

Credit derivatives – some applications in international financial transactions

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Abstract

The credit derivatives market spans a broad range of products designed to help end users manage credit risk and exploit relative value opportunities across the global credit markets. Long thought of as a promising but exotic sector, credit derivatives are rapidly maturing into an established sector in its own right.

In the first part of this article we briefly describe the major credit derivatives products that people seeking to understand this market should know about. The credit derivative products which are considered are asset swap, credit default swap, credit linked notes, and synthetic collateralized debt obligations. In the second part of this article we review some practical examples of how credit derivatives can be applied by a wide range of different users with differing investment and hedging objectives. We conclude with some thoughts on why the credit derivatives market is poised to grow sharply for the foreseeable future.

Key words:

credit risk, asset swap, credit default swap, credit linked notes, synthetic collateralized debt obligations.

1 Introduction

The credit derivatives market encompasses a wide range of capital markets products designed to transfer credit risk among investors through over-the-counter transactions. Credit swaps are off-balance sheet financial products that allow capital markets participants to trade and hedge credit risk separately from the loans, bonds, portfolios and various business contracts where it is normally embedded.

More broadly the credit derivatives market also includes on-balance sheet customized structured products such as credit-linked notes, repackaged notes, and synthetic collateralized debt obligations (CDOs). These products appeal to investors who cannot participate directly in the derivatives market but have credit expertise and wish to acquire structured securities that offer yield pickups or risk/return characteristics that simply are not otherwise available.

Perhaps the most significant development in financial markets over the past ten years has been the rapid development of credit derivatives and structured credit products. Although the first credit derivatives transactions occurred in the early 1990s, a liquid market did not emerge until the International Swaps and Derivatives Association succeeded in standardizing documentation of these transactions in 1999. According to the BIS, the notional value of credit derivatives outstanding increased sixfold between 2001 and 2004, reaching \$4.5 trillion in June of last year. Moreover, this growth has been accompanied by significant product innovation, notably the development of synthetic collateralized debt obligations (CDOs), which allow the credit risk of a portfolio of underlying exposures to be divided or 'tranchéd'

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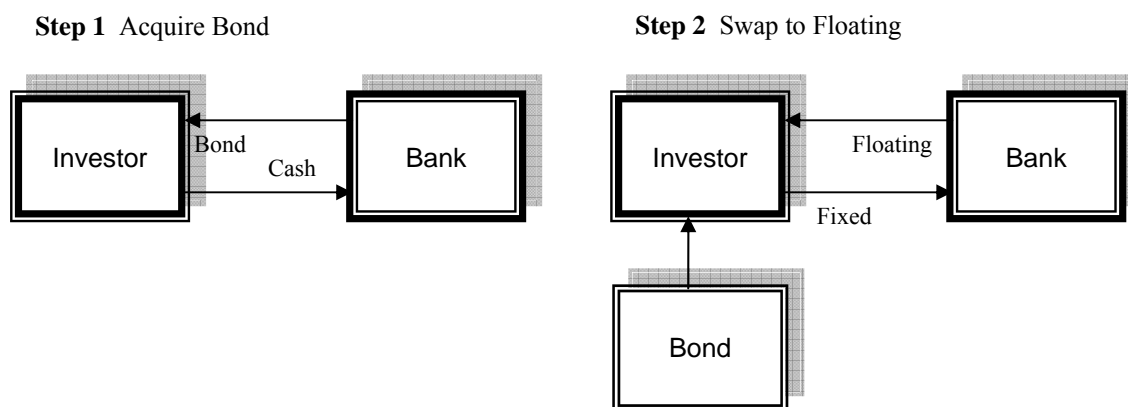
into different segments, each with different risk and return characteristic. Recent growth of credit derivatives has been concentrated in these more-complex structured products.

We believe the credit derivatives market has become a significant sector of the capital markets, and that it will attract an increasing number of new investors and risk managers in coming years.

2 Asset swaps: the basic building block

An asset swap transaction typically entails purchasing a fixed rate asset and simultaneously entering into a swap to convert fixed interest cash flows to floating. Frequently an investor's motive in these transactions is to earn a credit spread on a fixed rate security, while minimizing interest rate or market risk. As such, asset swaps are a basic building block in the credit derivatives market (see figure 1).

