

# **CREDIT DERIVATIVES IN SOUTH AFRICA**

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## TABLE OF CONTENTS

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1	Introduction	Page 2
2	Background Review	Page 4
3	A Literature Review	Page 7
4	Credit Default Swaps	Page 8
5	Total Return Swaps	Page 18
6	Credit-linked Notes	Page 28
7	Synthetic Securitisation	Page 38
8	The Impact of Enron	Page 54
9	Credit Derivative Pricing	Page 57
10	Legal Documentation	Page 67
11	Objectives of the Study	Page 75
12	The Research Design	Page 76
13	Benefits of the Research	Page 79
14	Research Results and Analysis	Page 80
15	Conclusion	Page 95
16	Bibliography	Page 102

# 1 INTRODUCTION

The aim of this research dissertation is firstly to undertake a review of international practice and academic literature in the field of credit derivatives and secondly to compare this body of research to the practice of credit derivatives in South Africa. The analysis will cover a wide range of topics, including but not limited to the following:

- The growth of the credit derivatives internationally and in South Africa
- The identification of the basic credit derivative instruments. In this respect, the credit default swap, credit-linked note and total return swap will be examined
- The uses, benefits, risks and advantages of credit derivatives in both the international and South African context
- The pricing of credit derivative instruments and the determinants of credit spreads. The potential problems in credit derivative pricing will be highlighted
- The legal risks associated with credit derivative documentation, with particular reference to the efforts of the International Swaps and Derivatives Association (ISDA), and
- The use of credit derivatives in synthetic securitisation

The research undertaking will canvass and analyse the views of the major credit derivative practitioners in South Africa. In this regard, the factors both inhibiting and facilitating the growth of credit derivatives in South Africa will be explored and highlighted for resolution going forward. As noted below, there are few practitioners of credit derivatives in South Africa, being limited currently to the large banking institutions: Standard Bank, ABSA, Investec and NIB. A questionnaire, open ended in

nature, will be used as an instrument in the collation and analysis of actual credit derivative practice in South Africa.

Credit derivatives are in fact privately negotiated bilateral contracts that allow users to manage their exposure to credit risk. For example, a bank concerned that one of its customers may not be able to repay a loan can protect itself against loss by transferring the credit risk to another party while keeping the loan on its books. Credit risk is the possibility that a borrower will fail to service or repay a debt on time. The degree of risk is reflected in the borrower's credit rating, which defines the premium over the risk-free borrowing rate it pays for funds and ultimately the market price of its debt. Credit derivatives have two variables: market risk and firm specific risk. Market risk can be defined as those factors that affect all participants in the market place, such as interest rate movements. Credit derivatives allow users to isolate, price and trade firm specific credit risk by unbundling a debt instrument into its component parts and transferring each risk to those suited to managing it. There are various traditional mechanisms to reduce credit risk including refusal to make a loan, insurance products, guarantees and letters of credit, but these mechanisms are less effective during periods of downturn when risks that normally offset each other simultaneously default. Internationally, credit derivatives have emerged as a major risk management tool in recent years. The total volume of credit derivatives is estimated to exceed \$75 billion in 2003.

## 2 BACKGROUND REVIEW

### *An International Perspective*

The bank for International Settlements (BIS) and the US Office of the Controller of the Currency (OCC) have both released reports (June 2002) indicating that credit derivatives has received a significant boost from the loss of confidence in corporate governance and accounting. However, the BIS report also makes it clear that the vexed question of defining a credit default swap remains a serious problem.

The OCC's quarterly report reveals that derivatives held by US commercial banks increased by \$3,8 trillion in the second quarter of 2002, to reach a total of \$ 50.1 trillion. In addition, the report states that the sharp rise in volumes can be attributed to a breakdown in corporate governance this year – "Risk Managers typically respond to greater uncertainty by reshaping their risk profiles, and that explains the sharp rise in derivative notional volumes during the second quarter" (June 2002).

The BIS Quarterly Review, on the other hand, talks of an "eventful" period for the credit derivatives market. Mirroring the findings of the OCC, the BIS report says that Argentina's default on its sovereign debt and the collapse of Enron has led to many more investors looking to credit derivatives as a way of hedging and trading both sovereign and corporate risk. The authors note that Argentina's debt default at the end of last year underlined the need for precise documentation in credit derivatives. This is an issue that has dogged the credit derivatives market in the past, notably after the Russian debt default of 1998. While Argentina's debt repudiation was a clear cut "trigger" event for credit default swaps written under the International Swaps and Derivative Association's

(ISDA) 1999 credit derivative definitions, the BIS says there “was less agreement concerning a \$50 billion debt exchange” conducted by Argentina in November 2001. What is clear from both reports, however, is the degree of disquiet that is being felt in the market at the extent of bad governance and dubious accounting – and the fact that this has translated into an increased demand for credit default protection.

### ***The South African Context***

A healthy market in credit derivatives has sprung to life in recent months in South Africa, despite the lack of a domestic corporate bond market. In response to keen demand from asset managers eager to invest in higher yield paper, banks have compensated for the almost complete absence of corporate bonds by creating yield enhancing credit derivatives (e.g. credit-linked notes).

The notes are just like bonds; with the credit default risk embedded in their structure. Local demand for corporate paper is unprecedented and arises from a number of factors. These include:

- The drop in government bond yields over the past six months from just over 12% to all time record lows under 10% (the yields have risen slightly since the terrorist attack on New York)
- A general shortage of government bonds
- A lowering of inflation expectations due to the introduction of inflation targets by the South African Reserve Bank (SARB) last year and the appalling performance of the local equity markets.

Currently, there are four local banks trading credit derivatives - Standard Corporate and Merchant Bank, ABSA, Gensec and Investec. Some of the international banks are also looking to join the fray. However, participation by the international banks is hindered by low spreads (the difference between risk-free rates and the cost of borrowing to the borrower). Government exchange control regulations do not allow local banks to take much of their funds offshore, resulting in too much local money chasing too few credits. This has led to stiff competition and what is regarded as a general under pricing of credit risk in the local market.

Regulations governing the credit derivatives market have not yet been officially promulgated by the South African Reserve Bank (SARB), although a working group has drafted proposals based on international best practice. The lack of formal regulations however, has not stifled the development of credit derivatives in South Africa. This is on the basis that the banks are well informed about risk reporting guidelines, and liaise frequently with the SARB on their credit derivative transactions. One of the most interesting aspects concerning the development of the credit derivative markets is that it is likely to lead to a creation of a liquid, accurately priced corporate bond market in the country. The new synthetic credit-linked notes act as an excellent price discovery mechanism for local companies considering bond issues. The banks will be able to go to potential issuers with the actual prices of their credit-linked notes, so that they have an accurate picture of the cost of a bond issue. With investor demand for corporate credit at its highest levels, it is not likely to be long before a liquid corporate bond market develops in South Africa.

### **3 A LITERATURE REVIEW**

There are two primary types of risks faced by firms engaged in financial transactions. These are market risk and credit risk. The former is the risk that movements in interest rates, exchange rates, and stock prices or commodities prices will have an effect on the firm's value. The latter is the risk that counter parties to transactions will fail to make obliged payments. Credit risk is sometimes called default risk (Chance, 1997). The management of market risk is achieved by entering into offsetting or hedging transactions. Credit risk is more difficult to manage. Typical methods of controlling credit risk include limiting the amount of business a party does with another party, requiring collateral etc. While these methods reduce credit risk, they are not adequate to manage credit risk (Chance, 1997). Credit derivatives can help banks, financial companies, and investors manage the credit risk of their investments by insuring against adverse movements in the credit quality of the borrower. If the borrower defaults, the investor will suffer losses on the investment, but the losses can be offset by gains from the credit derivative (Neal, 1996).

Internationally, there are three major types of credit derivatives: Total Return Swaps, Credit Default Swaps, and Credit-linked Notes (Kothari, 1996).

## 4 CREDIT DEFAULT SWAPS

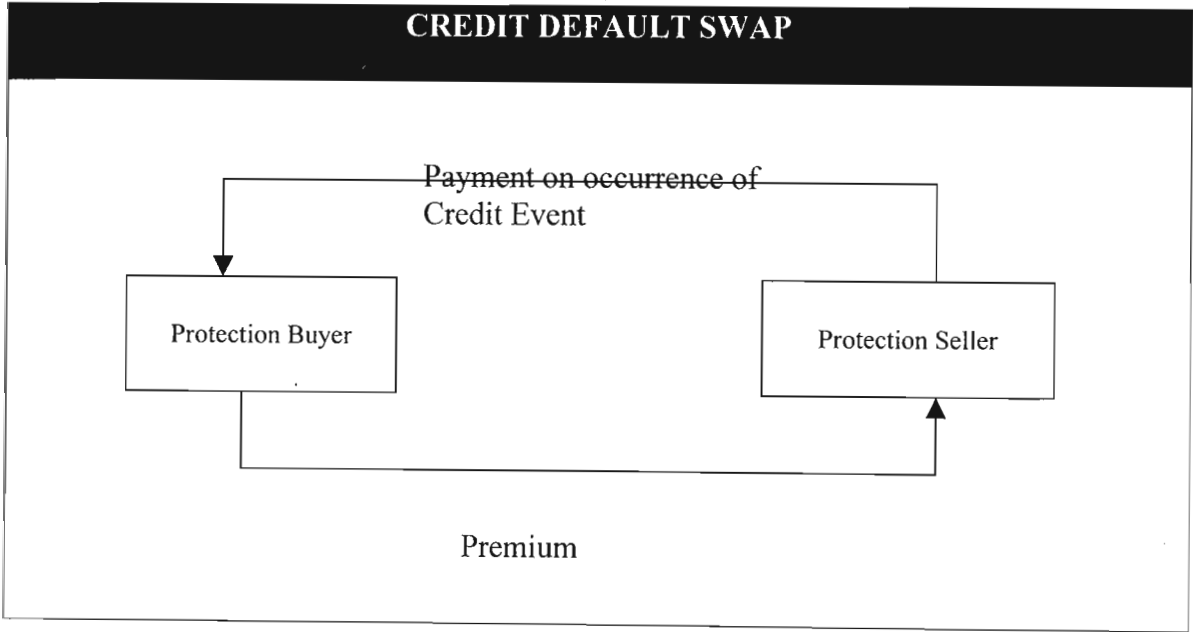
According to Douglas-Jones (Futures and Options World, Autumn 2001) the credit default swap has come a long way since its inception in 1996. Initially viewed as a complex and exotic product, Douglas-Jones says that default swaps soon shot to fame as the “next big thing”. The possibilities were endless. However, unforeseen dangers in the form of the Russian and Asian crises lurked around the corner. The problem was one of documentation, a difficulty that has plagued the market throughout its life (Douglas-Jones, 2001). The central question was what constituted a “default”. According to Douglas-Jones, the industry worked hard with ISDA to develop a standard form confirmation of the credit derivative contract (see discussion later for an elaboration of this point). This development, in 1999, revolutionized the market with the result that confidence was restored and the market witnessed credit derivative contracts paying out in the instance of default. With the furore over the restructuring issue came more documentation woes and uncertainty. As with the previous concern over what constituted a “default”, the uncertainty threatened the liquidity of the market and the further sustained development of the credit derivatives market. Once again, ISDA came to the rescue with the Restructuring Supplement (Douglas Jones, 2001).

Vinod Kothari (1996), an Indian academic and authority in the field of securitisation and credit derivatives, defines a credit default swap as a contract under which one party (“the protection seller”) agrees to compensate another party (“the protection buyer”) for the financial loss it may occur following the occurrence of a “credit event” in relation to a “reference amount” or notional amount of a credit obligation (usually a bond or loan).

According to Kothari (1996), credit default swaps are over the counter contracts and are usually based on ISDA documentation and definitions.

The economic effect of a credit default swap is similar to that of an insurance contract or guarantee. The protection buyer pays a premium to the protection seller and receives credit protection; in the same way a guarantor receives a fee for accepting credit risk (Kothari, 1996).

According to Kothari (1996), the basic credit default swap can be described as follows: In return for assuming the underlying credit risk, the protection buyer pays an agreed premium to the protection seller, normally at regular intervals over the term of the transaction. The protection buyer will receive a payment from the protection seller upon the occurrence of a “credit event” in respect of the credit obligation (“the reference obligation”). The credit events are typically based on the six trigger events detailed in the ISDA definitions.



The obligation of the reference entity, to which the credit default swap is referenced, is known as the “reference obligation”. The parties to the transaction may decide to identify a single specific reference obligation or some or all of the obligations of the reference entity. Often the credit default swap will be referenced to “borrowed money”. Borrowed money is debt that ranks at least equal in priority of payment with senior unsecured obligations of the reference entity. After a credit event, the protection buyer may have to deliver to the protection seller a deliverable obligation which will normally be any unsecured debt obligation of the reference entity.

The value of the credit default swap and hence the premium will depend on a number of factors. These include:

- The absolute value of, and expected movement in, the credit quality of the reference entity and the volatility of that reference quality
- The maturity of the credit derivative
- The credit status of the protection seller
- The number and types of credit events included in the contract
- The joint probability of default of the protection seller and reference entity
- The nature of the payment being cash, physical, binary etc
- Other risks incorporated within the derivative (e.g. foreign exchange and interest rate risk) (Kothari, 1996).

