

AN INTRODUCTION TO COLLATERALISED DEBT OBLIGATIONS

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Collateralised Debt Obligations (CDOs)

A CDO is essentially a securitisation in which a special purpose vehicle or SPV issues bonds or notes against an investment in a diversified pool of assets. These assets can be bonds, loans such as commercial bank loans or a mixture of both bonds and loans. Where assets are bonds, these are usually high-yield bonds that provide a spread of interest over the interest liability of the issued notes; where the assets are loans, the CDO acts as a mechanism by which illiquid loans can be pooled into a marketable security or securities. The third type of CDO is known as a synthetic CDO and refers to a structure in which credit derivatives are used to construct the underlying pool of assets.

The investments are funded through the issue of the notes, and interest and principal payments on these notes are linked to the performance of the underlying assets. These underlying assets act as the *collateral* for the issues notes, hence the name. The key difference between CDOs and ABS and multi-asset repackaged securities is that the collateral pool is more actively managed by a portfolio or collateral manager. Generally CDO feature a multi-tranche structure, with a number of issued securities, most or all of which are rated by a ratings agency. The priority of payment of the issued securities reflects the credit rating for each note, with the most senior note being the highest rated. The term *waterfall* is used to refer to the order of payments; sufficient underlying cash flows must be generated by the issuing vehicle in order to meet the fees of third-party servicers and all the note issue liabilities. In Europe issued securities may pay a fixed or floating coupon, usually on a semi-annual, quarterly or monthly basis¹, with senior notes issues from AAA to A and junior and mezzanine notes rated BBB to B. There may be unrated subordinated and equity pieces issued. Investors in the subordinated notes receive coupon after payment of servicing fees and the coupon on senior notes. The equity and subordinated note are the first loss pieces and, as they carry the highest risk, have a higher expected return compared to that of the underlying collateral.

There are two types of CDO, *collateralised bond obligations* (CBOs) and *collateralised loan obligations* (CLOs). As the names suggest, the primary difference between each type is the nature of the underlying assets; a CBO will be collateralised by a portfolio of bonds while a CLO will represent an underlying pool of bank loans. CDOs have also been collateralised by credit derivatives and credit-linked notes. Following this distinction, CDOs can be broken into two main types, *balance sheet* CDOs and *arbitrage* CDOs. Balance sheet CDOs are most akin to a traditional securitisation; they are created to remove assets from the balance sheet of the originating bank or financial institution, usually for reduce capital requirements, increase return on capital or free up lending lines. An arbitrage CDO is created when the originator, who may be a bank or fund manager for instance, wishes to exploit the yield differential between the underlying assets and the overlying notes. This may be achieved by active management of the underlying portfolio, which might consist of high-yielding or emerging market bonds. Arbitrage CDOs are categorized further into *cash flow* and *market value* CDOs.

¹ Hence proving once and for all that Eurobonds, defined as international securities issued by a syndicate of banks and clearing in Euroclear and Clearstream, may pay coupon on frequencies other than an annual basis!

Almost invariably balance sheet CDOs are cash flow transactions. Put simply a cash flow CDO is one in which the underlying collateral generates sufficient cash flow to pay the principal and interest on the issued notes, as well as the servicing fees of third party agents. In a market value CDO, the collateral manager actively runs the portfolio and, by means of this trading activity, generates sufficient returns to pay the CDO obligations.

Banks and financial institutions use CDOs to diversify their sources of funding, to manage portfolio risk and to obtain regulatory capital relief. Investors are attracted to the senior notes in a transaction because these allow them to earn relatively high yields compared to other asset-backed bonds of a similar credit rating. Other advantages include:

- exposure to a diversified range of credits;
- access to the fund management and credit analysis skills of the portfolio manager;
- generally, a lower level of uncertainty and risk exposure compared to a single bond of similar rating.

A good overview introduction to CDOs is given in Fabozzi (2000). We show a “family tree” of CDOs in figure 7.15. The most common CDOs are balance sheet deals; however a later development, the *synthetic* CDO, now accounts for a large number of transactions.