Fig. 1: Asset swaps combine a bond and a swap



Assets swaps can be done with a wide variety of securities and loans. Plain vanilla asset swaps account for roughly 60% of asset swap transactions. About 40% of the asset swap market involves more complex structural features that are designed either to strip out unwanted structural features in the underlying bond or to create an enhanced yield.

For example, over the past decade a wide range of structured securities with esoteric interest rate, currency or equity features have been issued by a variety of high quality borrowers. These structured securities often trade at a significant discount to otherwise comparable credit quality securities because few investors want their structured features.

A structured asset swap can be used to strip away or adjust structured interest rate components of the underlying bond and still leave an attractive credit spread. Alternatively, an asset swap may be structured with an embedded interest rate or credit option to generate increased yield. The advantages of asset swaps include simplicity, transparency and flexibility. However, there are several disadvantages associated with asset swaps. In particular, many investors cannot enter into derivative transactions due to regulatory, accounting or investment policy restrictions, or because dealers will not accept them as derivatives counterparties. In addition, the credit performance of the underlying bond and the swap are not linked.

If the underlying bond goes into default, the investor remains subject to the swap, and must either continue to make payments or terminate the swap at the then-current market value.

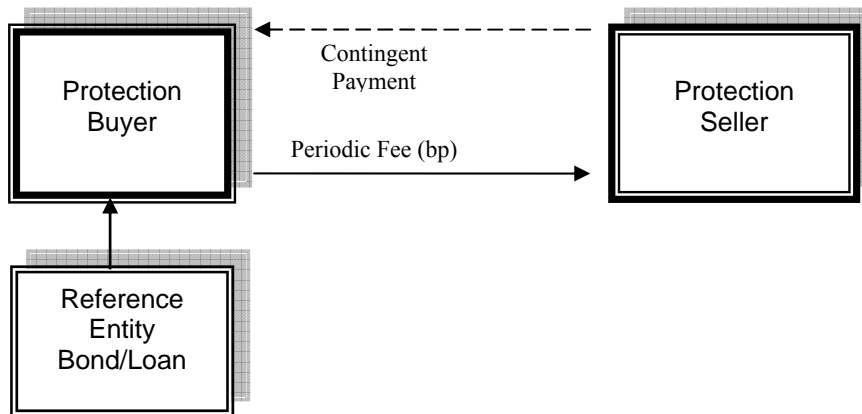
Indeed the development of many credit derivatives products has been driven by the shortcomings of asset swaps. But asset swaps are also an important structured credit product in their own right.

3 Credit Default Swaps

The credit default swap is, in our view, the dominant credit swap product in the credit derivatives market. Quite simply, when an investor's objective is to transfer or acquire credit risk in the derivatives market, the default swap is the most effective and liquid tool available.

In a credit default swap, one counterparty pays a premium to a second counterparty in exchange for compensation for losses should a defined credit event occur with respect to the underlying reference entity or asset (see figure 2).

Fig. 2: Default swaps are simple and transparent



The counterparties are generally referred to as the protection buyer (who pays a premium) and the protection seller (who makes the contingent credit payment). Depending on the contract specifications, should a credit event occur, settlement may be in cash or physical (the protection buyer delivers the reference obligation or other qualifying asset) to the protection seller for par.

Credit default swaps are often described and marketed as financial instruments that provide protection against default risk. While this is certainly true, it does not begin to convey the full versatility of the product.

- Default swaps are not static instruments that only perform in the event of default; like corporate bonds they are market-sensitive products whose mark-to-market performance is closely related to changes in credit spreads. As a result they are an effective tool for hedging against (or assuming exposure to) changes in credit spreads as well as default risk. Credit spread option products provide an asymmetric option approach to hedge against or assume credit spread risk.
- Default swaps also have the special quality that they can be used to create (or hedge) maturity exposures to a credit entity that are not available in the cash market. For example, if an investor wants a three-year maturity and duration exposure to an issuer that has only 1.5-year and 10-year securities outstanding, the appropriate exposure can be created by selling a three-year default swap, or by purchasing a credit-linked note with an embedded written default swap. Total return swaps are sometimes marketed as providing customized maturity exposures (e.g., a one-year total return swap on a 10-year reference asset), but it is important to distinguish between swap maturity and duration exposure. During the term of the swap the total return receiver has full exposure to the market risk and duration of the reference asset, as if it were on the balance sheet. For this reason, total return swaps are often viewed as off-balance sheet funding tools.

