK defines credit derivatives as follows:

> Credit derivatives is a general term used to describe various swap and option contracts designed to transfer credit risk on loans or other assets from one party, the **protection buyer**, to another party, the **protection seller**. The protection seller receives **premium** or interest-related payments in return for contracting to make payments to the protection buyer, which are linked to the credit standing of a **reference asset** or assets.

The **BAKred**'s circular no. 10/99 defines credit derivatives thus:

> "Credit derivatives" are instruments recently traded on the financial markets by means of which the credit risk inherent

in loans, bonds or other risk assets or market risk positions are transferred to third parties acting as so-called protection sellers. The original credit relationships of the so-called protection buyers (the parties transferring the credit risk) are neither changed nor newly established by this process. Credit derivatives differ from other, traditional forms of credit risk transfer, such as guarantees or providing collateral security, in that these, as derivatives, are normally

- Concluded under standardised master agreements,
- Subject to an ongoing market valuation,
- Subject to special risk controlling and management.

An additional difference is that the drawing on the credit derivative does not directly constitute a claim on the debtor of the underlying position for the protection seller.

## Quick guide to basic jargon:

The feedstock of a credit derivative transaction is a **credit asset**, that is to say, an asset or contract that gives rise to a relationship of a creditor and debtor. However, credit derivatives are usually not related to a specific credit asset but trade in the generic risk of default of a particular entity. The entity whose risk of default is being traded in is commonly referred to as the **reference entity**. There are cases where the credit derivative is linked not to the general default of the reference entity but the default of specific asset or portfolio of assets. This is called the **reference obligation**, **reference asset** or the **reference portfolio**.

The party that wants to transfer the credit risks is called the **protection buyer** and the party that provides protection against the risks is called **the protection seller**. The two are mutually referred to as the counterparties. Protection buyer and protection seller may alternatively be referred to as the **risk seller** and the **risk buyer** respectively. In this book, we have used the term protection seller and buyer respectively.

We have mentioned above that it is not necessary for the protection seller to actually own the reference asset: he might either be using the credit derivative deal as a proxy to transfer the risk of something else that he holds, or may be doing so for trading or arbitraging reasons. Irrespective of the motive, a derivative deal does not necessitate the holding of the reference asset by either of the counterparties, by which it is also obvious that the protection buyer need not hold the reference asset of the same value for which the derivative deal is written.

Therefore, like most other derivatives, credit derivatives are written for a **notional value**, usually in denominations of USD 1 million. The premium to be paid by the protection buyer, and the protection payment to be made by the protection seller, are both computed with reference to this notional value. For the same reason, the **tenure** of the credit derivative does not have to coincide with the tenure of the credit asset.

Since the derivative deal focuses on the credit risk, it is necessary to define the credit risk. This is done by defining the **credit events**. Credit events are the specific events on the happening of which protection payments will be made by the protection seller to the protection buyer. Parties may define their credit events; in OTC transactions taking place under ISDA[3]'s standard documentation, the credit events are chosen from out of the list of credit events specified by ISDA. In case of a total rate of return swap, a type of a credit derivative discussed later, the entire credit risk of volatility of returns from a credit asset, without reference to the reasons therefor, is transferred to the protection seller, and therefore, the definition of credit events is relevant only for termination of the swap on its happening.

The **premium** is what the protection buyer pays to the protection seller over the **tenure** of the credit derivative. If there is no credit event during the tenure of the deal, the protection buyer pays the premium, and on efflux of time, the deal is closed. If there is a credit event, there will be protection payment due by the protection seller to the protection buyer, and the deal is closed without waiting for the tenure to be over. The **protection payments** or **credit event payments** are what the protection seller has to pay to the protection buyer, should the credit event happen. The protection payment is either the outstanding par value plus accrued interest (computed with reference to the notional value) of the reference asset, or the difference between such par value plus accrued interest and the post-credit-event market value of the reference asset. In the former case, the protection buyer delivers the reference asset to the protection seller (called **physical settlement**) and the latter case, there is no transfer of the credit asset (called **cash settlement)** as the protection seller merely compensates the protection buyer for the losses suffered due to the credit event.

In any case, the protection payments are not connected with the actual losses suffered by the protection buyer.

In case the terms between the parties have fixed physical settlement as the mode, the protection buyer shall be required to deliver a defaulted obligation of the reference entity on default. Generally, the definition of such defaulted obligations is broad enough to allow the protection buyer to buy from out of several available obligations of the reference entity. Such obligations are called **deliverable obligations**. Both reference obligations and deliverable obligations are defined usually by characteristics. Hence, any obligation of the reference entity that satisfies the characteristics listed will be deliverable obligation.