The ISDA definitions set out six credit events that can trigger payment on a credit default swap. These are as follows:

- Bankruptcy
- Failure to pay

- Obligation default
- Obligation acceleration
- Repudiation
- Restructuring

On occurrence of a credit event, the protection buyer will normally have to deliver notice of the credit event to the protection seller, and if specified in the contract, notice of publicly available information with which to confirm the occurrence of the event. In addition, if there is physical settlement, the protection buyer must deliver notice of intended physical settlement to the protection seller.

Jessica James, Vice President and head of Research at First National Bank of Chicago in London (2000) says that a credit default swap can either be physically settled or cash settled. Whilst the contract is typically based on physical settlement with the option of cash settlement, the contract will usually cash settle. Physical settlement involves the delivery of an obligation of the underlying reference entity (“the deliverable obligation”), as set out in the contract, in return for cash settlement of the reference amount. If there is a difference between the market value and par value of the reference obligation on the date the credit default swap is transacted, this will be factored into the calculation of the premium (James, 2000).

The deliverable obligation may be a reference obligation or one of a class of obligations that meets certain specifications. The deliverable obligation is often senior unsecured debt of the reference entity. Following a credit event, there can sometimes be a shortage of the deliverable obligations as demand exceeds supply. This may cause a problem for

the protection buyer if the deliverable obligation has to be purchased and could lead to a defaulted deliverable obligation trading at an artificially high price.

According to James (2000), credit default swaps may be entirely cash settled. The cash settlement amount is calculated by the calculation agent, as denoted in the contract, as the reference value less the “final value” of the reference obligation after the credit event. The final value is determined by the calculation agent and is the market value of the reference obligation on valuation date.

According to James (2000), a number of variations of the credit default swap have been developed. These are as follows:

- *Basket or portfolio trades*

Basket or portfolio trades are credit default swaps that are based on a number of reference entities documented in one contract rather than a number of individual credit default swaps

- Termination options and refundable credit default swap

A termination option within the credit default swap allows the contract to be terminated prior to the agreed maturity date. A common usage of termination options in credit default swaps is to enable effective protection to be purchased on revolving credit lines where the facility may be repaid early and hence the protection is no longer needed.

- Credit Spread Options

Credit spread options have a strike price based on a credit spread above the risk free rate. The option will be exercised if the credit spread of the underlying reference

entity moves above or below this strike price depending on whether this option is a PUT or CALL option respectively.

In terms of a guide written by Davies, Hewer and Rivett (The Financial Jungle: A guide to Credit Derivatives, 2001), the following benefits, risks and disadvantages accrue to both the protection buyer and seller.

### ***Benefits to the protection buyer***

- The credit default swap allows the protection buyer to eliminate or reduce the credit risk associated with exposure to a reference entity without selling or transferring the underlying obligation. A transfer/sale may not be possible for legal reasons or the bank may wish to maintain an ongoing customer relationship.
- The protection buyer does not have to own any debt obligations of the underlying reference entity in order to enter into a credit default swap. The protection buyer can therefore use the credit default swap to speculate on the credit quality of the reference entity and will benefit should the credit quality of the reference entity deteriorate. The protection buyer is therefore taking a “short” credit position.
- The protection buyer may obtain a reduced regulatory capital charge on the underlying exposure provided the credit default swap meets the required regulatory conditions. Currently, under most regulatory jurisdictions, a regulatory capital saving may be available to a bank if a credit exposure to a non-bank obligor can be substituted for an OECD bank exposure. The protection buyer can reduce the risk weightings from 100% to 20%. Under the proposed BASEL Accord rules, the calculation of regulatory charge may change

### ***Benefits to the protection seller***

- The credit default swap creates a synthetic credit position for the protection seller. This enables the protection seller to gain an exposure to the reference entity without having to
  - Fund the position outright and incur either the associated funding cost or, for loans, the cost of establishing and maintaining a relationship with the reference entity; and
  - Add any operational infrastructure needed to manage the reference obligations.
- The protection seller can tailor the synthetic credit position to create the required credit risk/return profile, which may not be available in the cash market. For example, an institution may want to obtain an 8 year exposure to a reference entity but there are only 5 and 10 year remaining maturity bonds available
- Credit default swaps are useful to a protection seller that wants to gain exposure to particular markets or counter parties but cannot own the underlying debt obligations of the reference entity directly. This may be because of legal or regulatory restrictions or because of a lack of liquidity
- The protection seller will receive an income stream from the protection buyer in return for the protection written.
- Depending on the relative funding costs of the protection seller and protection buyer there can be a funding advantage gained by entering into a credit derivative.

### ***Risks and disadvantages to the protection buyer***

- If the protection buyer enters into the credit default swap to hedge an underlying exposure it is exposed to potential basis risk. Basis risk arises from a mismatch between the underlying asset and the hedge in either economic or legal terms. Thus, the protection buyer could potentially suffer a loss on the underlying credit exposure that is not fully compensated by the receipt under the credit default swap. This could arise if the credit default swap is not triggered, despite a severe deterioration in the credit quality of the underlying exposure because a credit event, as defined in the credit default swap documentation, has not actually occurred.
- The credit worthiness of the protection seller is a key consideration for the protection buyer. The protection buyer has a contingent credit exposure to the protection seller because the protection seller may not be able to meet its obligations following a credit event. As a result, the correlation between the credit quality of the protection seller and the reference entity is a key factor in the pricing of the protection. There is a higher probability that a counter party that is positively correlated to the reference entity may not be able to meet its obligations when a credit event occurs on the reference entity. This risk can be reduced significantly by the use of collateral
- The processing of all credit derivative trades is subject to significant operational risk. In particular, basket trades, which can be complex and have numerous underlying reference obligations, can present particular trade processing challenges. The protection buyer needs to establish a robust operational infrastructure in order to monitor effectively the basket of reference obligations for credit events and to be able to model and value the transaction correctly

### ***Risks and disadvantages to the protection seller***

- On the occurrence of a credit event, the protection seller will have to make a payment to the protection buyer
- The protection seller is exposed to potential basis risk in the same way as the protection buyer. As explained above, the basis risk arises from a mismatch between the two contracts in either economic or legal terms. For the protection seller, basis risk is likely to arise when hedging one credit default swap with another. Basis risk can be compounded if the credit default swap is not based on the standard ISDA documentation. The majority of credit default swaps are based on ISDA documentation and definitions and it may therefore be difficult to find a counter party willing to trade on non-ISDA terms. In this situation, the protection seller could be exposed to some residual risk. Institutions introducing basis risk, however, often amend the ISDA standard terms and definitions.
- The protection seller is exposed to the credit worthiness of the protection buyer (counter party) for the premium payments due under the credit default swap. The exposure is relatively small as payments are usually made either in advance or on a regular basis throughout the life of a swap and are small in comparison with the value of the reference obligation.
- The processing of all credit derivatives trades is subject to significant operational risk. In particular, basket trades which can be complex and have numerous underlying reference obligations, present particular processing challenges. The protection seller needs to establish a robust operational infrastructure in order to monitor effectively

the basket of reference obligations for credit events and to be able to model and value the transaction correctly.

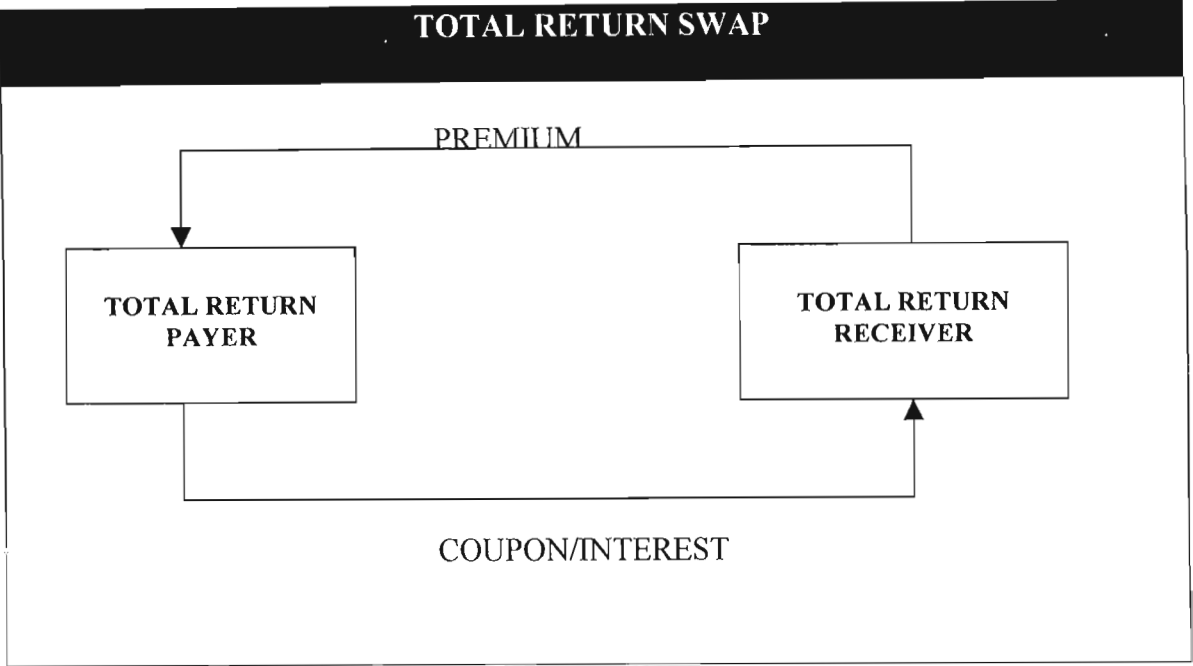
## 5 TOTAL RETURN SWAPS

Davies, Hewer and Rivett (2001) defines a total return swap as a contract under which one party (“the total return payer”) transfers the economic risks and rewards associated with an underlying asset to another counter party (“the total return receiver”). The transfer of risks and rewards is effected by way of an exchange of cash flows that mirror changes in the value of the underlying asset and any income derived therefrom. All total return swap contracts are OTC contracts and at present there are no standard contractual definitions specific to the product (Davies, Hewer, Rivett, 2001).

In contrast to a credit default swap, a total return swap transfers the credit risk and the market risk associated with an underlying asset. The economic effect for a total return receiver is equivalent to that derived from owning the asset. The total return receiver, however, does not incur the direct costs of funding the purchase of the underlying asset (e.g. a bond or a loan or certain other costs normally associated with ownership). In addition the total return receiver has no relationship with the borrower and no refinancing obligations. The total return receiver makes a payment to the total return payer that compensates the latter for the funding costs. As a result, the total return receiver and the total return payer in a total return swap are equivalent to the protection seller and protection buyer respectively in a credit default swap, i.e. the total return payer and protection buyer seek risk protection (Davies, Hewer and Rivett, 2001).

According to Davies, Hewer and Rivett (2001), the basic credit default swap can be illustrated as follows: the total return payer will make periodic payments to the total return receiver comprising the coupons/interest from the underlying asset and an amount,

if any, equivalent to the appreciation in the market value of the underlying asset. If the value of the reference asset depreciates, a payment would be paid by the total return receiver to the total return payer, together with a regular floating rate payment, normally based on LIBOR plus or minus a financing spread.



The asset to which a total return swap is referenced is known as the reference obligation. The parties to the transaction can decide to identify a single specific reference obligation, a number of reference obligations or a market index (Davies, Hewer and Rivett, 2001). According to Davies, Hewer and Rivett (2001), total return swaps are generally referenced to assets traded in a liquid market or an index so that the market price can be accurately determined by the calculation. The total return payer will typically own the reference obligation that is the subject of the total return swap. Alternatively, according to Davies, Hewer and Rivett (2001), if the total return payer does not hold the obligation, the swap will create a “short” position in the market and credit risk of that asset. The

total return payer normally retains the servicing and any voting rights associated with the underlying reference obligation.

The premium is the “fee” paid by the total return receiver to the total return payer and usually comprises a LIBOR based payment. A key factor in the calculation of the premium is the relative credit quality of the two counter parties and the reference obligation. This will determine the spread above or below the floating index. The total return payer will seek to recover the cost of financing (and servicing) the reference obligation and should achieve this where its cost of funding is cheaper than the total return receiver. In fact a total return receiver allows a low cost borrower to “rent” its balance sheet to a high cost borrower at a price that is cost effective to both parties (Davies, Hewer and Rivett, 2001).

As indicated above, with a credit default swap, total return swap contracts can include credit events. On occurrence of a credit event, a total return swap on a single reference obligation will normally terminate and a final payment will be made to reflect the decrease in the value of the reference obligation.

The payments between the total return payer and total return receiver are based on the changes in market value of the reference obligation. Cash settlement of the amounts relating to the market value movements of the reference obligation can be made either at maturity of the transaction or periodically throughout its life. Payments of income derived from the asset and the premium are normally settled on a periodic basis and are often netted, together with any market value payment if this is also paid periodically. Total return swap contracts can also involve physical delivery of the reference obligation at maturity by the total return payer to the total return receiver in return for a payment

equal to the final value of the reference obligation plus or minus any market value appreciation or depreciation payments made during the life of the contract (Davies, Hewer and Rivett, 2001).