These two factors – the ability to use default swaps to hedge (or assume) credit spread risk and to create custom maturity products – account in large part for the success of the default swap product.

4 Credit-linked notes: embedding a credit swap in a corporate obligation

In their most common form credit-linked notes (CLNs) are structured notes or medium-term notes with embedded default swaps. Structured notes are common in Europe and Asia, where investors seek to combine the security of well-known issuers with structured features designed to provide enhanced yield or meet specific investor's objectives. Credit-linked notes are usually direct obligations of a corporate issuer, although as we discuss below, they can also be structured as repackaged notes. CLNs are generally simple and flexible instruments.

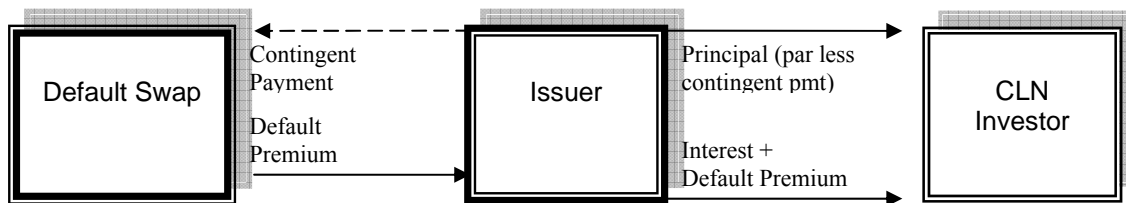
The reference entity in a CLN can be based on a variety of underlying borrowers, ranging from high quality corporates and G-8 governments to high yield issuers and emerging market sovereigns. While specific assets (bonds or loans) can be referenced, generally the contract covers a class (e.g. 'obligations in respect of any borrowed money') of the reference entity. If a credit event occurs on the default swap, the note typically matures and the investor sustains a loss based on the losses on the reference entity's debt. In effect, the investor is selling protection on the reference entity and receiving a premium in the form of an attractive yield spread. The issuer of the note, on the other hand, is purchasing default protection on the reference entity.

CLNs can also be structured to provide for full return of principal. In these structures, if a credit event occurs the CLN remains outstanding until its maturity date but it ceases to pay interest. At maturity the CLN investor is repaid the principal amount. This structure is commonly used by investors looking for exposure to riskier credits (high yield or emerging markets) but with some downside protection. While they yield less than CLNs that do not provide for return of principal (or principal protection), they also receive more favorable regulatory treatment in many countries. In these structures the risk of principal loss is tied to the credit performance of the medium term note issuer rather than the reference entity of the embedded default swap.

There are a number of reasons why investors find CLNs attractive:

- CLNs are on-balance sheet instruments. Investors who are not authorized to use credit derivatives or other off-balance sheet instruments can gain access to credit derivatives markets by buying CLNs. In addition, there is no need to enter into an ISDA master agreement.
- CLNs can be created with customized maturity structures and credit features that are otherwise not available in the cash market.
- CLNs frequently provide a yield pick up relative to comparable cash market investments.
- Banks can issue CLNs that are linked to loan credits in their portfolios. This can free up credit lines to a particular borrower, as well as give non-bank investors access to credit opportunities that are otherwise not normally available in the capital markets.

Fig. 3: Credit-Linked Notes



5 Repackaging: customized securitization

Repackaging involves placing securities and derivatives in a special purpose vehicle (SPV), which then issues customized notes that are backed by the instruments in the SPV. The goal in repackaging is to take securities that have some attractive features (e.g., high yield, good credit) but nonetheless are unappealing or inaccessible to many investors and repackage them to create viable investments. If necessary the repackaged notes can be rated by one or more major rating agencies and they can be exchange listed.