## A quick example:

> Let us suppose PB has an outstanding secured loan facility of USD 65 million, payable after 7 years, given to a certain corporate, X Corp. PB wants to shed a part of the risk of the said facility and enters into a credit derivative deal with PS. The derivative deal is done for a notional value of USD 50 million for X Corp as

[3] ISDA is a registered trade mark; see www.isda.org

the reference entity. The reference obligation is "senior unsecured loans or bonds of the reference entity". PB will pay a premium of 80 bps to PS for the full term of the contract, that is, 5 years. Parties agree to physical settlement.

This is the most common form of a credit derivative, called a credit default swap, discussed later in this Chapter and more fully in a later Chapter.

Here, PB is buying protection basically for hedging purposes. However, it may be noted that there are mismatches between the actual loan held by PB and the derivative. The amount of the loan is USD 65 million where the notional value of the derivative is only USD 50 million. The actual loan is a secured loan facility, while the reference asset for the credit derivative is a senior unsecured loan. The term of the loan is 7 years, while the term of the derivative is 5 years. We wish to emphasize that there may be complete disconnects between the actual credit asset, if at all held by the protection buyer, and the credit derivative. For the purpose of our discussion, it would be all the same if PB did not have any loan given to X Corp, and was simply trying to buy protection hoping to make a profit when the premium for buying protection against X Corp went above 80 bps.

Since the transaction of credit derivative is referenced to "senior unsecured loans or bonds of X Corp", the credit events (as defined by the parties) will be triggered if there is such event on any of the obligations of X Corp that satisfy the characteristics listed for the reference obligations. Generally speaking, if there is a default on any of the loans or bonds of X Corp, or if X Corp files for bankruptcy, it would trigger a credit event. The obvious purpose of PB buying protection in this case is to partially hedge against the risk of default of the exposure held by PB. PB actually holds a secured loan, but buys protection for a senior unsecured loan for two reasons – one, since the market trades in general risk of default of X Corp, the defaults are typically defined with reference to unsecured loans as they are more likely to default than secured loans. Two, for PB, the protection is stronger when it is referenced to an inferior asset than the one actually held by PB.

PS as protection seller is earning a premium of 80 bps by selling protection. PS, of course, is exposed to the risk of default of X Corp. In normal course, to create the same exposure, PS would have to lend out money to X Corp. In this case, PS has acquired the exposure without any initial investment (see later in this Chapter about funded derivatives). The purpose of PS might be simply to create and hold this exposure as a proxy for a credit asset to X Corp. Alternatively, PS might also be viewing the transaction as a trade: PS would stand to gain if the cost of buying protection against X Corp declines to below 80 bps. PS may encash this gain either by buying protection at the reduced price, or by other means.

If the credit event does not happen over the 5 year term of the contract, the derivative expires with PB having paid periodic premium to PS. If the credit event does happen, PB may choose to make a physical settlement. In that case, PB may well deliver an unsecured bond of X Corp, as evidently, the possible recovery on the secured loan that X Corp is holding will be better than the market price of the unsecured bonds of X Corp.

Thus, if PB buys such bonds at a price of 30%, he would stand to make 70% of the notional value as PS will obligated to pay to PB the par value of the defauled assets that satisfy the characteristics of the "deliverable obligations". PB may continue to hold the secured loan and recover it through enforcement of security interests or otherwise.

## Synthetic lending:

Through a credit derivative contract, the protection buyer transfers defined credit risks of a reference asset to the protection seller. Assuming the protection buyer holds the reference asset, as is the case in the example above, what is the impact of the derivative on the protection buyer? He still holds the reference asset, but he has now transferred the defined credit risks. Instead, the protection buyer now has a risk on the protection seller. Should a defined credit event take place, the protection buyer is not concerned with receiving interest or principal on the reference obligation from the obligor; he is rather concerned about getting the protection payment from the protection seller. So, there is a substitution of obligor risk by counterparty risk.

As far as the protection seller is concerned, the protection seller has not bought the reference asset, but he is exposed to risks and rewards of the reference asset. Should the reference asset not default, he continues to get the premium which is obviously based on the credit risk of the obligor, and is therefore, a reward related to the reference obligor. Should the credit event take place, the protection seller is exposed to the risk of having to make protection payments.

In other words, the protection seller has assumed risk and reward in the obligor, without actually lending to the obligor. The obligor is now the **synthetic asset** of the protection seller, as by the derivative contract, the protection buyer has synthetically substituted obligor exposure by counterparty exposure, and the protection seller has **synthetically created** a new asset, viz., exposure in the obligor.

Credit derivatives deals provide a new opportunity of synthetically creating assets – without actually creating a portfolio or lending. Instead of originating a loan, virtually the same position can be created synthetically by selling protection[4]. The credit asset so created is referred to as **synthetic** or **unfunded asset**.

## Why do they do it?

The motivations of the protection buyer in our above example are easily understandable – he wants to transfer the risk of holding the exposure in X Corp, without transferring the asset. But a primary question arises on the motivation of the protection seller: why would he be willing to write protection on something never actually created by him.