As with other OTC derivative contracts, collateral can be requested in relation to the transaction to mitigate counter party credit risk. Collateral may be in the form of securities or cash. There are four considerations when determining the amount of collateral to be called from a counter party:

- ◆ The credit-worthiness of the counter party
- ◆ The fair value of the credit derivative
- ◆ The nature of collateral to be placed by the counter party; and
- ◆ The correlation between the credit quality of the counter party, the reference obligation and any collateral posted. Collateral that exhibits a high correlation with either the counter party or the reference obligation may be of little use as a credit risk mitigant

Market value payments need to be made by the total return payer or the total return receiver, dependant on whether the value of the reference obligation has appreciated or depreciated. The higher rated counter party will normally call for collateral from the counter party with a low credit rating, once the amount payable exceeds a pre-agreed limit. Collateral is more likely to be called where there has been a large market movement and the associated market value payment is not due until some future date (Davies, Hewer and Rivett, 2001). According to Davies, Hewer and Rivett (2001), total return swaps may be used for tax arbitrage purposes. For example, a transaction can be structured to alleviate withholding tax on the receipt of income from a security. In some

markets, withholding tax is not levied on an investor if a resident of the relevant country or region owns a security. A third party investor may therefore take out a total return swap with a resident counter party on such an underlying asset. The resident counter party will receive the income on the security gross. This is then paid to the investor under the total return swap, thereby enabling the investor to avoid the withholding tax that would be incurred if it held the security directly. The savings made under this type of transaction are normally shared between the two parties (Davies, Hewer and Rivett, 2001).

In comparing total return swaps to asset swaps, Davies, Hewer and Rivett (2001) makes the following point: Asset swaps involve both a sale of an asset to a counter party and an interest rate swap packaged into a single transaction. In the case of bonds, the asset will usually be a fixed rate instrument and the investor is seeking a floating rate return. The investment bank will therefore package the fixed rate bond with an interest rate swap, swapping the fixed return on a bond for a floating return, thereby providing an investor with a synthetic floating rate asset. The main difference between an asset swap and a total return swap is that the asset swap involves an outright sale of the bond to the investor whereas the total return swap does not involve the sale of the reference obligation on which it is based.

An equity swap is essentially a total return swap based on an equity instrument. The counter party swaps the entire return on an equity-based asset (i.e. appreciation in value and dividends received) in return for a LIBOR based payment and payments to compensate for any depreciation in value. Neither an equity swap nor a total return swap

involves the purchase or sale of the referenced equity/asset and both lead to the creation of synthetic asset positions (Davies, Hewer and Rivett, 2001).

Davies, Hewer and Rivett (2001) lists the following benefits, risks and advantages to the investor and protection buyer of using credit derivatives:

***Benefits to the total return payer***

- The total return swap allows the total return payer to eliminate or reduce the market and credit risk associated with a reference obligation without selling or transferring the underlying obligation, and without knowledge of the reference obligor. The transfer/sale may not be possible for legal reasons or the bank may wish to avoid harming an ongoing customer relationship
- The total return payer does not have to own any debt obligations of the underlying reference obligation in order to enter into the total return swap. The total return payer can therefore use the total return swap to “short” the market and credit risk of the reference obligation. The total return payer will therefore benefit from any depreciation in the market value of the underlying reference obligation as an equivalent amount will be due, under the terms of the total return swap, from the total return receiver.
- The total return payer may obtain a reduced regulatory capital charge on the underlying exposure provided the total return swap meets the required regulatory conditions. Currently, in most regulatory jurisdictions, a regulatory capital saving may be available to a bank if a credit risk exposure to a non-bank obligor can be substituted for an OECD bank exposure. The total return payer can reduce the risk

weighting from 100% to 20%. Under the proposed Basel Accord rules, the calculation of regulatory capital charge may change

- Depending on the relative funding costs of the total return payer and the total return receiver, there can be a funding advantage gained by entering into a total return swap.
- The total return payer will receive an income stream that should cover the carrying cost of the asset. In that sense, as the total return payer is incurring the direct cost of owning the asset, it may be regarded as providing the counter party with the use of its balance sheet
- The total return payer may be able to alter the timing of tax liabilities that would arise if the underlying asset was sold rather than hedged with a total return swap.

#### ***Benefits to the total return receiver***

- The total return swap creates a synthetic asset position for the total return receiver. This enables the total return receiver:
  - To gain credit and market exposure to the reference asset without having to fund the position outright and incur the associated funding cost and, for a loan, the cost of establishing and maintaining a relationship with the reference entity; and
  - To manage its balance sheet, allowing it to create synthetic positions rather than on balance sheet positions. For example, the total return receiver could sell an asset but retain the risks and economic performance associated with it through a total return swap

- Total return swaps are useful to a total return receiver that wants to gain exposure to a particular market or counter party but cannot own the underlying debt obligations of the reference entity directly
- The total return receiver receives the interest income relating to the reference obligation and benefits from any market value appreciation associated with the reference obligation
- Banks with comparatively high funding costs tend to invest in riskier assets to provide a commensurately higher return. A bank could use a total return swap to diversify its portfolio into lower risk assets by making use of the total return payer's lower cost of funding

***Risks and disadvantages to the total return payer***

- If the total return payer has an unhedged position then it will be exposed to any appreciation in the market value of the underlying reference obligation as an equivalent amount will be payable, under the terms of the total return swap, to the total return receiver
- A total return swap might also involve basis risk similar to that which can arise in credit default swaps, due to mismatch in economic or legal terms. For example, the total return swap may be denominated in dollars but the underlying reference obligation may be denominated in euros
- When the total return payer holds the underlying reference obligation so that it has a hedged position, any mismatches in settlement terms between the total return swap

and the underlying reference obligation will give rise to cash flow mismatches that will need to be funded

- Total return swaps based on a basket of reference obligations can be complex and have a large number of reference obligations. The processing and monitoring of basket trades can therefore be subject to high levels of operational risk

### ***Risks and disadvantages to the total return receiver***

- If the total return receiver has no offsetting position then it will be exposed to any depreciation in the market value of the underlying reference obligation as an equivalent amount will be payable, under the terms of the total return swap, to the total return payer
- The total return receiver is exposed to potential basis risk in the same way as the total return payer. As explained above, the basis risk arises from a mismatch in either economic or legal terms between the two contracts. For the total return receiver, basis risk is likely to arise when the offsetting one total return swap with another
- The credit worthiness of the total return payer is a key consideration for the total return receiver, which has an exposure to the total return payer for any market value appreciation. Counter party risk can be reduced by the use of collateral
- The total return receiver is also exposed to the credit worthiness of the total return payer for the interest income derived from the reference obligation. This exposure is relatively small as payments are usually made on a regular basis throughout the life of the swap and are small in comparison with the value of the reference obligation

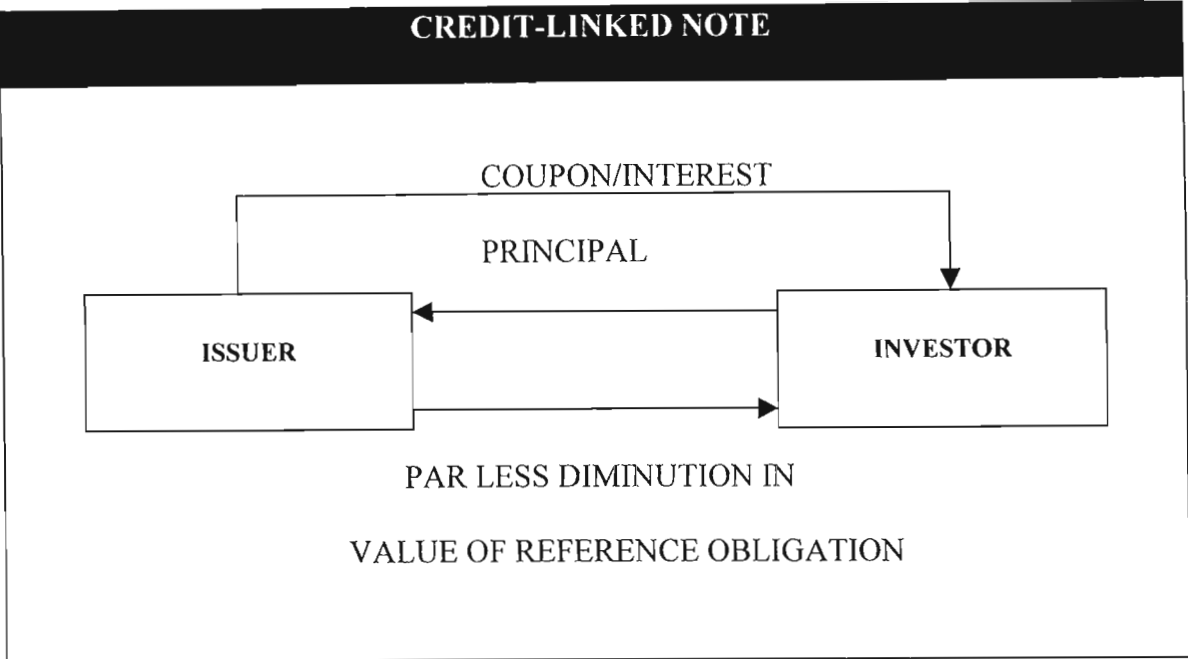
- Total return swaps based on a basket of reference obligations can be complex and have a large number of reference obligations. The processing and monitoring of the basket trades can therefore be subject to high levels of operational risk. The total return payer needs to establish a robust operational infrastructure in order to mitigate the operational risk associated with these type of transactions

## 6 CREDIT-LINKED NOTES

Davies, Hewer and Rivett (2001) defines a credit-linked note as an instrument under which one party (“the issuer”) issues a note to another party (“the investor”) in return for consideration equal to the principal value (assuming the note is issued at par) of the note. The coupon on the note is linked to both the credit quality of the issuer and an obligation (“the reference obligation”) of a third party (“the reference entity”). According to Davies, Hewer and Rivett (2001), credit-linked notes are often listed on a stock exchange and although there are specific standard ISDA definitions for credit-linked notes, they often incorporate the ISDA credit derivative definitions.

In the most common form, credit-linked notes are medium term notes with an embedded credit default swap (Davies, Hewer and Rivett, 2001). The investor receives a regular LIBOR based coupon on the credit-linked note from the issuer normally payable quarterly, semi-annually or annually. The coupon is priced above or below the floating rate index to compensate the investor for assuming the credit risk of the reference entity and the issuer. On maturity the issuer will redeem the credit-linked note at par provided there have not been any credit events arising in relation to the reference obligation.

The issuer will normally be a bank or a special purpose vehicle (“SPV”). Where an SPV is used, the SPV will be bankruptcy remote to ring fence the transaction from the sponsoring bank, thereby providing some protection to the bank against reputational risk. The use of an SPV can also, dependent on the exact structure, allow the SPV’s credit quality to be higher than that of the bank (Davies, Hewer and Rivett, 2001).



The SPV will issue the credit-linked note to investors and use the proceeds in one of two ways. Firstly, the SPV may purchase a medium term note (“MTN”) from the bank and sell protection on the reference obligation included within the credit-linked note to either the bank or another counter party. The premium from the credit default swap and the return from the MTN will enable the issuer to pay an enhanced coupon on the credit-linked note. The counter party to the credit default swap is normally the bank as the SPV is in effect restricted in the choice of counter party as it has no assets to place as collateral against the credit default swap (Davies, Hewer and Rivett, 2001).

Secondly, the SPV can use the proceeds to purchase the collateral, normally government bonds or similar low risk securities and place these with the counter party, usually the bank, as collateral for the credit default swap. The coupon on the collateral, plus the premium on the credit default swap, will pay the enhanced coupon on the credit-linked note. According to Davies, Hewer and Rivett (2001), this structure is very similar to the structures used in some synthetic securitisations (discussed at a later stage). The issuer of

a credit-linked note is equivalent to the protection buyer in a “fully funded” credit default swap. The issuer pays a premium over the normal funding rate to the investor that is in effect the same as the premium in a credit default swap. The redemption amount reflects any credit events experienced by the reference entity, equivalent to the contingent payment under the default swap. The credit events will be defined in the credit-linked note documentation and will usually be based on the ISDA definitions.

The investor in the credit-linked note is equivalent to the protection seller. Provided that the credit events are not experienced by the reference entity and the issuer does not default, the investor will receive a regular coupon and par on redemption. If there is a credit event, the amount paid to the investor will be significantly less than par reflecting the effect of the credit event on the value of the underlying reference entity.

For an investor, credit-linked notes create credit exposures to both the issuer and the reference entity. While economically credit-linked notes are similar to fully collateralised credit default swaps, the risks are very different. In a collateralised transaction, if the issuer defaults, the collateral should still be available to the investor whereas in a credit-linked note the investor has credit exposure to both the issuer and the reference entity.

Credit-linked notes are sometimes compared to securities guaranteed by third parties. They differ significantly, however, in that the investors in securities guaranteed by third parties will only experience a credit loss if both the issuer and guarantor default. With a credit-linked note, the investor may experience a credit loss if either the issuer or the reference entity defaults (Davies, Hewer and Rivett, 2001).

The credit quality of the reference entity will usually be lower than the credit quality of the issuer of the credit-linked note. The credit risk of the reference entity in the note

provides the enhancement to the return to the investor – if the credit quality of the reference entity were superior to that of the issuer then the issuer would be more likely to issue a plain vanilla bond.

The asset to which the credit-linked note is referenced is known as the reference obligation. The parties to the transaction can decide to identify a single specific reference obligation, a number of reference obligations or a market index.

In general, credit-linked notes are referenced to “borrowed money” of the reference entity, being debt that ranks at least equal in priority of payment with senior unsecured obligations of the reference entity.