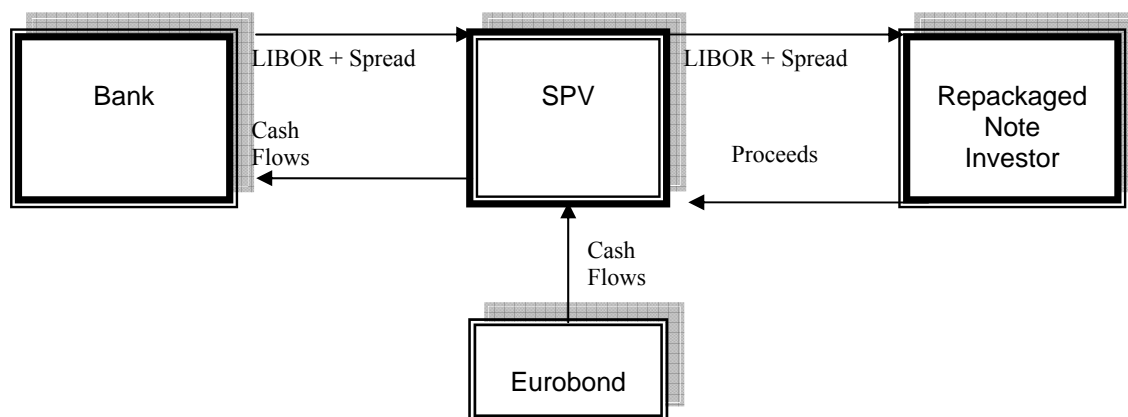
Repackaging is similar in concept to securitisation. The primary difference is that securitization usually entails placing non-security financial assets (such as bank loans) into an SPV, and ‘securitising’ them when the SPV issues notes backed by the financial assets. In repackaging transactions, the components of the SPV are generally securities and derivatives that are ‘repackaged’ into a different form to meet specific investor needs. Among other differences, securitisations tend to be large wholesale issues, while repackagings are generally smaller and aimed at meeting specific investor needs.

The simplest type of repackaging is to repackage an asset swap. Investors who are unable to do asset swaps can obtain similar economics through a repackaged asset swap. In the event of a default on the underlying collateral, the repackaging transaction terminates, including the swap. The swap counterparty is compensated for any mark-to-market exposure by the SPV before the investor is repaid. The economics are similar to that of unwinding an asset swap. The investor, of course, is not a direct party to the swap.

More generally any type of vanilla or structured asset swap could be done in repackaged form. Another advantage of repackaging is that the notes issued to the investors can be in a variety of documentation formats, including listed Eurobonds, non-listed medium term notes, or loans such as German Schuldschein.

Currently, repackaged credit-linked notes – transactions that repackage an asset swap and a default swap – are very popular with investors. These transactions have all the advantages of medium term note CLNs but typically offer higher yields. The cheapness of the asset swap component enhances the yield, and while there are fixed costs to setting up the SPV for a repackaging transaction, a well run program can limit these expenses.

Fig. 4: Repackaging



6 Synthetic CDOs: Combining the best of securitisation and credit derivative technology

Collateralized debt obligations are securitizations of either corporate bonds (collateralized bond obligations) or bank loans (collateralized loan obligations), and have been around for about a decade. Over the past few years, synthetic CDO products have been created, which combine securitisation technology and credit derivatives to provide a more efficient way to structure CDOs. In these structures, credit risk is transferred to investors via credit default swaps or CLNs, while the sponsor retains the assets.

As with many structured credit products, this innovation addressed shortcomings of a previous generation of products. For example, on the bank front conventional CLOs provide significant regulatory capital relief but are a costly source of funds and require a high level of administrative effort to transfer loan assets to an SPV. Synthetic CLOs require far less administrative work to set up, and allow banks to obtain credit protection on much larger reference portfolio than would be feasible using a conventional format. On an all-in basis, the synthetic structure offers similar regulatory capital benefits to conventional CLOs but at a much lower cost, and often results in the release of economic capital for the bank as well.

7 Some applications of credit derivatives

Promising high margins for dealers and brokers, and new hedging and investment opportunities for market participants, credit derivatives present an exciting new field in the derivatives landscape. Here we take a look at a few of the numerous applications of credit derivatives.