We get into the details of the respective motivations of parties later on, but this one is a short introduction to the synthetic credit possibilities created by credit derivatives. Credit derivatives have provided an easy way for banks to diversify their credit risks without

[4] This will be more true in case of total rate of return swaps, discussed later, where the parties replicate the actual cashflows from a reference obligation

having to actually create assets. Let us visualise a bank, say Bank A which has specialised itself in lending to the office equipment segment. Out of experience of years, this bank has acquired a specialised knowledge of the equipment industry. There is another bank, Bank B, which is, say, specialised in the cotton textiles industry. Both these banks are specialised in their own segments, but both suffer from risks of portfolio concentration. Bank A is concentrated in the office equipment segment and bank B is focused on the textiles segment. Understandably, both the banks should diversify their portfolios to be safer.

One obvious option for both of them is: Bank A should invest in an unrelated portfolio, say textiles. And Bank B should invest in a portfolio in which it has not invested still, say, office equipment. Doing so would involve inefficiency for both the banks: as Bank A does not know enough of the textiles segment as bank B does not know anything of the office equipment segment.

Here, credit derivatives offer an easy solution: both the banks, without transferring their portfolio or reducing their portfolio concentration, could buy into the risks of each other by credit derivative deals. Both have diversified their risks. And both have also diversified their returns, as the fees being earned by the derivative contract is a return from the portfolio held by the other bank.

The above example has depicted credit derivatives being a bilateral transaction - as a sort of a bartering of risks. As a matter of fact, credit derivatives can be completely marketable contracts: the credit risk inherent in a portfolio can be securitised and sold in the capital market just like any other capital market security. So, any one who buys such a security is inherently buying a fragment of the risk inherent in the portfolio, and the buyers of such securities are buying a fraction of the risks and returns of a portfolio held by the originating bank.

Credit derivatives allow parties completely strangers to the banking market to eat into the rewards and bear the risks of banking assets which would be otherwise ruled out. For example, a capital market participant buying a synthetic security with an embedded derivative feature gets to create a synthetic loan asset. An insurance company would not have been allowed to enter the banking market at all – but credit derivatives enable it to sell protection which is synthetically the same as writing a loan itself.

Credit derivatives succeed in creating a new derivative product parallel to a cash bond or obligation. This synthetic product can have structured or leveraged risk/reward positions, and therefore, can be a device for the markets to allow structured trading in a credit asset without, of course, investing in the asset at all.

## The elements of a credit derivative:

### Bilateral deals and capital market deals:

A credit derivative may be a transaction between two counterparties, or may be a capital market transaction. Bilateral transactions between parties or dealers are normally referred

to as OTC deals, since they take place between parties on over-the-counter basis, as opposed to exchange traded derivatives. The other possible format of a credit derivative deal is embedding the derivative into some capital market instrument, and offering such instrument to investors in the capital market.

The most basic distinction between capital market deals and counterparty or OTC deals is based on who the counterparty is. Obviously, the counterparty for any credit derivative deal is a specific party and it is impossible to envisage a credit derivative where the "capital market" is the counterparty. However, capital market transactions intend to transfer the exposure to the capital market instruments by putting up special purpose vehicles (SPVs). In a capital market transaction, the risk is first transferred by the protection buyer to the SPV, which is turn transmits the risk into the market by issuing securities which carry an embedded derivative feature.

OTC derivatives are more liquid, easy to conclude, and are mostly single-obligor derivatives. Capital market derivatives usually entail an elaborate homework including setting up of SPVs, issue of securities to the investors, etc. The terms of OTC derivatives are mostly standardised and most of them use ISDA documentation. The terms of capital market transactions are governed by the exigencies of the deal and many of them deviate from standard ISDA definitions.

OTC deals and capital market deals differ in terms of pricing as well – the pricing of OTC deals is based on prices quoted for the specific obligor in the market. The risk is assessed and priced by market mechanism which may inherently adopt one or more models for pricing credit derivatives discussed later. The obligor portfolio in a capital market transaction is mostly diversified and the risk is assessed by the extent of diversity of the pool. The pricing of the risk transfer is mostly implied by the negative carry inherent in the assets and liabilities of the SPV – that is, the rate of return that the investments of the SPV fetch, and the weighted average coupon of the liabilities.

## Reference asset or portfolio:

From the viewpoint of obligor specification, there are two types of credit derivatives: **single obligor** or **single name** derivatives and **portfolio** derivatives. As implied, a single obligor credit derivative refers to an obligation of a specific named obligor, whereas a portfolio trade refers to specific obligations of a portfolio of obligors.