The coupon on the credit-linked note will be a LIBOR based payment that will compensate the investor for taking on both the credit risk of the issuer and the underlying reference obligation. A key factor in the determination of the coupon is therefore the relative credit quality of the two counter parties (Davies, Hewer and Rivett, 2001).

Credit-linked notes are debt instruments redeemable by the issuer at a specified time in the future and are usually issued at par value. Prior to redemption, the value of a credit-linked note is primarily dependent on the credit quality of the reference entity. If the reference entity experiences a decline in its credit standing then the credit-linked note will fall in value. Following a credit event in respect of the reference entity, the notes will be redeemed below their par value normally resulting in a loss to the note holders. The loss would be similar to that experienced by the protection seller in a credit default swap (Davies, Hewer and Rivett, 2001).

The redemption amount is calculated by the calculation agent, as denoted in the contract, as par less the difference between the reference value and the final value of the reference

obligation after the credit event. The final value is determined by the calculation agent and is the market value of the reference obligation on the valuation date. The valuation date, or dates, is effectively either a specified number of business days or, if not specified, 5 business days after the notice of a credit event. The calculation agent is usually one of the counter parties rather than an independent third party and is identified in the contract.

Credit-linked notes specify credit events following which the credit-linked note will not redeem at par, reflecting the decrease in value of the reference obligation due to the credit event. The credit-linked note can either be designed to redeem immediately on the occurrence of a credit event or to continue until the stated maturity of the note.

On occurrence of a credit event, the issuer will normally have to deliver notice of the credit event to the investor and, if specified in the contract, notice of publicly available information with which to confirm the occurrence of the event. In addition, if there is physical settlement, the issuer must deliver notice of intended physical settlement to the investor (Davies, Hewer and Rivett, 2001).

Credit-linked notes can be structured to tailor the risks that are replicated within the note to the issuer's and investor's requirements (Hewer, Davies, Rivett, 2001).

### ***Total return credit-linked notes***

In the total return credit-linked notes, the prepayment of principal on the credit-linked note is linked to the market value movements of the reference obligation, i.e. market and credit risk. The credit-linked note can therefore redeem below par even if there is no credit event. These types of credit-linked notes can be referenced to a single reference

obligation, multiple reference obligations or an index and are in effect medium term notes with embedded total return swaps.

### ***Credit spread credit-linked notes***

Credit spread credit-linked notes have the repayment of principal linked to the movements in the credit spread on the reference entity. The credit spread is the differential between the yield on a reference entity's debt and risk free rate. This could be by way of an embedded callable credit spread option, whereby if the credit spread of the reference entity reaches a certain level, the option would be exercised by the issuer and the repayment of principal would be reduced.

### ***Deep discounted credit-linked notes***

Credit-linked notes can be constructed to provide no periodic interest payments or interest payments that are significantly below market rates (i.e. zero coupon or deep discount bonds). Such credit-linked notes are sold at a discount to their nominal value and the investor's return is derived from the difference between the purchase price and redemption value.

### ***Basket credit-linked notes***

Credit-linked notes can be referenced to a number of reference obligations and documented in one contract rather than numerous individual contracts. The redemption value of the credit-linked note will depend on the credit quality of the reference

obligations in the basket and whether any credit events have occurred on those referenced obligations.

In terms of the guide written by Davies, Hewer and Rivett (2001), the following risks, benefits, advantages accrue to the investor and protection seller from using credit derivatives.

### ***Benefits to the issuer***

- The principal benefit to the issuer of a credit-linked note is that the note provides a mechanism for hedging and transferring credit risk. As the proceeds of the note are received from the investor by the issuer, the issuer is not exposed to counter party risk, as is the case with a credit default swap.
- A credit-linked note provides the issuer with an additional way of raising debt.
- The issuer can “short” the credit risk of the underlying reference entity (i.e. create exposure equivalent to a loan) by not owning any debt obligations of the underlying reference entity defined in the credit-linked note
- The issuer may obtain a reduced regulatory capital charge, potentially zero, on the underlying credit exposure provided the credit-linked note meets the required regulatory capital conditions (e.g. where risk is effectively cash collateralised). Under the proposed BASEL Accord rules, the calculation of regulatory capital may change
- If the credit-linked note is issued via a bankruptcy remote SPV, it allows the transaction to be ring-fenced and provides some protection for the originating bank against reputational risk.

### ***Benefits to the investor (protection seller)***

- The ability of the investor to access new classes of credit risk through a credit-linked note allows an investor to diversify from its traditional core credit concentrations into new assets
- Credit-linked notes provide access to new markets that may not be available in the cash market. For example, the credit risk associated with part of a bank's loan book or an individual loan can be passed on to investors who would not have access to such assets by purchasing a credit-linked note. This allows the investors to take on the credit risk of the reference portfolio or loan without the need to establish the banking relationship
- Credit-linked notes allow new classes of investors, such as mutual funds or certain insurance companies that are not permitted to invest either directly in the reference entity or in derivatives to take exposure to that reference entity. The investors may be restricted due to external regulatory reasons, legal reasons, or internal policy guidelines
- Credit-linked notes allow investors to take exposure to the reference entity for a tailored period. For example, the reference entity may only issue 10-year bonds but the investor may want exposure to a five-year bond. This can be achieved through a credit-linked note
- The investor will receive an enhanced yield on the credit-linked note compared with a standard bond issued by the issuer, as the investor is exposed to the credit risk of both the issuer and reference entity and the coupon on the note will reflect this increased level of risk

- The investor can gain credit exposure to an underlying reference entity without having to own any of the reference entity's obligations directly. This allows the investor to ensure that it does not hold, and therefore have to manage, a defaulted obligation should there be a credit event.

### ***Risks to the issuer***

- The issuer has to pay a higher interest rate on the finance raised, compared to standard debt instruments of the same rating, to compensate the purchaser of the note for the exposure to the reference entity as well as the issuer risk.
- Assuming the issuer is issuing the credit-linked note to hedge an underlying exposure, the issuer has an exposure to potential basis risk as the terms of the credit-linked note may not match exactly those of the underlying exposure. Basis risk is the risk of mismatch in economic or legal terms between the underlying exposure and the note.
- A credit-linked note is effectively a medium term note with an embedded credit derivative. The processing of all credit derivative trades is subject to significant operational risk. In particular, basket trades, which can be complex and have numerous underlying reference obligations, can present particular trade processing challenges. The protection buyer needs to establish a robust operational infrastructure in order to monitor effectively the basket of reference obligations for credit events and to be able to model and value the transaction correctly.

***Risks to the investor (protection seller)***

- The investor has credit exposure to both the credit risk of the issuer of the note and of the reference entity. On the occurrence of a credit event on the reference entity, the note will not redeem at its par value. Even if there is no credit event on the reference entity, the investor is still exposed to any default by the issuer on a coupon payment or redemption.
- Although not classified as a derivative, a credit-linked note has an embedded derivative within it. The investor may not be aware of the embedded derivative and the associated risk that this introduces into the transaction.
- The investor may also be exposed to basis risk. The investor holding the credit-linked note may hedge the reference entity credit risk by shorting that reference entity credit, by using a credit default swap or similar instrument. If there are mismatches between the documentation in the credit-linked note and the hedging instrument, this would give rise to a basis risk.
- The credit-linked note may be difficult to value as there is unlikely to be an active market. In such circumstances, valuation models will be required which must take account of credit exposure to both the issuer and the reference entity. Such models require default data that might not be readily available.

## 7 SYNTHETIC SECURITISATION

Just as the electronics industry was formed when the vacuum tubes were replaced by transistors, and transistors were replaced by integrated circuits, the financial services industry is being transformed now that securitised credit is beginning to replace traditional lending (Kothari, 2002). According to Kothari (2002), securitisation will take about 10 to 15 years to displace the classical lending system.

Securitisation is widely defined as carving out identifiable cash flow receivable from financial assets (receivables) of the originator (who generates those assets) and selling the right to receive those cash flows on to a new entity, typically a special purpose vehicle (SPV) (Moore, 2000). According to Moore (2000), the SPV then issues the loan securities and uses the cash flows to pay the interest payable on the loan securities. The SPV is typically not owned by the originator and is therefore insulated from the originator should the latter become insolvent so that the income rights are not affected. Outside investors therefore feel comfortable about putting money into the SPV's securities, as they know exactly the risk they are taking on, which does not include originator risk (Moore 2000). According to Moore (2000), by isolating the assets from the operational risks of the originating entity, the debt will invariably attract a higher rating and hence lower interest cost than would have been the case if the originator had raised the debt from its own balance sheet.

In analyzing the need for securitisation, Kothri (1996) states that financial markets developed in response to the need to involve a large number of investors in the market place. As the number of investors keeps on increasing, the average size per investor

keeps on coming down. The small investor is not a professional investor. Hence he needs an instrument which is easy to understand, and is liquid (Kothari, 1996). These two needs set the stage for the evolution of financial instruments which would convert financial claims into liquid, easy to understand and homogenous products. Thus, securitisation in a generic sense is basic to the world of finance, and it is a truism to say that securitisation envelopes the entire range of financial instruments, and hence, the entire range of financial markets (Kothari, 1996).

According to Kothari (1996), credit derivatives are only a logical extension of the concept of securitisation. Securitisation was premised on credit being converted to a commodity. In the process, the risks inherent in credits were being professionally managed and rated. In the second step, one would argue that if the risk can be measured and traded as a commodity with the underlying financing involved, why can't the financing and the credit be stripped as two different products? (Kothari, 1996). The development of credit derivatives has not reduced the role for securitisation: it has only increased the potential for securitisation. Credit derivatives are only a tool for risk management: securitisation is both a tool for risk management and treasury management. Entities that want to go for securitisation can easily use credit derivatives as a credit enhancement device, that is, secure total returns from the portfolio by buying a derivative, and then securitise the portfolio (Kothari, 1996). The use of credit derivative technology in securitisation is widely known as synthetic securitisation. These structures are the preferred choice for banks seeking to manage regulatory and risk capital, especially in Europe (Bund, 2001). By some estimates, synthetic securitisation

represents about 25 % of total European asset backed securities (ABS) volume in 2000, and a similar portion of issuance in the US (Bund, 2001).

In terms of a guide written by Davies, Hewer and Rivett (2001), synthetic securitisation is defined as a structured transaction in which the originating banks use credit derivatives to transfer the risk of a specified pool of assets via a bankruptcy remote vehicle ("SPV") to investors without actually selling the assets themselves. The pool of assets could be loans, bonds, derivatives, lines of credit and/or illiquid securities. The transfer into the SPV can be made using funded credit derivatives such as credit-linked notes and/or unfunded credit derivatives such as credit default swaps and/or total return swaps. Synthetic securitisation involves a transfer of risk and not a sale of the underlying pool of assets (Davies/ Hewer/ Rivett, 2001).

In a synthetic securitisation, the originating bank transfers the risk relating to a pool of assets, normally, to a SPV or some other legal entity using credit default swaps, total return swaps or credit-linked notes. The investors purchase the notes issued by the SPV and thereby assume the credit risk of the underlying pool of assets. The notes are issued in various tranches, most of which are rated by the rating agencies. The greatest risk of the underlying pool of assets is in the lower or unrated tranches of notes. The tranches usually have a large range of expected maturities based on the risk profile of each tranche. The proceeds from the notes are either used by the SPV to purchase collateral, which is then given to the originating bank, or passed to the originating bank as consideration for the credit-linked note (Davies/Hewer/Rivett, 2001).

The main difference between synthetic securitisation and a classic securitisation is that in a synthetic securitisation only certain risks inherent in the assets are transferred rather

than an outright sale of the assets themselves. The transfer could include both market and credit risk or just credit risk depending on the type of credit derivative used to transfer risk. In a classic securitisation, the assets are sold outright to the SPV and hence all risks are transferred. Although there are many variations of a synthetic securitisation, there are normally basic structures – full credit risk synthetic securitisation and leveraged credit risk synthetic securitisation (Davies/ Hewer/ Rivett, 2001).

There are a number of reasons for using an SPV. These include:

- Creating a highly rated and bankruptcy remote vehicle for investors. This ring-fences the transaction from the originating bank thereby protecting the investors in the event the originating bank goes bankrupt.
- A mechanism for the originating bank to structure the tranches of notes to tailor the return for different investors.
- A taxation benefit for the originating institution and/or the investor for issuing notes out of an SPV rather than directly from the originating bank. A key reason for the use of an offshore SPV, for example, is that the “home” jurisdiction may have tax rules under which there is a risk of re-characterisation or non-deductibility of cash flows (Davies, Hewer, Rivett, 2001)

The originating bank will normally set up the SPV such that it is not a subsidiary or quasi subsidiary and therefore any assets of the SPV are not consolidated onto the originating bank’s balance sheet.