7.1 Yield pick-up

Some credit derivative products are more suitable than others under certain scenarios in order to enhance the return for the investor. Here we look at two applications of the several that exist.

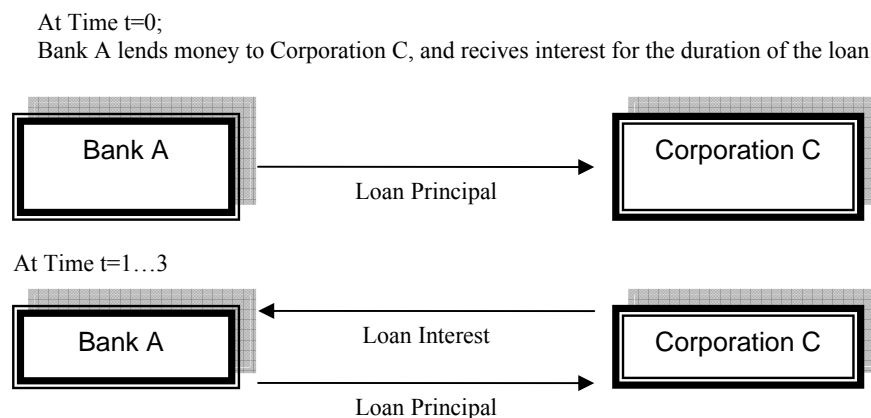
Case 1: Assume an investor has a view on the future movement of a certain credit. Translated to a transaction the investor could either sell the forward credit spread at P if he believes that spreads would widen by more than P . Alternatively he could buy the forward credit spread at P if he believes that spreads would narrow by less than P . This is effectively a forward credit spread trade.

Case 2: Entities such as funds are often restricted on the quality of the assets in which they can invest. A recent example is the creation of the euro, where returns have been forced to much lower levels in order to converge with the rest of Europe. Investors in countries such as Spain, Italy, Greece and Portugal who were used to returns over 10 per cent are now facing a fraction of that. This creates a psychological barrier and it takes a good deal of education and training for investors to get used to returns around the 4 per cent level. Funds will have to relax their policies about investing only in good credit names and they will be obliged to undertake credit risk in order to enhance returns.

7.2 Varying treatment of capital charges

Capital charges for borrowing money can significantly vary depending on the type of borrowing organization. Let's assume corporation C needs to borrow money for three years. The corporation can typically borrow money at $\text{Libor} + 100$. There are three ways with different reporting and cost implications through which Bank A could extend a loan to corporation C. This is shown in figure 5.

Fig. 5: Traditional bank loan



The cost to Bank A differs depending on the method by which it executes the transaction. In case 1, the typical banking loan, the collateral that is required is:

$$[\text{loan principal}] * [\text{borrower published weighting factor}] * [8\%]$$

In cases 2 and 3 the collateral required differs and depends on the maturity of the asset (loan). The percentages most recently published were:

Maturity of 6 months or less: 0.25%

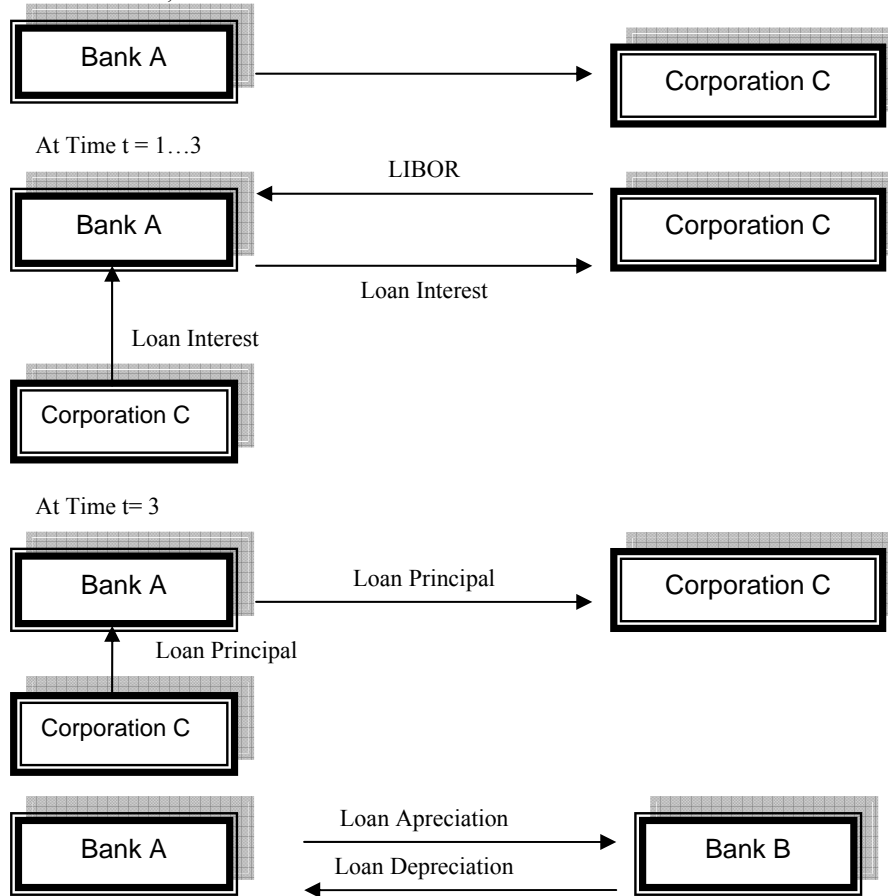
Maturity of 6 – 24 months: 1 %

Maturity of 24 months or more: 1.6 %

The advantages of lending to C through a credit product are obvious (see figure 6). The maximum capital required as collateral is 1.6 per cent of the loan principal compared with the 8 per cent through a conventional bank loan. It is worth noting here that there are additional restrictions on the assets that could receive the preferential treatment of the lower capital charge. Certain 'qualifying' criteria exist that refer to the asset rating. These criteria however are general and loosely defined. When using the credit products, Bank A achieves a risk adjusted return five times larger than when executing a traditional loan.

Fig. 6: Total return swap

Bank A arranges for Bank B to lend money to Corporation C;
 Bank A assumes C's credit risk (probability of no repayment) through a total return swap
 At Time $t = 0$;