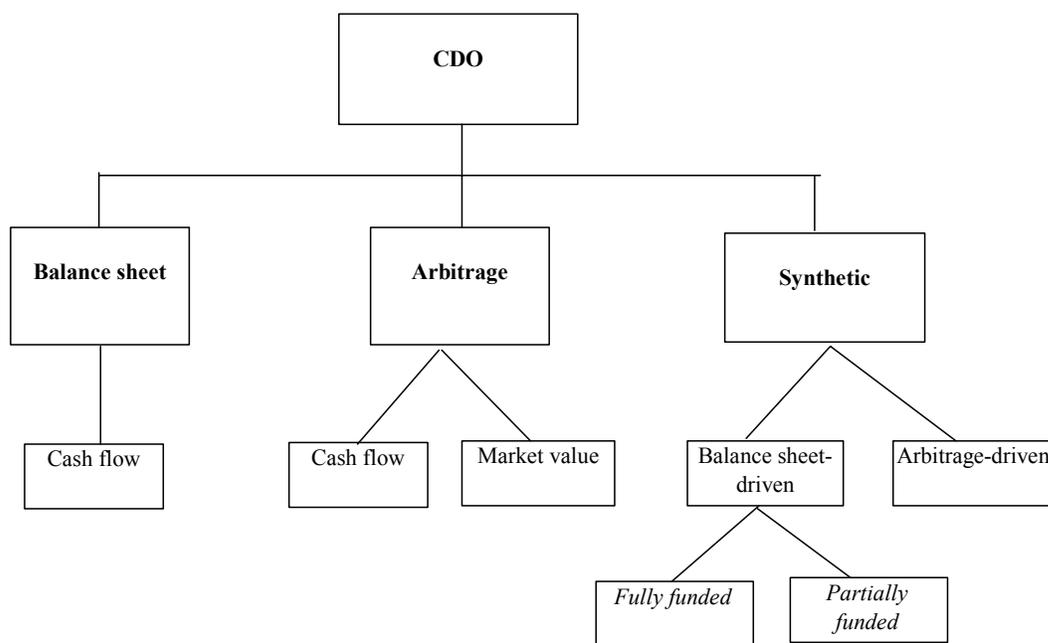


Figure 2 The CDO family

Cash flow CDO

These are intuitively the easiest to understand and are similar to other asset-backed securitisation involving an SPV. In essence assets such as bonds or loans are pooled together and the cash flows from these assets used to back the obligations of the issued notes. As the underlying assets are sold to the SPV, they are removed from the originator's balance sheet; hence the credit risk associated with these assets is transferred to the holders of the issued notes. The originator also obtains funding by issuing the notes. The structure is illustrated, admittedly in simple fashion, at figure 3.

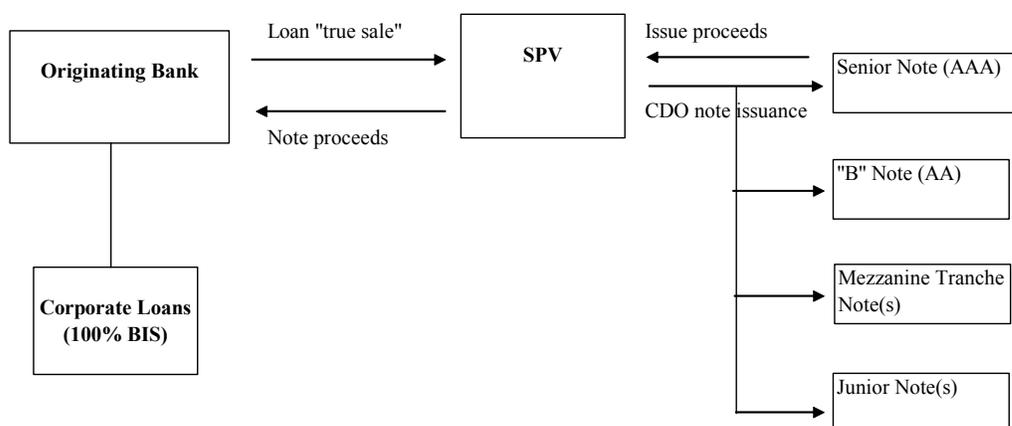


Figure 3 Cash flow CDO

Synthetic CDO

A synthetic CDO is so-called because the transfer of credit risk is achieved “synthetically” via the sale of a credit derivative, rather than a “true sale” to the SPV. This in a synthetic CDO the credit risk of the underlying loans or bonds is transferred to the SPV using credit default swaps and/or Total Return swaps (TRS). However the assets themselves are not legally transferred to the SPV, and they remain on the originator's balance sheet. Using a synthetic CDO, the originator can obtain regulatory capital relief and manage the credit risk on its balance sheet, but will not be receiving any funding. A typical structure is shown at figure 7.17.²