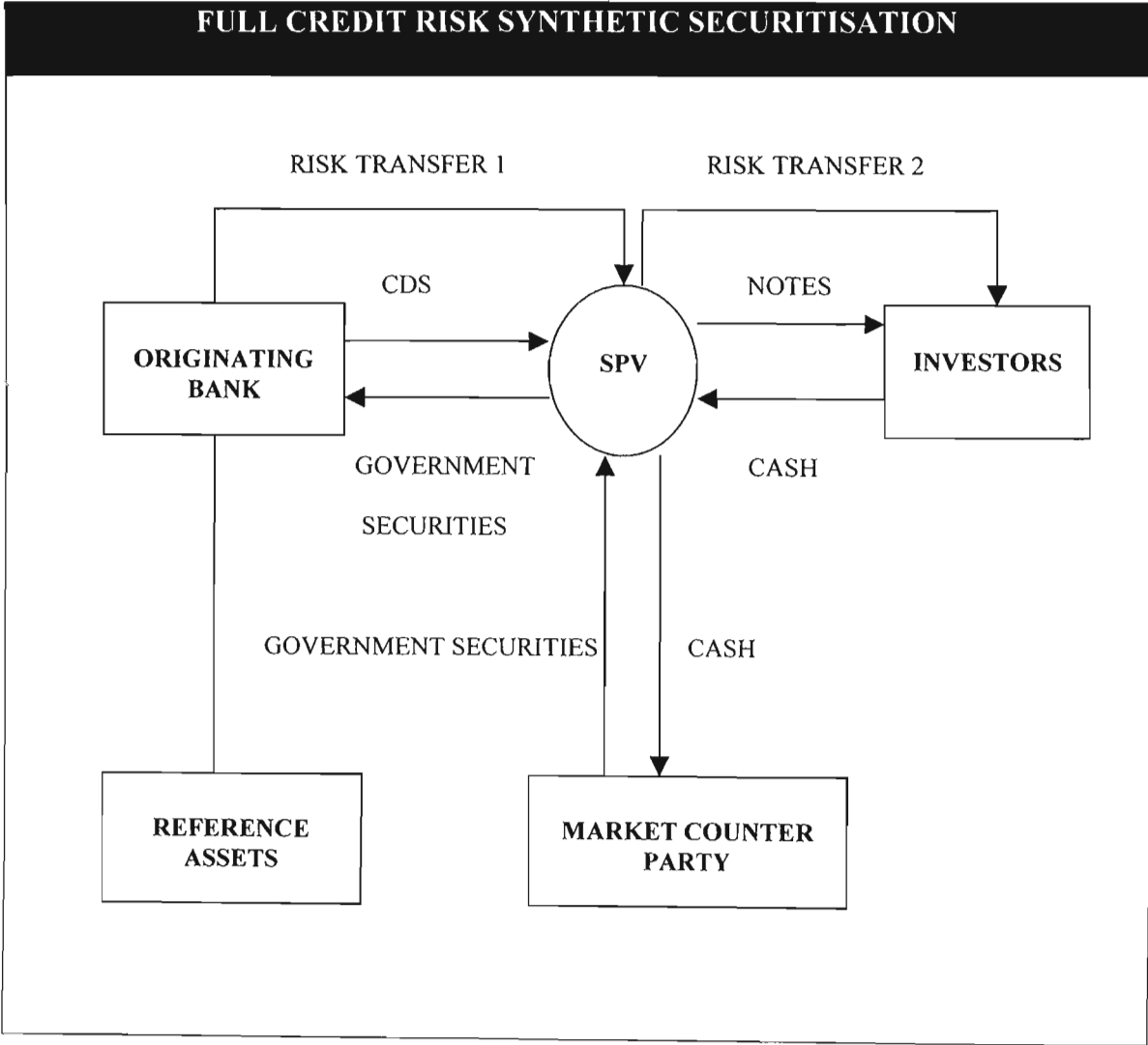
The rating of the notes issued by the SPV will depend on the precise nature and structure of the transaction, the credit quality of the underlying reference obligation and the tenor and seniority of the notes issued. The originating bank will endeavour to ensure that the

most senior notes issued by the SPV are AAA rated. If the credit-linked notes are used to transfer the risk from the originating bank to the SPV, the SPV bears the credit risk of the originating bank as well as that of the underlying reference assets. Ignoring any over collateralisation or other credit enhancement techniques, the rating of the most senior tranche of notes issued by the SPV will, in these circumstances, be subject to a rating cap equal to the rating of the originating bank. According to Davies, Hewer and Rivett “it is more common for credit default swaps to be used between the originating bank and the SPV so the proceeds from the notes issued by the SPV to investors can be invested in highly rated collateral. The rating of this collateral will then be limiting factor on the rating of the notes issued by the SPV rather than the rating of the originating bank”(2001). According to Davies, Hewer and Rivett (2001), there are basically two types of synthetic securitisation structures, the basic full credit risk synthetic securitisation and the leveraged credit risk synthetic securitisation structure.

### ***Basic full credit risk synthetic securitisation***

In a basic full credit risk synthetic securitisation, the credit risk relating to an underlying portfolio of assets is transferred in total to the SPV, and then on to the investors. The originating bank can either enter into individual credit default swaps or credit-linked notes with the SPV for each asset in the portfolio or a basket credit default swap or a credit-linked note referenced to all assets in the reference portfolio. The SPV will issue a number of tranches of notes to the investors. The different tranches provide different levels of risk and return to the investors (Davies/ Hewer/Rivett, 2001). A typical full credit risk synthetic securitisation structure using credit default swaps is depicted below.

In this structure, the originating bank purchases protection from the SPV using credit default swaps. The SPV then issues various tranches of notes to investors, each of which has a different credit quality. The proceeds from the notes issued to the investors are invested in highly rated securities, such as government securities, and these are then used as collateral for the credit default swaps with the originating bank. The premium on the credit default swap and the coupon on the collateral securities provide the return to pay the coupon on the notes issued to the investors.



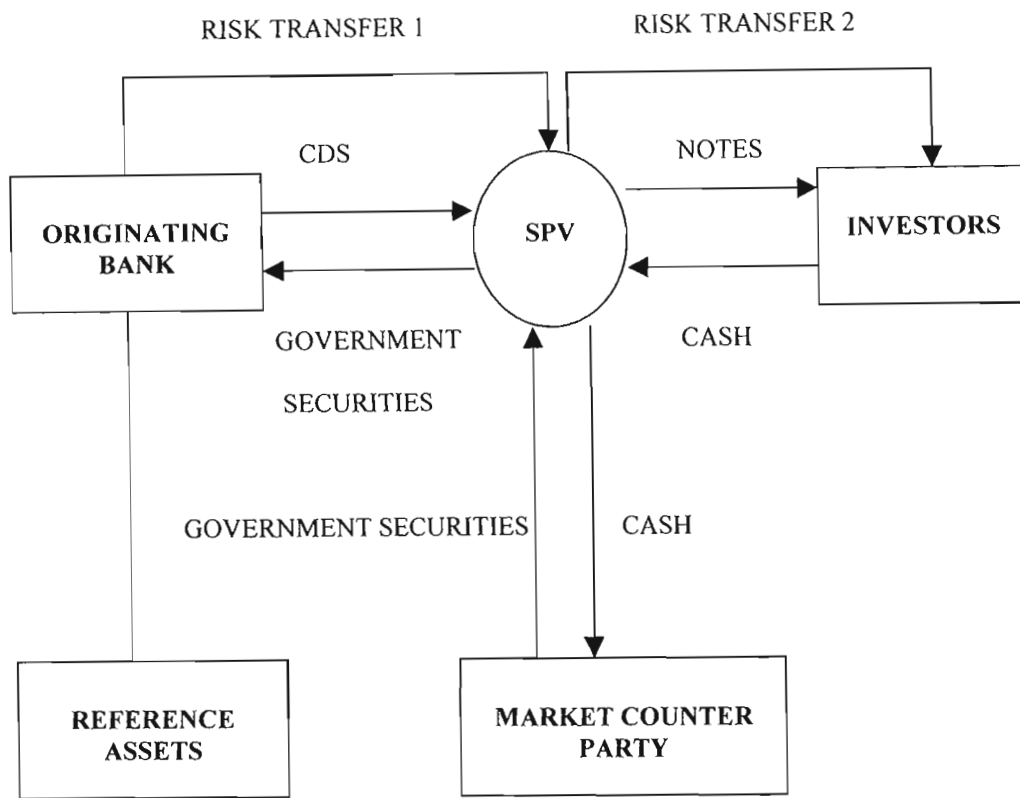
In order to market the synthetic securitisation or to be more cost effective, the originating bank may take on the risk of the first loss on the reference portfolio. The originating bank may do this by either purchasing the lowest rated tranche of notes issued by the SPV or by retaining the first loss on the reference portfolio so that the risk transferred to the SPV is the second loss. There may also be an interest rate swap between the SPV and the originating bank in order to produce the necessary cash flows for the investors.

According to Davies, Hewer and Rivett (2001), full credit risk synthetic securitisations can be done without the use of an SPV. In this case, the originating bank issues a series of credit-linked notes directly to the investors replicating the various tranches of notes issued by the SPV. The originating bank therefore saves the cost of setting up and managing the SPV.

#### ***Leveraged credit risk synthetic securitisation***

A leveraged credit risk synthetic securitisation structure will transfer a percentage of the risk on a credit portfolio to an SPV, as depicted below (Davies, Hewer, Rivett, 2001). The size of the reference pool of assets to which the credit derivative between the originating bank and the SPV is referenced is greater than the value of the notes issued by the SPV. The originating bank will incur any credit losses over the level of protection in the credit default swap.

## LEVERAGED SYNTHETIC SECURITISATION



Due to the leveraged nature of the structure, the originating bank will normally buy protection from the SPV using a credit default swap rather than a credit-linked note. The credit default swaps are referenced to a portfolio of assets held by the originating bank. The notional value of the protection bought by the originating bank from the SPV will be the same as the notional value of the underlying credit portfolio. The credit default swap used will only provide protection up to a set percentage of the notional amount.

The SPV issues tranches of notes to investors up to a value equal to the amount of risk transferred under the credit default swap. The SPV buys government securities or some

other form of low risk asset with the proceeds of the note. The SPV then pledges these securities to the originating bank as collateral for the credit default swap (Davies, Hewer, Rivett, 2001).

In order to obtain a regulatory capital benefit in most jurisdictions, the originating bank will need to get approval from its regulators that the SPV is equivalent in credit standing to an OECD bank (Davies, Hewer, Rivett, 2001). If the regulator agrees that the SPV is equivalent to an OECD bank, the originating bank will be able to substitute a 20% risk weighting instead of a 100% risk weighting.

The authors go on to state that the coupon on the notes issued by the SPV will depend principally on the credit rating of each tranche. The rating agencies will determine the rating on each tranche of notes by reference to the credit quality of the assets in the reference portfolio, the structure and size of the various tranches of notes and their tenor. This will be monitored and reviewed by the rating agencies on a regular basis. The coupon will compensate the investor for taking on the risk implicit in that tranche of notes. The lower rated tranches will have a higher coupon reflecting the greater credit risk in the lower tranches of notes (Davies, Hewer, Rivett, 2001).

The credit derivative between the originating bank and the SPV, normally a credit default swap or potentially a credit-linked note, will specify the relevant credit events which will normally be based on the standard ISDA definitions.

Settlement between the SPV and the originating bank can occur immediately following a credit event or can be deferred until the stated maturity of a particular tranche of notes issued by the SPV. If credit default swaps have been used to transfer the credit risk from the originating bank to the SPV, then on occurrence of a credit event on one of the assets

in the reference portfolio, collateral will normally be sold to fund the payments required under the credit default swap to the originating bank. Following a credit event, the market value of the lower rated tranche will fall, the size of the fall being dependent on the precise redemption mechanics of the issued tranches. To fund the redemption at maturity of the notes issued by the SPV, the remaining collateral will be sold by the SPV. The highest rated notes will be redeemed first, then each subsequent tranche through to the lowest or unrated notes (Davies, Hewer, Rivett, 2001).

If credit-linked notes have been used to transfer the credit risk from the originating bank to the SPV then normally these credit-linked notes will not redeem on the occurrence of a credit event but at the designated maturity of the credit-linked note. This will be designed to match the maturity of the tranches of notes issued by the SPV. The amount received by the SPV from the originating bank on redemption of the credit-linked notes will be distributed to the holders of the notes in order of seniority.

Davies, Hewer, Rivett (2001) lists the following benefits, risks and advantages that accrue to both the bank and the investor in the securitised instruments:

***Benefits for the originating bank specific to full credit risk synthetic securitisation***

- The originating bank has purchased protection on the pool of the reference credits and has hence transferred all the credit risk on the specified portfolio of assets to the SPV.
- If the credit risk is transferred to the SPV using credit-linked notes then normally, providing the originating bank allocates the proceeds it receives from the notes as

collateral against the reference credits it owns, the originating bank may obtain a low or zero regulatory capital charge against those assets.

- If the credit is transferred using a credit default swap, the originating bank may obtain a reduced capital regulatory charge on the underlying exposure provided the credit default swap meets the required regulatory conditions.

***Benefits for the originating bank specific to leveraged credit risk synthetic securitisation***

- The originating bank buys protection on a percentage of loss on the reference portfolio rather than on the whole of the reference portfolio, and, therefore, dependent on the level of the protection purchased, it may be more cost effective than purchasing protection on the whole reference portfolio.
- For leveraged synthetic securitisations, based on the calculation of expected loss on the reference portfolio and the amount of credit risk transferred to the SPV, the originating bank can get protection on a much larger reference portfolio. As the originating bank knows all the assets in the portfolio are very unlikely to default, it can therefore get effective protection by issuing a smaller percentage of this value in notes from the SPV. As significantly less notes need to be issued, the process should be easier because not so many investors need to be found.