In either case, the reference is to obligations of the reference entity, such as an unsecured loan, or unsecured bond of the obligor. Parties may define the obligation either specifically by making it specific such as a particular loan or a particular bond issue, or give a broad generic description – such as any loan, or any bond, etc. Most of the OTC transactions are referenced to a generic senior unsecured loan of the reference entity (and usually, not a particular loan taken from a particular lender), which is mostly chosen as representative of the risk of default, mostly leading to a bankruptcy, of an obligor on a plain unstructured credit. This may or may not represent the actual exposure of the protection buyer. A protection buyer might be by buying protection on a senior unsecured loan while he might be actually exposed to a bond, or an unfunded obligation such as a

guarantee or a derivative. For that matter, the protection buyer may not be exposed to the particular obligor at all and might be buying protection for trading or hold-to-maturity purposes, or simply because this protection serves as an effective hedge against any other exposure he has.

In case of portfolio derivatives, the portfolio may be a **static portfolio** or a **dynamic portfolio**. As implied by name, a static portfolio is one where the constituents of the obligor portfolio will remain fixed and known over time. In case of a dynamic portfolio, though the total value of reference portfolio remains fixed, its actual composition may change over time as new obligors may be introduced into the pool, usually for those that have been repaid or prepaid, or those that have been removed due to failure to comply with certain conditions. It is very obvious that the dynamic portfolio will constituted based on several **selection criteria**, elaborately laid down in the documents, so as to ensure that the reinstatement of obligors over time does not change the portfolio risk.

## Structured portfolio trade:

Where the credit derivative deal relates to a portfolio, it is possible to create tranches of the risk arising out of it. We have earlier briefly discussed the concept of tranches. Hence, it is possible for the protection buyer to come up with several tranches – say, junior, mezzanine and senior tranche, or say 0-4%, 5-8% tranche, and so on. The protection buyer may either buy protection on all these tranches, or one or more than one of these. Such trades are called structured credit trades, or structured portfolio trades. The word "structured" puts such trades in line with other segments of structured finance, such as securitization. The word "structured" also implies that the number and sizing of the tranches are structured to suit investors' appetite for risk and urge for returns.

## Basket trades:

Another common variety of a structured credit derivatives prevailing in the market is called a basket derivative, where the reference asset is a basket of obligations, and the credit event is "**n-th to default in a basket**", let us say, **first-to-default** in a basket of 10 obligors. So, the deal is referenced to a basket of 10 defined obligors, each with a uniform notional value, and when any one out of the basket becomes the first to default, the protection payments will be triggered, and thereafter, the deal is closed. Effectively, this might be a very efficient way of buying protection against a portfolio of 10 assets, while paying a much smaller premium. This is because the joint probability of more than one obligor defaulting in a basket of 10 obligors is very small; while the probability of any one of the 10 defaulting is much higher. So, the losses of the protection seller are limited to only one of the 10 obligors, while at the same time, providing needed protection against a larger portfolio to the protection buyer.

At times, parties might even transaction a basket deal where protection is bought for **second-to-default** obligor. The intent here is that the first or threshold risk will be borne by the protection buyer, but any subsequent loss after the first default will be transferred to the protection seller. Conceptually, the protection buyer has limited his losses to the first default in the portfolio, seeking protection from the protection seller for the second

default. The third or subsequent default in the portfolio is unprotected, but that is only a theoretical risk as the probability of three defaults in an uncorrelated portfolio is nominal.

Likewise, one may think of an n-th to default basket swap.

## Index-based credit derivative trades:

The idea of portfolio credit trades, structured or otherwise, was carried further with the introduction of the index trades and gained tremendous popularity. A single name credit derivative allows the parties to trade in credit risk of a particular entity. A portfolio derivative allows parties to transact trade in the credit of a broad-based portfolio – let us say, a portfolio of 100 American corporates. The selection of these 100 American corporates may be done by the person who structures the transaction. However, to allow parties to have trade on a common portfolio, index trades construct a standard pool of *n* number of names (or securities), and allows various traders to trade in such common portfolio. The common portfolio is known as *index*, in line with indices of equities, bonds or other similar securities. The advantage with the index trades is that carry out structured trades in a generalized portfolio – so people may take views on the general corporate credit environment in America, or Europe, or so on. In view of their advantage over bespoke portfolio trades, index trades have quickly grown to become a very large component

## Protection buyer

The protection buyer is the entity that seeks protection against the risk of default of the reference obligation. The protection buyer may usually be a bank or financial intermediary which has exposure in credit assets, funded or unfunded. In such a case, the primary objective of a protection buyer is to hedge against the credit risks inherent in credit assets. The credit assets in case of OTC transactions are mostly corporations, or sovereigns, primarily emerging market sovereigns. In case of capital market transactions, the assets can diversified obligor pools representing a broad cross-section of exposure in various industries. There have been several cases where risks on a portfolio of a very large number of obligors have been transferred through derivatives, for example, SME loans, auto leases, etc.