Synthetic CDOs are popular in the European market because they are simpler and can be brought to the market quickly; in practice, in certain countries the legal infrastructure has not been sufficiently developed to enable to true sale securitisation to be undertaken. In addition when the underlying asset pool is composed of bonds from different countries, a cash funded CDO may present too many administrative difficulties. A synthetic CDO removes such issues by using credit derivatives, and in theory can be brought to market more quickly than a cash flow arrangement (although in practice this is not always the case). Synthetic CDOs have been issued as arbitrage CDOs or balance sheet CDOs. We briefly describe each type.

² “P + I” is a common abbreviation for note (or loan) principal and interest.

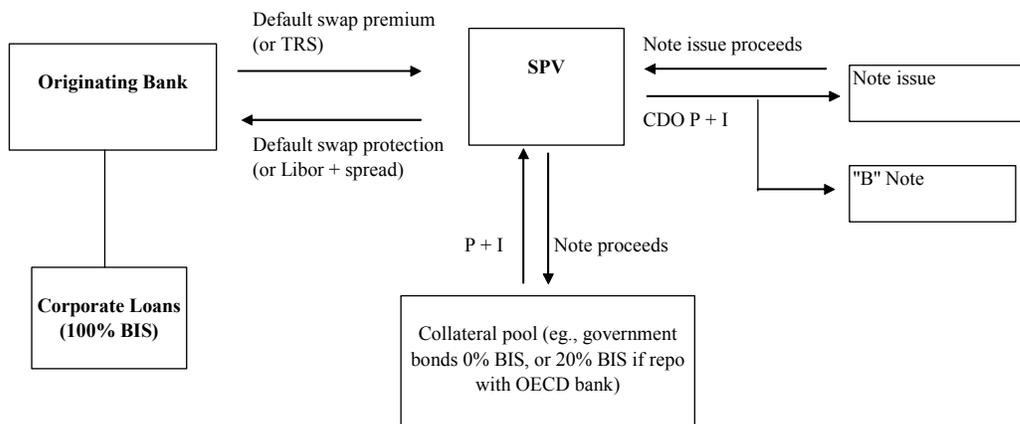


Figure 4 Synthetic CDO structure

A synthetic arbitrage CDO is originated generally by collateral managers who wish to exploit the difference in yield between that obtained on the underlying assets and that payable on the CDO, both in note interest and servicing fees. The generic structure is as follows: the specially-created SPV enters into a TRS with the originating bank or financial institution, referencing the bank's underlying portfolio (the *reference portfolio*). The portfolio is actively managed and is funded on the balance sheet by the originating bank. The SPV receives the "total return" from the reference portfolio, and in return it pays Libor plus a spread to the originating bank. The SPV also issues notes that are sold into the market to CDO investors, and these notes can be rated as high as AAA as they are backed by high-quality collateral, which is purchased using the note proceeds. A typical structure is shown at figure 5.

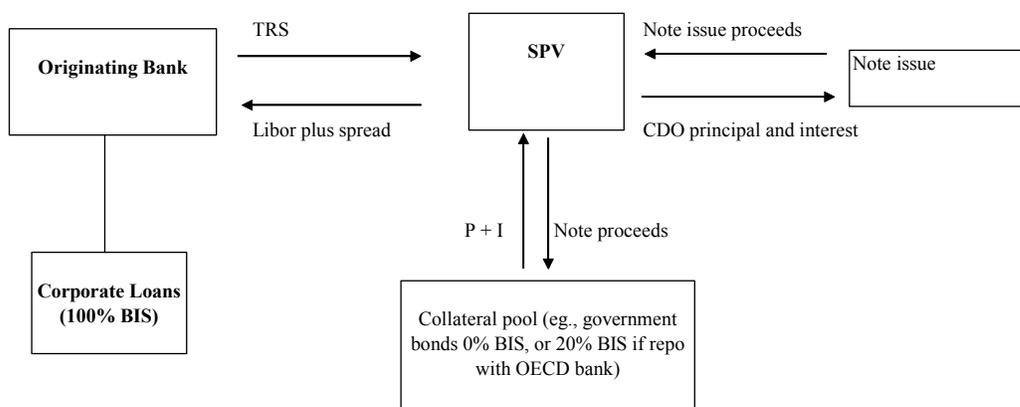


Figure 5 Synthetic arbitrage CDO structure

A balance sheet synthetic CDO are employed by banks that wish to manage regulatory capital. As before, the underlying assets are bonds, loans and credit facilities originated by the issuing bank. In a balance sheet CDP the SPV enters into a credit default swap agreement with the originator, again with the specific collateral pool designated as the reference portfolio. The