## ***Benefits to the investor***

### ***Generic benefits to the investor***

- The investor is able to access risks associated with asset classes it would not normally have access to without having to transact any complex trades, as the investor acquires loan notes. For example, investment funds can obtain risk exposures and returns based on the credit risk of a loan portfolio.
- The investor has the operational advantage of not having to record, monitor or collect interest and principal in respect of all the underlying reference assets
- The investor can purchase notes with the risk and reward profile suited to their needs by purchasing different tranches of notes issued by the SPV.
- The investor is normally able to obtain an enhanced yield, compared to classic securitisation with similar notes, due to the reduced transaction costs.
- The investor does not have a direct credit exposure to the originating bank, rather to the rated notes issued by the SPV. Where credit default swaps are used, the rating of the notes is influenced by the fact that the proceeds from the notes are used to purchase government bonds, which are often used as collateral for credit default swaps with the originating bank. Where credit-linked notes are used or the funds are lent to the originating bank, the rating of the notes issued by the SPV will normally be limited to the credit rating of the originating bank.
- Synthetic securitisation can be used to provide the investor with a portfolio risk exposure without requiring the investor to establish relationships with the individual customers to whom the assets relate. Similarly, the investor does not have to

purchase the underlying assets, which may be prohibitive due to tax or regulatory reasons

- Where the transaction accompanies substitution, the investor is exposed to a lower level of prepayment risk.

#### ***Benefits to the investor specific to leveraged credit risk synthetic securitisation***

- The leverage in a leveraged credit risk securitisation structure concentrates the credit risk in the SPV and therefore the returns on the notes issued by the SPV to the investors are greater to compensate for the increased risk.

#### ***Risks to the originating bank***

- Synthetic securitisation can have large notional values and normally involve a large number of assets in the reference portfolio. This can create significant operational risks within the organisation unless an operationally robust framework exists.
- The originating bank may not achieve a complete transfer of the reference portfolio's risk to the SPV. This may occur where there is a mismatch of terms between the credit derivative and the asset in the reference portfolio. This could be a difference between the covenants in a loan document and the credit events in the credit default swap. There could also be differences in the maturity of the numerous underlying assets and that of the credit derivative.
- The SPV may have to be consolidated into the balance sheet of the originating bank. This would mean that all the assets and liabilities of the SPV are consolidated. This could potentially defeat the object of setting up an SPV and may result in capital and

regulatory ratios for the originating bank being adversely affected. The originating bank must make sure that the SPV does not fall foul of the accounting guidelines, which are likely to be based around control and by reference to the risks and rewards associated with the assets in the SPV.

- Where the originating bank sells the collateral to the SPV, the assets may not be deemed to have been sold under the accounting rules and therefore may remain on the originating bank's balance sheet. The issue of a "true sale" may also be impacted where the originating bank manages the collateral for a fee dependant on the performance or is able to substitute securities in and out of the collateral pool.
- There is reputational risk for the originating bank should one of the structures that it has set up collapses.

### ***Risks to the investor***

- The investor is exposed to the credit risk of the reference credits and potentially the risk of default by the originating bank depending on the structure of the transaction. The investor would be exposed to the credit risk of the originating bank if the transaction between the SPV and the originating bank is funded, using credit-linked notes, and the originating bank is not able to repay the principal on maturity.
- The exposure to the credit risk of the underlying pool of assets is concentrated in the lower rated tranches of the notes issued by the SPV. If the transaction is a leveraged credit risk synthetic securitisation, the credit risk of the reference portfolio is already concentrated in the SPV. A first percentage of the losses relating to a much larger

reference portfolio will have been transferred into the SPV and this will then be “super” concentrated in the lowest rated tranches of notes issued by the SPV.

- There may not be a liquid secondary market for the notes issued by the SPV.
- The notes may be redeemable on the occurrence of a credit event, which may be before the designated maturity of the notes
- There may be insufficient due diligence undertaken on the assets which are included in the reference portfolio
- Loans may be incorrectly substituted into the reference portfolio thereby worsening the credit risk of the reference portfolio. Similarly, assets may be correctly substituted into the reference pool to increase the yield, which may also increase the credit risk in the reference pool.
- Where collateral is posted by the SPV with the originating bank, the investor is at risk that the collateral may be misappropriated.
- The rated notes issued by the SPV may be difficult to value, as there is unlikely to be an active market. In such circumstances, the notes will be valued according to their rating using an equivalent benchmark price for notes of that rating.
- Any unrated notes issued by the SPV may also be difficult to value due to the lack of an active market. In such circumstances, valuation models will be required which must take account of credit exposure to all the underlying reference entities to which the SPV is exposed. Such models require default data that may not be readily available.

The use of synthetic structures and credit derivatives will only increase as more financial institutions and corporations shift from passive to active management of credit risk in all

forms (Bund, 2001). Recent synthetic structures executed in the US and Europe have allowed banks to credit enhance and sell first loss equity exposure to a pool of credits by extending a sub participation of interest from the entire reference portfolio.

In South Africa, the first synthetic securitisation structure was set up by Rand Merchant Bank (RMB), when it created a new asset class locally by structuring a R 12.5 billion synthetic CLO – called Fresco – from a portion of parent FirstRand and bought protection – via a credit default swap with a SPV – consisted of advances to 107 mainly South African companies with 96% of the portfolio commanding investment grade ratings and an average of A+. The portfolio was highly diversified among different industries. In terms of the structure, FirstRand bought back R 11.25 billion of the AAA-rated loans via a super senior portfolio CDS. It then issued the remaining R 1.082 billion in bonds divided into six tranches, five with credit ratings ranging from AAA to BB. These bonds, all listed on the Bond Exchange of SA, were snapped up by institutional investors and were 1.8 times over-subscribed. The sixth unrated tranche totaling R 168 million was taken up by RMB itself. FirstRand says it opted for the transaction partly because it was more efficient for freeing up capital than raising new capital in the local debt or equity markets, and released additional capacity for it to make further loans to the underlying companies.

## 8 THE IMPACT OF ENRON

In the immediate aftermath of the downfall of US energy giant, Enron, questions began to be asked about how this would impact on the credit derivatives market. Standard and Poor (S&P) estimated the number of credit derivative transactions that Enron appeared in could be in the region of 3.3 billion pounds (Futures and Option World, 2002).

“Although much attention had been focused on Enron in relation to loan exposures, the energy sector and the commodities market, it was also a named source of credit risk in many credit derivative transactions,” explains Nik Khaki, director of the S&P’s structured finance derivatives group” (FOW, 2002). “In addition, Enron had an overall derivatives strategy that included credit derivatives. Thus Enron was not only a source of credit risk in derivatives transactions, it was a source of risk to the derivatives transactions” (FOW, 2002).

Traders believe that Enron’s collapse has and will continue to have positive implications for the credit derivatives market for two reasons. Firstly, it has highlighted the potential dangers of counter party and supplier credit risk and will, therefore, encourage more companies into the credit derivatives market (FOW, 2002). Secondly, the Enron example clearly shows that the market is a key-leading indicator. Research by online credit derivatives broker, CreditTrade, illustrates how credit derivative swap spreads were much wider than asset swap spreads. In analyzing the immediate implications of Enron’s demise, CreditTrade concluded that:

- Credit default swaps provided an important hedging tool for worsening Enron credit

- There has been a more efficient loan/bond portfolio management
- Credit default swaps are a vital leading indicator across a broad spectrum of market activities.

In addition, S&P notes that, in December 2000, Enron began acting as the counter party in swap transactions without also being the reference entity. As such, the counter parties were vulnerable to potential default by Enron as a counter party, even if it was not a reference source of credit exposure in a transaction. “ In these transactions, any default by Enron as counter party under the swap contract would initiate a process whereby termination of the swap contract is possible,” says Khakee. “The non-defaulting counter party would have the option to replace Enron with a new counter party in the swaps. This could be done on the whole swap notional amount of credit exposure or the portfolio could be carved up into pieces in order to distribute the risk across various counter parties”.

Additionally, Enron’s default has had a significant impact on synthetic securitisation issues. S&P has lowered its rating on several of these transactions. In their report, Goldman Sach’s Reyman and Marx state “ The liquidity of the Enron name in the credit default swap market made Enron an easy addition to synthetic portfolios” (FOW, 2002). Reyman and Marx conclude that Enron’s collapse could be positive for the investment grade synthetic market: “ First, Enron provided a dramatic demonstration of counter party and supplier credit risk to non-financial companies, who are now more likely to become active users of credit derivatives markets. The increase in single name credit risk hedging will, in turn, spur synthetic issuance (FOW, 2002). Second, credit investors have once again witnessed the benefit of first

loss protection offered by mezzanine and senior synthetic issues. A portfolio manager who owned Enron debt outright has suffered a visible credit loss. Investors who had Enron exposure through a synthetic mezzanine or senior class will, in most circumstances not suffered more than a rating downgrade (FOW, 2002).

## 9 CREDIT DERIVATIVE PRICING AND MODELING

The rapid development of the market for credit derivatives has prompted increasing focus on the modeling of credit risk (Das, 2000). This is in part predicated upon the necessity of pricing credit derivative transactions, but also because at a more fundamental level an understanding of the value dynamics of credit risk is inevitably a precursor to effectively applying credit derivatives to the management of credit risk and credit portfolios (Das, 2000).

This interest has led to increasing interest in credit and default risk modeling which has manifested itself in significant increases in the volume of academic literature and the release of products such as CreditMetrics and CreditRisk+. In practice however, pricing of credit risk remains driven by the pricing of debt securities in the capital markets.

In an analysis of the pricing issues surrounding the ongoing development of credit derivatives internationally, Kumar (2001) argues that protection against specific credit risk is still hard to find at the right price and at the right time. Until the market is liquid and competitively priced, companies will often prefer not to hedge credit risks or may opt for traditional cover such as credit insurance, bank guarantees, factoring or state guarantees. According to Kumar (2001), non-financial firms are extremely reluctant to pay out any kind of money for any kind of hedge. Credit default swaps, for example, are often more expensive than letters of credit. But, as Kumar (2001) argues, this is often because credit derivatives are not priced accurately. However, insurance and capital markets are converging, and credit is increasingly priced in the credit default market. Kumar (2001) argues that as a result such inefficiencies should disappear. The bankers

are waiting for two things: for credit default spreads to narrow, and for stock market investors to start recognizing the value of companies actively managing their credit risk with hedges.

According to Kumar (2001), the problem is that the evolution internationally of the credit default swap has not been smooth and logical. Kumar cites a derivatives trader “interest in credit protection comes sporadically and it comes with market crises. It spiked after the Russian and Asian crises, and it has spiked again with the downgrade of the telecoms companies. But that interest comes too late for the markets concerned because protection prices have already widened too far.”

Liquidity in the credit derivatives market has improved substantially, and it is now easy to place transactions worth \$ 500 million or more. This, however, is true primarily of major names that are generally listed. Unrated companies or those rated below investment grade remain illiquid, says Paulo Gribaudo, a managing director who heads global credit derivatives at IntesaBc in Milan, and these are precisely the kind of companies that most buyers of credit protection are exposed to. Internationally, however, some industries including the telecoms industries may have no choice but to go down the credit derivative route despite the expensive price tags, if only to improve their declining credit ratings or obtain further financing (Kumar, 2001). Most international banks and investors may become lenient to companies willing to hedge their credit exposures. “Having an actively traded credit derivatives market for a certain name improves liquidity for the issuer. The kinds of products that can be issued vary greatly in such a situation”, says Kumar (2001). She goes on to state, “credit risk is not standardized in the way it is confirmed and written. Sometimes it does not lend itself to being hedged. The exposure a company

has with a counter party is not a bond or a loan. These are standard in the credit derivatives market. So, if there is a default, you have a mismatch. If you want to fully hedge the exposure, they need a different contract from the credit derivatives floor business. So it becomes very expensive.”

Despite the problems in the pricing of credit derivatives, most foreign investment bankers are bullish about the potential for credit derivatives. According to Deutsche Bank’s Stonberg (2001), the deteriorating credit environment in the US and in some sectors in Europe may accelerate the process of resolving the pricing issues in credit derivatives. He states that “ from a prudent perspective, companies from these environments should either hedge their exposure, or use the market as a pricing point to make sure they are pricing credit risk the right way in their contracts” (2001).

Ultimately, it will be a cost return trade off and credit derivatives will have to compete with established rivals, such as state export guarantees.

The value of a credit derivative is derived largely by the market price of the underlying credit-worthiness of the borrower. As in the cash market, the credit derivative industry uses credit spreads to express the price of the credit risk in products such as credit default swaps. Credit spreads represent the difference between the yield on company debts and the risk free interest rate of the same maturity. The price of credit risk cannot be easily observed in the market place unlike the underlying prices of interest rate derivatives.

The credit risk implicit in all credit-linked products depends on two major factors: the probability that the issuer may default and the expected recovery in the event such default occurs. In general, the greater the likelihood of default and the smaller the expected recovery rate, the larger the credit risk to the investor and hence a larger credit spread is

demand in the market place. An efficient market for credit requires sufficient and transparent information on these factors to facilitate an effective evaluation of the credit risk of the underlying reference asset. Because a cash credit product and related credit default swap are exposed to the same underlying credit risk, the pricing methodology for credit derivatives is closely linked to that used in the cash market. In particular, the large informational requirements and complexity of issuer specific credit analysis associated with the pricing of credit risk for cash credit products also applies for credit derivative products (Das, 2000).