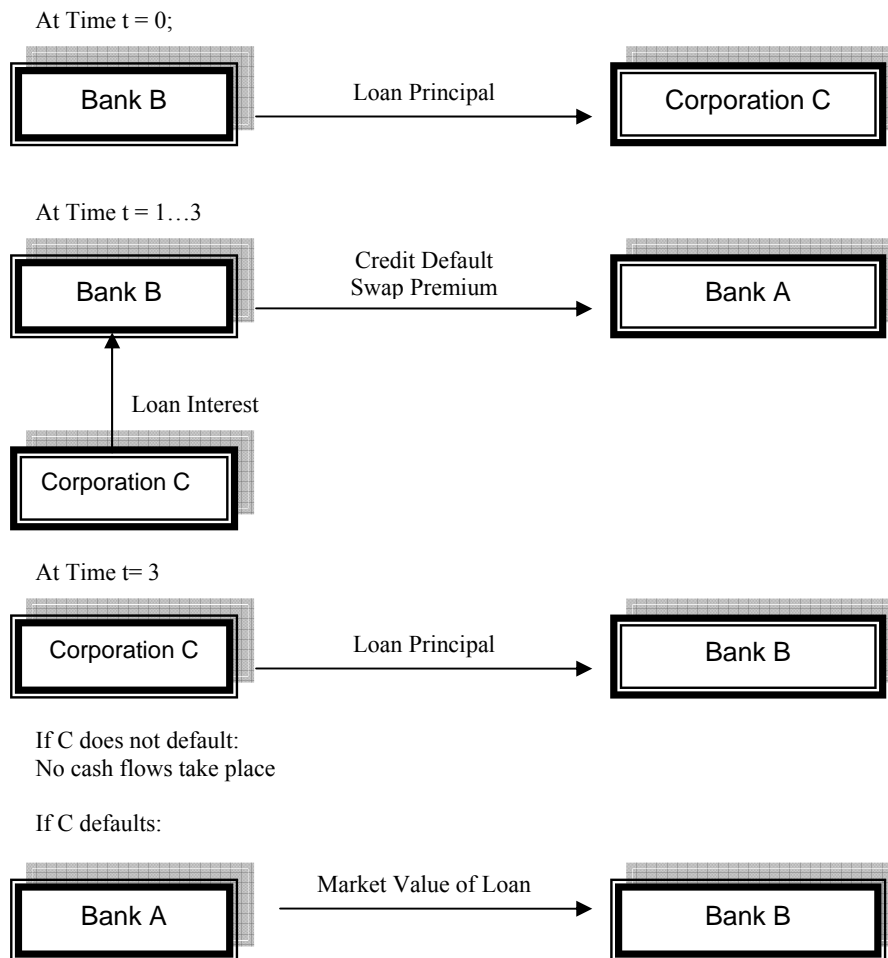
7.3 Diversify credit risk

Trading other derivative products such as interest rate swaps creates counterparty risk exposure. Trading houses may often find that their books have concentrated exposure on few names. By entering into a credit default swap or a total return swap, traders can diversify counterparty risk.

7.4 Funding costs differences

Funding costs for corporations can vary according to their assigned credit ratings. Assume: Bank A has an AA rating and can borrow money at L-10 bps. Bank B has a BB rating and can borrow money at L+10 bps. Both banks are involved in a loan of \$1m to corporation C for three years at L+30. We will analyze how the structuring of the transaction using credit derivatives will benefit the returns of Banks A and B (figure 7).

Fig. 7: Credit default swap



The analysis demonstrates that by means of a credit default swap, institutions can potentially arbitrage their funding levels due to different credit ratings, and hence earn a higher return.

In the above example Bank A achieved a return of 10.15 per cent instead of 8.9 per cent, an increase of 14 per cent, and Bank B's return was increased from 6.6 per cent to 7.65 per cent, an increase of 16 per cent.

7.5 Synthetic assets to meet investor profiles

Credit derivatives enable an investor to achieve the desired risk exposure either at lower costs or in situations where asset illiquidity or other constraints (e.g. only investment grade assets) exclude the possibility of direct exposure to a specific credit. Credit default swaps or total return swaps may be used to achieve exposure to an underlying asset issuer or a structured note. Investors may use credit default swaps to:

- achieve short-term exposure to a long dated asset
- hedge natural exposure to lower credit assets (e.g. a lending to a foreign entity)
- hedge the credit exposure of other derivative positions resulting from either a credit event or from unanticipated fluctuations of the market.

8 Conclusion

The ongoing trend of new dealers and end-users entering the market and rapid product innovation indicate that growth of credit derivatives market will be strong for the foreseeable future.

We think the new credit derivative definitions published by the International Swaps and Derivatives Association (ISDA) will be a major factor propelling the credit derivatives market to new levels. With common definitions, inefficiencies related to documentation-related basis risk (potential legal exposure arising from documentation mismatches) have been substantially reduced. As people come to appreciate this we think the credit derivatives market will see a significant increase in trading and liquidity.

The rise of the credit derivatives market has also started to bridge the gap between the capital markets and the broader traditional credit markets.

Indeed, credit derivatives have already brought many changes to the credit markets. For example, as banks have moved aggressively to incorporate credit derivatives into their loan portfolio and risk management activities, capital markets investors have gained access to credit investment opportunities that were previously only available to banks. Banks in turn are getting better information about how to price their loans, which is helping them become more efficient.

More broadly, the credit derivatives market is thriving because the global credit markets are non-transparent and inefficient, providing investors with a wide variety of credit arbitrage opportunities. This has led to the establishment of credit derivative trading desks, which have been able to create a wide range of risk management tools and structured credit investments for value seeking investors and portfolio managers.

These trends are becoming stronger with each passing quarter. In our view, the credit derivatives market is rapidly shedding its exotic status and maturing into a major sector in its own right.

We have established that the area of credit derivatives:

- offers high returns
- has a broad user base
- involves a wide asset class
- satisfies numerous investment and risk management functions.

It is still a developing market however with many challenges.

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Summary

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