At times, dealers could be buying protection short, for the purpose of arbitraging by selling protection, or actual lending. Buying protection is the same as going short on a bond. The protection buyer gains if the credit quality of the reference entity worsens. One may also visualize that usually, between the bond market, equity market and the credit derivatives market, there is a degree of correlation. Hence, the protection buyer shorts exposure on the entity by buying protection.

Buying of protection is also seen by the market as a convenient way of synthetically transferring the loan, while avoiding the problems associated with actual loan sales. Sale or securitisation of loans involves various problems, depending on the jurisdiction concerned, relating to obligor notification, partial transfers, transfer of security interests,

further lending to the same borrower, etc.[5] Synthetic transfers, on the other hand, avoids all of these problems as reference asset continues to stay with the originator.

In credit derivatives documentation, the protection buyer is also referred to as the fixed rate payer. Perhaps this term is the remnant of the interest rate swap documentation.

## Protection seller

We have discussed briefly the motivations of the protection seller, which we discuss later in detail. The protection seller is mainly motivated by yield enhancement, or getting to earn out of synthetic exposures where direct creation of loan portfolios is either not possible or not feasible. In OTC transactions, the protection sellers are insurance companies, banks, hedge funds, equity funds, investment companies, etc. In case of capital market transactions, the securities are mostly rated, and the investors that take up these securities are based on investment objectives of the investor concerned.

The protection seller may be taking a trading view and expecting the credit quality of the reference entity to improve.

In credit derivatives documentation, the protection seller is also referred to as the floating rate payer.

## Funded and unfunded credit derivatives:

Typically, a credit derivative implies an undertaking by the protection seller to make protection payments on happening of a credit event. Until the credit event happens, there is no financial investment by the protection seller. In this sense, a credit derivative is an unfunded contract.

However, quite often, for various reasons, parties may convert a credit derivative into a funded product. This may take various forms, such as:

- Protection seller prepays some kind of estimate of protection payments to the protection buyer, to be adjusted against the protection payments, if any, or else, returned to the protection seller;
- Protection seller places a deposit or cash collateral with the protection buyer which the latter has a right to appropriate, in case of protection payments.
- Protection buyer issues a bond or note which the protection seller buys, with a contingent repayment clause entitling the protection buyer to adjust the

[5] Apart from the procedural issues related to transfer of loan portfolios, a major legal risk in a loan sale is generically referred to as the "true sale" risk, that is, the possibility that the sale of the loans will either be disregarded by a Court or rendered unfructuous by a consolidation of the transferee with the transferor. For a detailed discussion on the true sale problems, refer to Vinod Kothari: *Securitisation: The Financial Instrument of the Future*

protection payments from the principal, interest, or both, payable on the bond or note.

The purpose of converting an unfunded derivative into a funded form may be variegated: it could either be a simple collateralisation device for the protection buyer, or may be creation of a funded product which features a derivative and is therefore a restructured form of the original obligation with reference to which the derivative was initially written (for example, an embedded derivative bond that carries a derivative referenced to an original cash bond, but the former one is structured to suit particular needs), etc. The last device of embedding a derivative into a bond or note is also a familiar way of converting credit derivatives into capital market instruments whereby credit derivatives are taken over to the capital market.

## Credit event:

Credit event or events are the contingencies or the risk of which is being transferred in a credit derivative transaction. There are certain credit derivatives, such as total rate of return swaps, where the reference to credit event is merely for close-out as the cashflows are swapped regularly; but most credit derivative deals refer to an event or events upon the happening of which protection payments will be triggered.

ISDA's standard documentation lists and elaborates different credit events for different types of credit derivative deals. For standard credit derivatives, there are 6 credit events – bankruptcy, failure to pay, obligation default, obligation acceleration, repudiation or moratorium, and restructuring. Parties are free to choose one or more credit events. If the parties use a non-ISDA document, they can define their own credit events as well. In most capital market transactions, credit events are given a structured meaning by the parties.

## Notional value:

We have discussed above the relevance of notional value in a derivative deal. Like all derivative deals, credit derivatives also refer to a notional value as the reference value for computing both the premium and the protection payments. Notional values are generally standardised into denominations of USD 1 million. However, capital market transactions can use their own non-standard notional values.

There are certain derivatives where the notional value is not fixed – it continues to come down over time. This is where the derivative is linked with an amortizing loan, or an asset backed security.

## Premium:

The premium is the consideration for buying protection that the protection buyer pays to the protection seller over time. Premium is normally expressed in terms of basis points (bps)[6]. For example, a premium of 85 bps will mean on a notional value of USD 1

[6] One basis point is 1 out of 10000. It is 1/100$^{th}$ of a cent.

million, the protection buyer will pay to the protection seller USD 8500 as the premium. Premium is normally settled on a quarterly basis but typically accrues on a daily basis.