According to Das (2000), internationally, there are two broad categories of products developed to price credit derivatives. These are the “structural models” and “intensity models”. Structural models, also known as the “Merton” approach, seek to predict the timing of default and hence quantify the appropriate credit spread by utilizing a large number of market inputs such as financial information and the credit rating of a specific issuer, together with industry and macro-economic variables. Such models assume a constant recovery ratio that is based on historical performance. Pricing should also reflect the distribution of the reference assets’ potential future credit quality. Credit rating agencies periodically produce “transition matrices” which compute the future credit distribution of the various rating categories by quantifying the historical probabilities of an issuer being downgraded or defaulting before a given date in the future. The Merton based models implicitly incorporate such information in the pricing of credit spread.

The Intensity models, on the other hand, explicitly employ such transition matrices to predict the default probabilities in order to price credit (Das, 2000).

## **The Merton Approach**

In the first class of models (“Structural models”), a credit product is regarded as a contingent claim on the assets of the issuer and is valued according to option pricing theory. Merton produced the first academic model in this class in 1974. Merton observed that corporate issuers have the option to default and will probably exercise it should the firm’s assets fall below the face value of the debt. The model relies heavily on the assumption that there is a strong relationship between credit risk and the price of equity. The time period to a potential default is determined by tracking the value of the underlying reference credit under various assumptions and is assumed to occur when this process meets a predetermine boundary. In its simplest form, the methodology prices credit risk as a deep-out-of-the-money put option on the assets of the firm with a strike price equal to the predetermined boundary. Most pricing methodologies derived from the Merton approach are complex and require many technical indicators. For example, such models utilize the fact that the volatility of default rates and loss rates are higher for lower rating categories. This implies that investors in lower rated debt must not only be compensated for a higher level of credit risk but also for a greater degree of certainty over the level of credit risk. To the extent that this approach to pricing can be applied to credit derivatives, it can also be applied to the pricing of any traditional credit instrument. The key model inputs include:

- Historical default and recovery rates
- Financial and accounting information
- Macro-economic indicators relating to a specific country or geographical region; and
- Statistical estimates, e.g. volatility of the stock price

### ***The Intensity Models***

This model measures the potential time of default using the historical transition matrices produced by credit rating agencies and credit spreads observed in the market place. The models involve the calibration of default probabilities to the observed credit spreads by usually assuming a constant historical recovery ratio. The model does not directly use the firm's underlying assets to model the time of default, as in the Merton approach described above, but this is indirectly taken into account by incorporating the firm's credit rating. With any credit-linked product, the primary risk lies in the potential default of reference entity: absent any default in the reference entity, the expected cash flows will be received in full, whereas if a default occurs, the investor will receive a reduced amount only. It is therefore possible to model a risky cash flow as a portfolio of contingent cash flows corresponding to the different default scenarios weighted by the probability of default and making assumptions on recovery ratios. The computed risk neutral probabilities can then be used to estimate the forward credit risk implied by the market and, in a consistent framework, price more complex derivatives such as credit spread options. Internationally, market practitioners often calculate the probability of default from credit spreads quoted in the market.

According to Das (2000), there are a number of issues in employing credit spreads to compute the default probability:

- Obtain a term structure of credit spreads can be a difficult exercise because, even for the most liquid underlying reference assets, only a few quotes exist on the credit term structure. The quoted spreads for the same underlying and with the same maturity differ but this difference tends to be small and the spreads are

usually tight under normal market conditions. For reference assets with low rating or non-investment grade assets, pricing quotes either do not exist or whatever quotes are available in the market place they are purely indicative in nature and vary significantly. Credit derivative practitioners are therefore forced to price credit risk using proxy credit spreads

- There are many different credit spreads that are used to price credit risk. Some practitioners prefer to use credit default spreads, others use asset swap spreads, others use spreads implied from quoted bond prices and some use a combination of whatever spreads are available in the market. When valuing a credit derivative using the credit spread of another asset, an assumption must be made on the correlation between the two markets. For example, if asset swap spreads are used as a proxy to price credit default swaps they are adjusted assuming a certain degree of correlation between the two markets. The level of correlation assumed varies between market participants.
- Where there are no credit spread quotes across different maturities, interpolation and extrapolation techniques are employed to value the credit derivative. Practitioners make different assumptions to apply these techniques with the result that the interpolated and extrapolated spreads generated can vary considerably.
- The nature of credit derivative contracts as a result of different clauses in the documentation will affect credit spreads. For example, in the US, effectively two different credit curves are used for a credit derivative; one based on a credit derivative with a restructuring clause and another credit curve used for a credit derivative without a restructuring clause

There are a number of other factors that affect the credit spreads and hence the calculated probability of default. The factors are as follows:

- The liquidity of both the underlying reference entity and other relevant markets.  
For example, to hedge the credit derivative, the most effective hedge is likely to be in a credit derivative market. It may also be possible, however, to obtain a hedge in the bond, loan, asset swap or other market. These markets may be more or less liquid than the credit derivative market.
- Different sensitivities to systemic risk in the reference entity. For example, a bank with a highly concentrated exposure to a country is likely to quote a different spread to a bank without a concentration exposure
- Depression scenarios. These are hypothetical default simulations much worse than the default suggested by historical data
- Individual views on future uncertainties. In volatile markets, traders may overrule the price produced by a model normally employed by the bank to price credit risk.
- Appetite for risk. Banks that have a strong appetite for risk will be prepared to quote more aggressive prices compared to banks which are more sensitive.
- Costs of transacting trades. As credit derivatives are a relatively new business, the fixed costs associated with doing business vary significantly between different banks. In general, the cost base of the bank will be reflected in the spreads it quotes.
- Correlation between the reference entity and the counter party. Different banks have different methodologies for evaluating the correlation between the probability of default of the counter party and the reference entity.

According to Das (2000), there are a number of key pricing issues. The features of credit derivatives expose investors to risks other than “pure” credit risk and these should, in theory, impact the pricing. For instance, the potential payment under a credit derivative is determined by reference to the occurrence of credit events in the reference obligation or portfolio. The broader the definition of credit events in the contract, the greater the risk. The accurate pricing of credit derivatives must capture this and other specific risk characteristics of each contract. The numerous assumptions and historical data used in the models, however, arguably fail to capture some of these. Some of the practical difficulties are as follows:

- The ISDA Credit Derivatives Definitions list six credit events that may be incorporated in a credit default swap. These credit events differ from the definition of default used by credit rating agencies such as Moody’s and S&P
- The use of ISDA’s definitions of credit events may lead to a credit derivative payout following an event that actually does not constitute an actual default. This should affect the pricing of credit derivatives since it affects their effectiveness as hedging instruments.
- Despite ISDA’s efforts to standardize product documentation for credit default swaps; the contracts are far from achieving the level of standardization experienced in other derivative markets. Documentation risk therefore remains a key issue in the pricing of credit derivatives
- The practical problem relating to the separation of pure credit risk from liquidity risk when pricing conventional risky products also apply to credit derivative products

In summary, despite the rigour that has been introduced to credit derivative pricing, not all credit pricing is a science; there are a number of factors preventing market participants from relying exclusively on models to price credit derivatives. An important obstacle is the lack of reliable risky bond prices on which to calibrate the term structure of default intensities. Because of low market liquidity, many market bond quotes reflect one-way prices. Without a liquid market to facilitate price discovery, owners of debt may be better informed about its riskiness, creating an information advantage over sellers of credit protection. As a result, sellers of credit protection face the risk of adverse selection of more risky default swaps, and of under pricing swap premiums. Because of the uncertainty about the risks that determine credit pricing, the market practice has been to add additional risk premiums to the default swap premium in order to compensate for the unknown risks. Despite their current limitations, credit derivative pricing models play an important role in creating pricing transparency. In turn, greater transparency attracts more market participants and therefore creates more liquidity. Therefore pricing models are an essential link in the liquidity circle.

## 10      **LEGAL DOCUMENTATION**

In an article written by Kohler and Cocco (Futures and Option World, 2001), the latest documentary issues surrounding credit derivatives were examined. In particular, the foundation of the vast majority of credit derivative documentation, the 1999 International Swaps and Derivatives Association (ISDA) Credit Derivative Definitions, pointing out some of the documentation's key features, was examined. ISDA is an industry trade group that collaborated on the first interest rate swaps master agreement and has developed most of the standard documentation in the derivatives industry. ISDA has a task force that is developing standard documents for credit derivatives.

According to Kohler and Cocco (2001), the definitions are a set of contractual provisions that can be incorporated by reference into confirmations relating to credit derivatives that take the form of a single name default swap. This allows parties to the transaction to use a short form of confirmation containing only the economic and deal specific terms relating to that transaction. The objective of the structure is to provide market participants with a tool for producing documentation that is sufficiently sophisticated to deal with the majority of issues arising from such transactions, simple enough to facilitate rapid processing, and cost effective. As with all ISDA documentation, the definitions allow for numerous electives to be made by the parties, and the parties are also free to make whatever amendments or additions they agree by inclusion in the confirmation of the appropriate language. Kohler (2001) says that the definitions also provide for a number of fallbacks to apply in case the parties do not specify otherwise. Accordingly, market participants recognize the particularly important role of documentation in the credit derivatives market. As a consequence of the Russian and Asian financial crises,

Kohler and Cocco (2001) comment that, especially in the case of credit derivatives, the payment of large sums of money depends critically on the wording of a specific clause. According to Kohler and Cocco (2001), the 1999 ISDA Credit derivative definitions also apply to credit default swaps relating to obligations for the payment of money by a reference entity. With appropriate modifications, the definitions can also be used to document credit derivative transactions that refer to baskets of reference entities, or to form the basis of documents relating to funded products. In a transaction, the party buying credit risk protection, or buyer, undertakes to pay the seller of protection a predetermined amount. In return the seller undertakes to make a payment in favour of the buyer in case the defined credit events occur. According to Kohler and Cocco (2001), credit events serve as indicators of the deterioration of the credit worthiness of the reference entity. One of the main characteristics of a credit derivative is that the buyer does not have to suffer a loss as a result of a credit event in order to qualify for the payment from the seller. To illustrate, Kohler and Cocco (2001) provide an example as follows: A buys from B the right to receive from B a payment of \$10 million in case company X undergoes bankruptcy proceedings or loan Y is not repaid. The occurrence of one of these events, in circumstances involving the satisfaction of any other condition to payment that the parties may have specified in the transaction, would give A the right to receive from B the agreed payment, irrespective of whether A had any credit exposure to company X or loan Y. In terms of the article, this feature is of crucial importance to the determination of the regulatory environment applicable to credit derivatives. Kohler and Cocco (2001) comment that in the UK, if entering into credit derivatives constituted the carrying on of insurance business, there would be a requirement for authorization under

the Insurance Companies Act 1982. The fact that a buyer of a credit derivative does not have to hold the obligations in question in order to obtain a payment from the seller means that the credit derivative does not fall within the scope of this legislation. This analysis was set out in full in a legal opinion obtained by ISDA in 1997.

In terms of the article, it is essential that a reference entity be identified with sufficient precision. For example, to what extent are successors or affiliates of an entity to be included? This point, in the view of Kohler and Cocco (2001), is particularly important when dealing with a sovereign.

In the view of Kohler and Cocco (2001), the issue of the specification of the credit event is also critically important. The buyer and seller may buy and sell credit risk defined by reference to different types of credit events. Accordingly, it is appropriate that both select carefully the type of event on which they wish to trade. The definitions offer a menu that comprises (1) failure to pay, (2) acceleration or default, (3) repudiation, (4) restructuring and (5) the bankruptcy of the reference entity. In the case of all but last of these, the parties can choose to implement a type of materiality threshold by agreeing a payment requirement or default requirement that has to be crossed before the credit event is deemed to have occurred. The parties may consider the definition's menu to be in need of amendment or supplement in order to deal with the specific credit risk they wish to trade. The article provides an example as follows: the bankruptcy credit event focuses on events that corporate obligors could experience and would require tailoring if the reference entity were to take some other legal form.

The article further states that the definition of restructuring was one of the most controversial provisions in the drafting process that led to the definitions. In the

forerunner of the definitions, ISDA's 1998 long form of confirmation, restructuring was defined by reference to events that had the effect of making the terms of the relevant obligation materially less favourable from an economic, credit or risk perspective. This definition was considered to be too subjective, and had given rise to a number of disputes. According to Kohler and Cocco (2001), the new definition now refers to more objective criteria, such as the reduction in the amount of principal or premium. A degree of subjectivity is, however, retained in that the events that would otherwise fall within the definition of restructuring do not constitute a restructuring if they do not result directly or indirectly from deterioration in the credit worthiness or financial condition of the reference entity. However, according to the article, the market's disquiet (the international market) regarding restructuring was not quelled by these changes, and this recently gave rise to ISDA publishing a Restructuring Supplement. The supplement restricts the types of obligation to which restructuring can apply. It clarifies issues that the definitions were not clear on and places certain additional parameters on the ways in which a transaction can settle following a restructuring credit event.

Apart from the bankruptcy of the reference entity, Kohler and Cocco (2001) state that the question of whether a credit event has occurred is determined by reference to obligations identified in the confirmation. The definitions introduce a matrix system based on the choice of one obligation category, and, if appropriate, one or more obligation categories. The aim of this structure is to introduce flexibility into the documentation process. The obligation categories are as follows: payment, borrowed money, reference obligations only, bond, loan, or loan. According to Kohler and Cocco (2001), it is possible to give a very wide definition of obligations by selecting payment. On the other hand it is possible

to specify that credit events are only relevant if they occur with reference to only one obligation, the reference obligation. Choosing one or more obligation characteristics has the effect of restricting the field of obligations in relation to which a credit event may occur, if it occurs in relation to obligations of the chosen category, and which have the chosen characteristics.