SPV receives the premium payable on the default swap, and thereby provides credit protection on the reference portfolio. There are two types of CDO within this structure. In a *partially funded* CDO, only the highest credit risk segment of the portfolio is transferred. The cash flow that would be needed to service the synthetic CDO overlying liability is received from the AAA-rated collateral that is purchased by the SPV with the proceeds of the note issue. An originating bank obtains maximum regulatory capital relief by means of a partially funded structure, through a combination of the synthetic CDO and what is known as a *super senior swap* arrangement with an OECD banking counterparty. A super senior swap provides additional protection to that part of the portfolio, the senior segment, that is already protected by the funded portion of the transaction.

A generic partially funded transaction is shown at figure 6. It shows an arrangement whereby the issuer enters into two credit default swaps; the first with an SPV that provides protection for losses up to a specified amount of the reference pool³, while the second swap is set up with the OECD bank or, occasionally, an insurance company.⁴

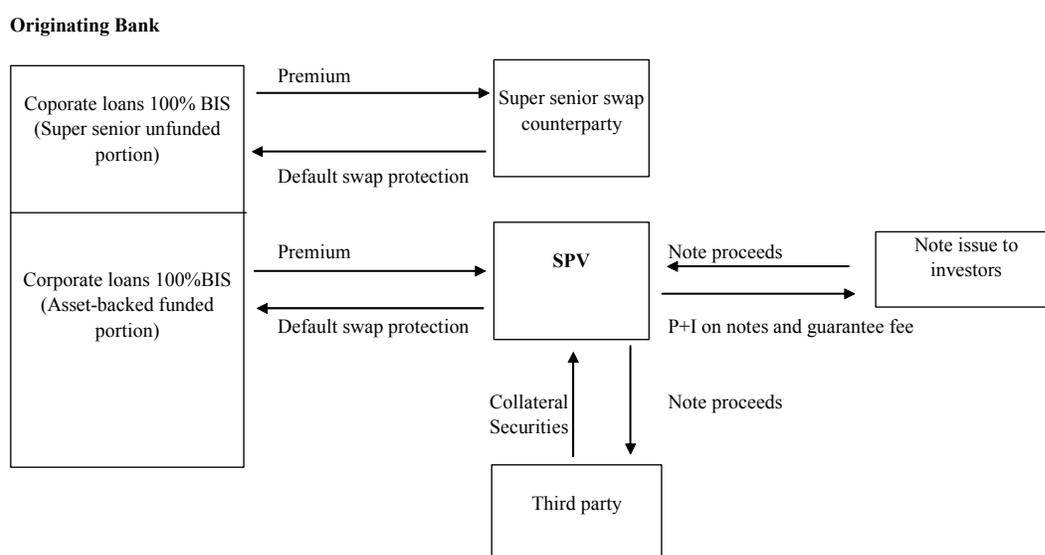


Figure 6 Partially funded synthetic CDO structure

A *fully funded* CDO is a structure where the credit risk of the entire portfolio is transferred to the SPV via a credit default swap. In a fully funded (or just “funded”) synthetic CDO the issuer enters into the credit default swap with the SPV, which itself issues notes to the value of the assets on which the risk has been transferred. The proceeds from the notes are invested in risk-free government or agency debt such as gilts, bunds or Pfandbriefe, or in senior unsecured bank debt. Should there be a default on one or more of the underlying assets, the required amount of the collateral is sold and the proceeds from the sale paid to the issuer to recompense for the losses. The premium paid on the credit default swap must be sufficiently high to ensure

³ In practice, to date this portion has been between 5% and 15% of the reference pool.

⁴ An “OECD” bank, thus guaranteeing a 20% risk weighting for capital ratio purposes, under Basle I rules.

that it covers the difference in yield between that on the collateral and that on the notes issued by the SPV. The generic structure is illustrated at figure 7.