The premium may not be constant over time – there might be a step-up feature, meaning the premium going up after a certain time. This might be either to reflect the *term structure of credit risk*, or simply for a perfunctory regulatory compliance – see under Tenure below.

## Tenure:

The tenure is the term over which the derivative deal will run. The tenure comes to an end either by the efflux of time or upon happening of the credit event, whichever is earlier. In case of portfolio derivatives, credit event on one of the obligors may not lead to termination of the derivative.

As we discussed earlier, the tenure of the credit derivative need not coincide with the maturity of the actual exposure of the protection buyer. However, for regulatory purposes, conditions for capital relief curtail the benefit of capital relief where there is a maturity mismatch between the tenure of the underlying credit asset, and that of the credit derivative, So, the common practice in transactions where the protection buyer intends to seek a capital relief, but where the protection seller wants to give protection only for 3 years while the underlying exposure is for 5 years, is to quote a rate for 3 years, with a step-up after year 3, with an option to terminate with the protection buyer. The protection buyer will terminate the transaction due to the step-up feature, effectively getting protection only for 3 yearS, while theoretically, for regulatory purposes, the exposure is fully covered for 5 years.

## Loss computation:

If a credit event takes place, the protection seller must make compensatory loss payments to the protection buyer, as in case of a standard insurance contract. However, the significant difference between a standard insurance contract and a credit derivative is that in case of the latter, it is not important that the protection buyer must actually suffer losses; nor is the amount of actual loss relevant.

Losses of the protection seller are also known as *protection payment*.

The loss computation and the payments required to be made by the protection seller are a part of "settlement". Obviously, the losses of the protection seller will depend on the settlement method – physical or cash. Where the terms of settlement are cash, the contract will provide for the manner of computing losses. Here, the loss is the difference between the **par value** of the reference asset (that is to say, the notional value,plus accrued interest as per terms of the credit), less the **fair value** on the valuation date. Most of the reference assets will not have any deterministic market values as such: so the method of computing the fair value is decided in the contract in details. If the reference asset is something like a senior unsecured loan, the market value may be found out by taking an average of the quotes given by several independent dealers. This is, of course,

one of the several **valuation method**s that the contract may signify – the appropriate valuation method will be the one that suits the reference asset in question.

As significant as specifying the valuation method is to specify the valuation date. Usually, a cooling off period is allowed between the actual date of happening of an event of default and the valuation date. This is to allow for the knee-jerk reaction of the market values to get alleviated, and more rational pricing of the defaulted credit asset to take place.

Computation of losses is not required for a type of derivative called **binary swaps** or **fixed recovery** swaps where the protection seller is required to pay a particular amount to the protection buyer, irrespective of the actual losses or valuation.

## Threshold risk or loss materiality provisions:

Credit derivative contracts may sometimes provide for a threshold risk, upto which the losses will be borne by the protection buyer, and it is only when the loss exceeds the threshold limit that a claim will lie against the protection seller. This is also called a materiality loss provision, under the understanding that only material losses will be transferred to the protection seller, even though the threshold limit may be quite high and not necessarily prevent immaterial losses from being claimed from the protection seller. In such cases, the more appropriate term is **first loss risk** – where the first loss risk upto the specified amount is borne by the protection buyer and it is only losses above the first loss amount that are transferred to the protection seller.

## Cash and physical settlement:

Settlement arises when the credit events take place. The terms of settlement could be either cash settlement or physical settlement. In case of cash settlement, the losses computed as discussed above are paid by the protection seller to the protection buyer, and the reference asset continues to stay with the protection buyer. In case of physical settlement, the protection buyer physically delivers, that is, transfers an asset of the reference entity that answers the definition of *deliverable obligation*, and gets paid the par value of the such delivered asset, limited, of course, to the notional value of the transaction. The concept of deliverable obligation in a credit derivative is critical as the derivative is not necessarily connected with a particular loan or bond. Being a transaction linked with generic default risk, the protection buyer may deliver any of the defaulted obligations of the reference entity. However, to prevent against something equity or other contingent securities from being delivered, transaction documents typically specify the characteristics of the “deliverable” obligations.

Thus, in case of physical settlement, there is a transfer of the reference obligation to the protection seller upon events of default, and thereafter, the recovery of the defaulted asset is done by the protection seller, with the hope that he might be able to cover some of his losses if the recovered amount exceeds the market value as might have been estimated in case of a cash settlement. This expectation is quite logical, since the quotes in case of cash settlement are made by potential buyers of defaulted assets who also hope to make a profit in buying the defaulted asset. Physical settlement is more common where the

counterparty is  bank or financial intermediary who can hold and take the defaulted asset through the bankruptcy process, or resolve the defaulted asset. The most common mode of settlement between the parties in bilateral deals is physical settlement, though the market has gradually started preferring cash settlements or fixed recovery trades.

### Deliverable asset:

In case of physical settlements, what is the asset that the protection buyer may deliver? As discussed earlier, the protection buyer may not exactly hold the reference asset.  A default on the reference asset would also imply a default on other parallel obligations of the obligor: therefore, market practices allow parallel assets to be delivered to the protection seller.  Several conditions exist under ISDA standard documentation before a deliverable asset can so qualify, and parties may choose one or more of these conditions to narrow down the scope of deliverable obligations. For that matter, the parties may also specify that the reference obligation itself will be the deliverable obligation.

### ISDA documentation:

International Swaps and Derivatives Association is an international body of dealers in swaps and derivatives. ISDA's membership includes the most of the regular dealers in OTC derivatives, and for the sake of standardisation as also brevity in legal documentation, ISDA members mostly use ISDA's standard definitions and confirmations. In case of OTC credit derivatives, it is most common for parties to use ISDA's standard confirmation, which contains the variable commercial terms agreed to between the parties. The legal definitions that are imported by reference are contained in published documents of ISDA, which in case of credit derivatives is the 1999 Definitions, amended from time to time.

## Quick introduction to the types of credit derivatives:

The easiest and the most traditional form of a credit derivative is a guarantee. Financial guarantees have existed for thousands of years. However, the present day concept of credit derivatives has travelled much farther than a simple financial guarantee, and has obviously been found much more robust in affording protection than the traditional guarantees.

The following is a quick introduction to the various types of credit derivatives.

### Credit default swap:

Credit default swap can literally be defined as an option to swap a credit asset for cash, should it default. A credit default swap is essentially an option, and option bought by the protection buyer, and written by the protection seller. The strike price of the option is the par value of the reference asset. Unlike a capital market option, the option under a credit default swap can be exercised only when a credit event takes place.

In a credit default swap, if a credit event takes place, the protection buyer at his option may swap the reference asset or any other deliverable obligation of the reference obligor, either for cash equal to the par value of the reference asset, or get compensated to the extent of the difference between the par value and market value of the reference asset.

Credit default swaps are the most important type of credit derivative in use in the market.

### Total return swap:

As the name implies, a total return swap is a swap of the total return out of a credit asset swapped against a contracted prefixed return. The total return out of a credit asset is reflected by the actual stream of cashflows from the reference asset as also the actual appreciation/depreciation in its price over time, and can be affected by various factors, some of which may be quite extraneous to the asset in question, such as interest rate movements. Nevertheless, the protection seller here guarantees a prefixed spread to the protection buyer, who in turn, agrees to pass on the actual collections and actual variations in prices on the credit asset to the protection seller.

So periodically, the protection buyer swaps (the actual return *on* a notional value of the reference asset), in lieu of (a certain spread on a reference rate, LIBOR + 60 bps). The swapping of principal flows is usually avoided as the interest will anyway compensate for any deviations in the principal flows.[7]

### Credit linked notes:

Credit linked notes (CLNs) are a securitized form of credit derivatives which converts a credit derivative into a funded form. Here, the protection buyer issues notes or bonds which implicitly carries a credit derivative. The buyer of the CLN sells protection and pre-funds the protection sold by way of subscribing to the CLN. Should there be a credit event payment due from the protection seller, the amounts due on the notes/bonds on account of credit events will be appropriated against the same and the net, if any, will be paid to the CLN holder. The CLNs carry a coupon which represents both the interest on the funding, as also the credit risk premium on protection sold. Obviously the maximum amount of protection that the CLN holder provides is the amount receivable on account of the CLN, that is, the interest and the principal.

### Credit spread options:

These are basically call or put options on an asset exercisable based on a certain spread. The call or put is an option with the holder, who is the protection buyer. Let us say a protection buyer agrees with the protectio buyer that should the spread of a particular bond exceed a particular spread over LIBOR (**strike spread**), then the protection buyer will have the option, as usual, of either a physical settlement of the reference obligation at the strike spread, or net settlement.

The option to put the asset can be said to be the option to call a pre-determined spread. In other words, the protection buyer intends to protect a particular spread over a base rate and indicates a negative view on the reference obligation. On the contrary, if the protection buyer holds a positive view on the reference obligation, he may enter into an option to call the asset, or put the spread.

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[7] Besides, swapping of principal flows will create a lender-borrower relation between the swap counterparties which may not be intended.

Credit spread options are not related to events of default as understandably, the movement in spreads can be related to various factors besides credit events.

In regulatory standards of most countries, credit spread options are not considered for regulatory capital relief.[8] [9]

## Credit derivatives and traditional financial guarantee products:

Credit derivatives, particularly, credit default swaps, have very close affinity with some traditional financial guarantee contracts such as:

- Bond insurance
- Letters of credit
- Revolving credit
- Financial guarantees.