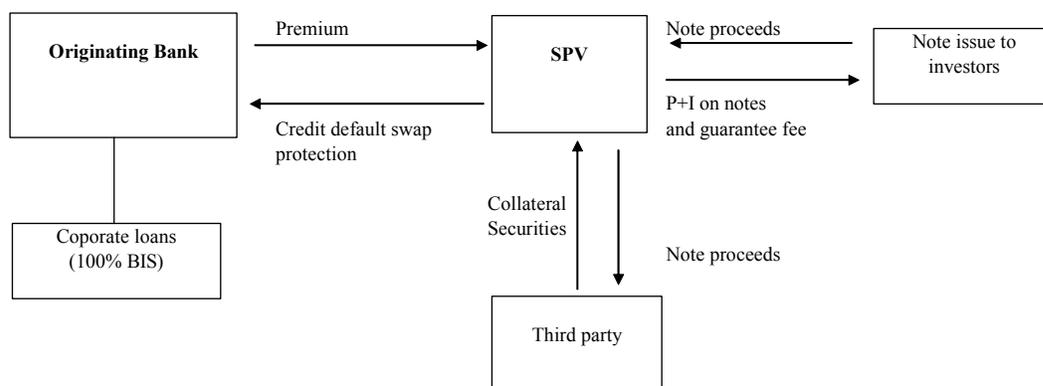


Figure 7 Fully funded synthetic balance sheet CDO structure

Fully funded CDOs are relatively uncommon. One of the advantages of the partially funded arrangement is that the issuer will pay a lower premium compared to a fully funded synthetic CDO, because it is not required to pay the difference between the yield on the collateral and the coupon on the note issue (the unfunded part of the transaction). The downside is that the issuer will receive a reduction in risk weighting for capital purposes to 20% for the risk transferred via the super senior default swap.

Within the European market synthetic balance sheet CDOs are the most common structure. The reasons that banks originate them are two-fold:

- *capital relief*: banks can obtain regulatory capital relief by transferring lower-yield corporate credit risk such as corporate bank loans off their balance sheet. Under Basle I rules all corporate debt carries an identical 100% risk-weighting; therefore with banks having to assign 8% of capital for such loans, higher-rated (and hence lower-yielding) corporate assets will require the same amount of capital but will generate a lower return on that capital. A bank may wish to transfer such higher-rated, lower-yield assets from its balance sheet, and this can be achieved via a CDO transaction. The capital requirements for a synthetic CDO are lower than for corporate assets; for example the funded segment of the deal will be supported by high quality collateral such as government bonds, and via a repo arrangement with an OECD bank would carry a 20% risk weighting, as does the super senior element;
- *transfer of credit risk*: the cost of servicing a fully funded CDO, and the premium payable on the associated credit default swap, can be prohibitive. With a partially funded structure, the issue amount is typically a relatively small share of the asset portfolio. This lowers substantially the default swap premium. Also, as the CDO investors suffer the first loss element of the portfolio, the super senior default swap can be entered into at a considerably lower cost than that on a fully funded CDO.

In essence synthetic CDOs represent relative ease of transaction and legal documentation requirements, which has been behind their popularity in the European market.

APPENDIX

An introduction to credit derivatives

Credit derivatives are a relatively recent innovation, having been introduced in significant volumes in the mid 1990s. They are financial instruments originally designed to protect banks and other institutions against losses arising from *credit events*. A succinct definition would be that they are instruments designed to lay off or take on credit risk. Since their inception, they have been used to trade credit and for speculative purposes and as hedging instruments.

A payout under a credit derivative is triggered by a credit event. As banks define default in different terms, the terms under which a credit derivative is executed usually include a specification of what constitutes a credit event. Typically this can be:

- bankruptcy or insolvency of the reference asset obligor;
- a financial restructuring, for example occasioned under administration or as required under US bankruptcy protection;
- 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;
- a downgrade in credit rating below a specified minimum level.

A user of credit derivatives may be any institution that has an exposure to or desires an exposure to credit risk. This includes investment banks and commercial banks, insurance companies, corporates, fund managers, and hedge funds.

The most common credit derivative, and possibly the simplest, is the *credit default swap*, *credit swap* or *credit swap*. This is a contract in which a periodic fixed fee or a one-off premium is paid 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 fee of the nominal value. The swap can refer to a single asset, known as the reference asset or underlying asset, or a basket of assets. 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. However it is structured, the credit default swap enables one party to transfer its credit exposure to another party. Banks may use default swaps to trade sovereign and corporate credit spreads without trading the actual assets themselves; for example someone who has gone long a default swap will gain (the protection buyer) if the reference asset obligor suffers a rating downgrade or defaults, and can sell the default swap at a profit if he can find a buyer counterparty. 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 default swap need never have owned a bond issued by the reference asset obligor.