### Credit derivatives and guarantees:

The traditional guarantee contract provides for payment by the guarantor to the creditor in case of a default by the debtor. Credit derivatives, particularly credit default swaps, might have an apparent similarity with traditional guarantees. However, the similarity does not go anywhere beyond.

In a traditional guarantee, the intent of the guarantor is to protect the creditor from losses and put him at par with what he would have received had the original debtor not defaulted. Thus, the payments by a guarantor are typically due only:

- When the principal debtor has defaulted
- To the extent of the loss or damage suffered by the creditor.

Credit default swaps, on the other hand, are not limited to "default" as such but generally extend to cover events such as bankruptcy, compromise, restructuring, etc.

Besides, in case of credit default swaps, the payments to be made by the protection seller might either be an a prefixed amount or may be based on a valuation, which may or may not equal to the damage suffered by the protection buyer.

Another significant difference lies in the fact that a guarantee is always a tri-lateral contract - the guarantor, debtor and creditor are all a party to the contract of guarantee. Credit default swaps, on the other hand, are purely a contract between the protection buyer and seller, and the obligor may not come to know about the contract at all.

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[8] See, for example, para 8.2.1 of FSA, UK's regulatory requirements on credit derivatives – "protection bought using a credit spread option is ignored for capital purposes".

[9] That they are not eligible for regulatory capital relief is a major reason why spread options have not become popular as the other types of credit derivatives.

Difference between traditional guarantees and credit derivatives

| | **Credit default swap** | **Financial guarantee** |
|---|---|---|
| Nature of the contract | A contract whereby the protection seller makes predefined payments to the protection buyer on happening of certain events. In contract law parlance, it is an independent contract, neither a contract of guarantee, nor indemnity. | A contract whereby the guarantor will pay the sums due and payable by the principal debtor on the failure of the latter to pay. In contract law parlance, it is a contract of guarantee. |
| Parties to the contract | The protection seller and the protection buyer. There is no contractual relationship with the obligor and the protection seller. | The guarantor (protection provider), surety (protection seeker) and the principal debtor (obligor). There is a contractual relation between the guarantor and the obligor. |
| Consideration | Payment of certain fees or premium by the protection buyer to the protection seller. | Consideration needs to exist between the guarantor and the principal debtor – normally a guarantee commission. |
| Assumption of rights against the obligor | Upon default, unless the protection buyer delivers the asset to the protection seller, the latter has no rights against the obligor. | As per law, if the guarantor makes payment of any sum due by the principal debtor, he becomes the creditor of the principal debtor for the sum so paid. |
| Nature of protection | Protection is provided against pre-defined credit events, not limited to defaults. | Protection is normally provided against default by the obligor. |
| Nature of payments upon default | Where the predefined credit events take place, the protection seller is to make the predefined credit event payments to the protection buyer. | Where the default by obligor takes place, the surety is first expected to proceed against the obligor. Having exhausted remedies, the surety can claim |

| | Credit default swap | Financial guarantee |
|---|---|---|
| | | defaulted payments from the guarantor. |
| Relationship between the protection provided and the obligation | Credit default swaps are not necessarily connected with the existence and extent of the payment obligation of the obligor: while the obligation may be different, the default swap might be referenced to a different asset. The notional amount for the swap might also differ from the actual obligation. | Guarantees are necessarily connected with a specific obligation of the obligor. |
| Tradability | Credit default embedded in credit linked notes are tradable. | Guarantees are bilateral contracts and are not tradable. |
| Pricing | Credit default swaps are priced by the market | Guarantees are priced bilaterally. |
| Marking to market | CDS are marked to market | Guarantees are not marked to market. |
| Documentation | Standard documentation as developed by ISDA | No standard documentation. |

## Credit derivatives and securitisation:

Securitisation is the device whereby financial assets such as receivables are converted into marketable securities and are offered to investors, usually with credit enhancements. As a generic process, securitisation refers to the very process of converting something which is not a marketable security into one; the word ‘asset securitisation” is sometimes used specifically to refer to the application of the device to converting assets into securities.

Asset securitisation and credit derivatives are contradictory, but have been used as mutually complementary. An asset securitisation results into transfer of assets, mostly while the risks are retained by the originator in form of the credit enhancements. In case of credit derivatives, on the other hand, there is no transfer of assets, but a mere transfer of risks. Securitisation results into creation of liquidity, while credit derivatives are unfunded as far as the protection buyer is concerned.

However, securitisation and credit derivatives have joined hands to result into **synthetic securitisations**, which can be viewed as a securitisation of a credit derivative, that is, conversion of a credit derivative into marketable securities. Synthetic securitisation has

provided wider use and far reaching effect to credit derivatives; at the same time, provided a new flexibility to asset securitisation.