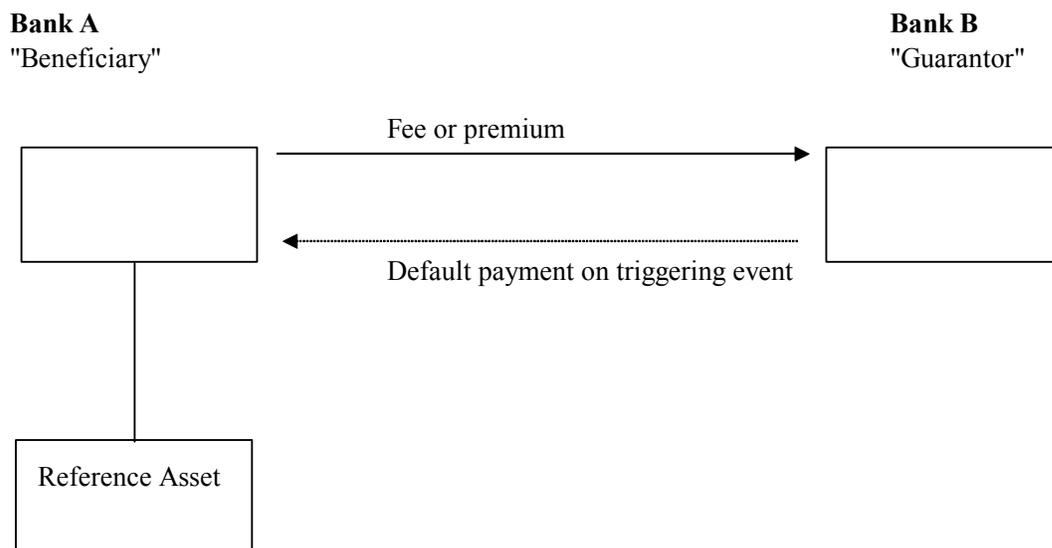


Figure A1 Credit Default Swap

The maturity does not have to match the maturity of the reference asset and in most cases does not. On default the swap is terminated and default payment by the protection seller or guarantor is calculated and handed over. The guarantor may have the asset delivered to him and pay the nominal value, or may cash settle the swap contract.

Another type of credit derivative is the *credit-linked note*. These exist in a number of forms, but all of them contain a link between the return payable on them and the credit-related performance of the underlying asset. A standard credit-linked note is a loan or security, usually issued by an investment-graded entity, that has an interest payment and fixed maturity structure similar to a vanilla bond. The performance of the note however, including the maturity value is linked to the performance of specified underlying assets as well as that of the issuing entity. An accessible introduction to credit-linked notes is given in Kasapi (1999).

Credit options are another form of credit derivative. Like other options a credit option is a contract designed to meet specific hedging or speculative requirements of an entity, which may purchase or sell the option to meet its objectives. A credit call option gives the buyer the right without the obligation to purchase the underlying credit-sensitive asset, or a credit spread, at a specified price and specified time (or period of time). A credit put option gives the buyer the right without the obligation to sell the underlying credit-sensitive asset or credit spread. By purchasing credit options banks and other institutions can take a view on credit spread movements for the cost of the option premium only, without recourse to actual loans issued by an obligor. The writer of credit options seeks to earn fee income.

Banks use credit derivatives for a number of reasons. Some of these are summarised below.

Diversifying the credit portfolio

A bank may wish to take on credit exposure by providing credit protection on assets that it already owns, in return for a fee. This enhances income on their portfolio. They may sell credit derivatives to enable non-banking clients to gain credit exposures, if these clients do not wish to purchase the assets directly. In this respect the bank performs a credit intermediation role.

Reducing credit exposure

Another use of credit derivatives is to reduce credit exposure either for an individual asset or a sectoral concentration, by buying a credit default swap. This may be desirable for assets in their portfolio that cannot be sold for relationship or tax reasons

Acting as a credit derivatives market maker

A bank may wish to set itself up as a market maker in credit derivatives, that is becoming a credit trader. In this case the trader may or may not hold the reference assets directly, depending on their appetite for risk and the liquidity of the market enabling them to offset derivative contracts as and when required.

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