In addition, the article points out that the fact that a credit event has occurred is not sufficient to trigger the payment of credit protection. Before that can occur, certain conditions to payment must be satisfied. The definitions set out three conditions involving the service of notice. A credit event notice must be served in any transaction before the credit protection will become payable. The parties may choose that a notice of publicly available information must be served to cite new sources that confirm the occurrence of a credit event. Finally, if the transaction is to settle physically, the buyer must serve a notice of intended physical settlement.

A credit event notice must refer to a credit event that occurs during the term of the transaction. According to Kohler and Cocco (2001), the term begins on the effective date and ends on the scheduled termination date, both of which are agreed by the parties in the confirmation. However, where the credit event is a failure to pay, the credit event must be continuing at the end of any applicable grace period or three days, whichever is the longer. According to Kohler and Cocco (2001), this requirement is intended to avoid a credit event being triggered by a technical default, but it means that a default could have occurred on or before the scheduled termination date, even though the grace period is pending at that time. The definitions provide that the parties have two options in these circumstances. They may either postpone the end of the term of the transaction beyond

the scheduled termination date to the end of the grace period, at which point, if the failure to pay is continuing, a credit event notice may be served. Alternatively, they may agree that the grace period must have expired before the scheduled termination date or no credit event notice may be served. The latter, in terms of the article, is the fallback provision, which applies unless the parties agree otherwise.

In terms of the article, the parties agree at the outset whether cash settlement or physical settlement applies to the relevant credit derivative transaction. These are different means of realizing the protection bought by the buyer where a credit event actually occurs. If cash settlement applies, the payment to be made by the seller to the buyer may be an amount fixed in advance or, more usually, an amount to reflect the drop in value of reference obligation as determined by way of a dealer's poll. In the case of physical settlement, the buyer will deliver to the seller certain types of obligations- deliverable obligations – against payment of a fixed amount, usually the face value of those obligations.

The buyer realizes its protection because it delivers to the seller assets that are worth less than their face value, but obtains payment of full face value from the seller. Physical settlement is usually used in the market place, because it avoids having to determine the exact market value of the relevant obligation, and in circumstances where the credit event actually occurs it may be difficult to assess the drop in the value of the reference obligation for the purpose of cash settlement. On the other hand, some buyers may prefer cash settlement because if the buyer has selected physical settlement and is unable to obtain suitable deliverable obligations to deliver due to, for instance, a squeeze of

liquidity in the market, the buyer may lose some or all of the protection it had under the credit derivative.

Deliverable obligations are defined, as is the case for obligations, by choosing one deliverable obligation category and any relevant deliverable obligation characteristic. Although they are defined in the same way, obligations and deliverable obligations play different roles. Whereas obligations are what parties refer to in order to assess whether a credit event has occurred, deliverable obligations come into play only as a settlement tool and if the parties have specified that physical settlement apply. The two do not need to be the same.

### ***Future Developments***

According to Kohler and Cocco (2001), ISDA is currently working on producing dispute resolution guidelines. It is also preparing user guidelines to the definitions. A goal in the future is to expand the definitions to govern more types of credit derivatives.

Assembling market consensus support for such developments has proved tricky, according to Kohler. As a result, ISDA has recently introduced a new approach to the compilation of standard documentation involving the inauguration of a small working party to make recommendations to the rest of the market. This working party, nicknamed the G<sup>+</sup>, comprises institutions representing constituencies on both sides of the Atlantic and different parts of the market. According to Kohler and Cocco (2001), the agenda it has set itself includes a review of other parts of the definitions including the bankruptcy, repudiation, acceleration and default credit events, language for zero coupon bonds and convertible bonds, and a clarification of the successor definition, with a view to

producing further supplements or guidance as to what constitutes the market standard on various issues. Developments expected to be implemented in the coming months will show whether the G6 approach is more efficient than the previous approach. The authors finally conclude that credit derivatives will continue to grow and expand. These developments will mean that refining the definitions is a continuing process that will inspire fierce debate.

## **11 OBJECTIVES OF THE STUDY, PROBLEM STATEMENT AND HYPOTHESIS**

The objective of the study is to research the building blocks of credit derivatives in general and then to determine whether there is scope to apply it in the South African context.

### **11.1. The Problem Statement**

There is a need to investigate the extent to which credit derivatives can be applied in South Africa in the context of an illiquid corporate bond market, and what, if any, obstacles stand in the way of implementing credit derivatives successfully.

## **12. THE RESEARCH DESIGN AND METHODOLOGY**

### **12.1. Sampling and Sampling Technique**

The sampling frame is the current practitioners of credit derivatives in South Africa. Currently, there are four local banks trading credit derivatives- Standard Corporate and Merchant Bank, ABSA, NIB and Investec.

### **12.2. Design and Analytic Technique**

The research design is essentially an Exploratory Design, being primarily qualitative in nature. Information has been collected using the Communication Study approach. In particular, questionnaires have been utilized in the information gathering process.

### **12.3 Method of Data Collection**

In order to collect information on the application of credit derivatives in South Africa, a two-step process has been followed. Firstly, secondary sources have been researched fully. This includes periodicals, journals, and articles written by the established authorities in the field.

Secondly, an open-ended questionnaire was distributed to the major participants in the credit derivatives in South Africa, highlighting critical issues that require clarification.

The following questions have been asked in the questionnaire:

1. In your estimation, what is the size of the current credit derivative market in South Africa?

2. What, in your view, is the most frequently used credit derivative instrument in the South African market?
3. What are the most common uses for credit derivatives in South Africa?
4. The South African Reserve Bank has recently proposed substantial amendments to the existing banking regulations to enable the practice of credit derivatives in South Africa. What are the most significant issues arising from the proposals that stand out, in your view?
5. What pricing model does your institution employ in determining the appropriate price of a credit derivative instrument? Are there any shortcomings in the pricing model chosen?
6. Does your institution employ the same model to price all credit derivative instruments?
7. In view of the fact that credit derivatives are in its infancy in South Africa, what are the particular pricing challenges, if any, that your institution faces?
8. Synthetic securitisation is widely believed to be the preferred model for securitisation in the future. Do you agree with this statement?
9. If your answer to the question above is YES, what advantages does synthetic securitisation have over typical securitisation models? Is this applicable to the South African context?
10. What factors, in your view, would facilitate or alternatively threaten the continual development of the credit derivatives in South Africa?

11. In light of the recent turmoil in the emerging markets and the uncovering of accounting scandals on a worldwide basis, what affect do these developments have on the credit derivative market in South Africa?
12. Other Comments?

#### **12.4 Data Analysis Technique**

Qualitative analyses of the responses to the questionnaire have been conducted. The analysis seeks to highlight the practice of credit derivatives in South Africa and the extent to which this differs from practice internationally. The analysis will also attempt to discuss the key issues surrounding the further development of credit derivatives in South Africa.

### **13. BENEFITS OF THE RESEARCH UNDERTAKING**

The benefit of the research undertaking would be to obtain clarity on the practice of credit derivatives internationally and in South Africa. In particular, the following range of topics would have been covered in the analysis of credit derivatives:

- The growth of the credit trading market internationally and in South Africa
- The identification of the basic credit derivative instruments. In this respect, the credit default swap, credit-linked note and total return swap have been examined
- The uses, benefits, risks and advantages of credit derivatives in both the international and South African context
- The pricing of credit derivative instruments and the determinants of credit spreads. The potential problems in credit derivative pricing have been highlighted
- The legal risks associated with credit derivative documentation, with particular reference to the efforts of the International Swaps and Derivatives Association (ISDA), and
- The use of credit derivatives in synthetic securitisation

#### **14. RESULTS AND ANALYSIS OF THE DATA GATHERING STAGE**

As indicated above, the research undertaking seeks to analyse the practice of credit derivatives in South Africa and to make comparisons with the evolution of credit derivatives internationally. In the process, the issues underlying the further development of credit derivatives in South Africa have been highlighted. The research undertaking should demonstrate that credit derivatives are arguably one of the most exciting developments in the field of contemporary finance. If the evidence of the success of credit derivatives internationally is anything to go by, credit derivatives is destined to assume the same level of importance in South Africa as interest rate derivatives. As a consequence of the infancy of credit derivatives in South Africa, there are currently few practitioners. In particular, it appears that only the “big five” banks have established trading and structuring desks to trade the domestic market. In particular, the following banks have an active credit derivatives department – Standard Bank, NIB, Investec, Rand Merchant Bank and ABSA. Of these institutions, it appears that Standard Bank, Investec and NIB are fairly advanced in the development of their credit derivatives capability.

In light of this, an open-ended questionnaire was distributed to the relevant departments of these institutions. At the outset, it was envisaged that, if anything, recording and analyzing the views and practice of these institutions would accurately capture the relevant issues in the evolution of credit derivatives in South Africa. On the downside, as the number of market participants in the field increase, the views of the institutions canvassed in the questionnaire may probably not reflect the reality of credit derivatives in South Africa. In addition, due to such limited numbers of practitioners currently, it is

envisaged that any analysis undertaken at this point in time may necessarily only begin to unearth the dynamics of credit derivative practice in South Africa. Despite these limitations, however, the research undertaking should highlight the teething questions that may need to be resolved in order for credit derivative technology to fully develop in South Africa. The responses and analysis to the questions posed are as follows -:

- In the estimation of the respondents, what is the size of the credit derivative market in South Africa?

NIB Investment Bank (NIB) believes that this is difficult to accurately quantify the size of the market, as the industry is very much in its infancy at the moment. In light of this, NIB estimates the market size to be about 10 % of the size of the interest rate derivatives market (i.e. swaps, caps/floors, FRAS and bond options). On the other hand, Investec believes that the credit derivative market is currently trading at approximately R 30 billion. In contrast, Standard Corporate and Merchant Bank (SCMB) is of the view that R 1 billion of credit default swaps and R 8 billion of credit-linked notes are traded on an annual basis. On the face of it, therefore, there does not appear to be consensus on the size of the credit derivative market in South Africa in view of the wide range of estimates above. This discrepancy could perhaps be attributed to share of market that each respondent bank currently enjoys in South Africa. The market size in South Africa is therefore in the region from R 9 billion to 30 billion. This is in sharp contrast to the size of the credit derivative market internationally, estimated to be in the region of \$ 50,1 trillion. The size of the market is no doubt as attributable to the infancy of credit derivatives in South Africa as the relative small number of potential market participants

in South Africa as opposed to the USA or Europe. As indicated below, the relative smallness of the market has a number of important effects on the continued development of credit derivatives in the future. In particular, the research undertaking will demonstrate that the pricing of credit derivative instruments is a difficult task in view of the lack of liquidity in the South African market.

- What, in the respondent's view, is the most frequently used credit derivative instrument in South Africa?

In the view of SCMB, the credit-linked note is the most frequently used credit derivative instrument in South Africa. This view is in fact corroborated by NIB and Investec. In contrast, the international experience has proven to be different. The British Bankers' Association survey, cited in a report in Financial Times (2002), estimates that the global market for credit derivatives reached USD 1,189 billion, more than that estimated by the BBA in its earlier surveys. According to the report, single name credit default swaps continues to be the most important product forming 45% of the market. As to why this is different in South Africa is not exactly clear from the evidence. A plausible explanation may be that credit-linked notes offer protection from both market and credit risk whilst the credit default swap offers investors protection from credit risk only. This difference is particularly relevant in the context of a relatively more hostile interest and exchange rate environment. The constant volatility of the rand dollar exchange rate as well as the threat of increasing inflation has led to an environment of considerable market risk (in addition to credit risk).

- What are the most common uses for credit derivatives in South Africa?

In the experience of NIB, hedging is the most common use for credit derivatives in South Africa. It is not clear whether this is in respect of credit risk only or market risk as well. Further, it is also not clear from the response whether this is in respect of the bank's lending activities or/and activities of all market participants in general. To some extent, this view is consistent with Investec's own experience in the South African market place. Investec argues that risk mitigation for banks overly exposed to specific sectors of the market and the ability of investors to enhance their portfolio yields are the primary drivers for using credit derivatives in South Africa. As far as risk mitigation for banks are concerned, it is important to bear in mind that the credit environment in South Africa (and worldwide) has deteriorated significantly in the last 36 months. This is *inter alia* a function of many factors, including but not limited to depressed economic conditions. This factor, together with the collapse of local banks, has meant that lending activities have been largely confined to the "big five" banks. A consequence of this is that these banks have become overly exposed to certain sectors of the economy. Hence, the need for risk mitigation. The problem, however, is that it is often difficult to offload credit risk exposure to potential investors or other banks. This is on the basis that most if not all banks already have significant exposure in a number of different economic sectors. Institutional investors, for instance, have traditionally been precluded from investing a significant portion of funds under management offshore as a result of restrictive exchange control regulations. This has meant that investors have a limited number of investment opportunities in South Africa, a factor that has led to significant over exposure to many industries. The problem, therefore, is that there may not be a large number of investors

willing to assume credit exposure via credit or other derivatives. Consistent with the view of Investec, SCMB believes that risk mitigation in so far as laying off credit exposure to the institutional investor market is the most common use for credit derivatives in South Africa. This seems to imply that yield enhancement drives a significant portion of credit derivative trades. A fundamental point to consider in the context of yield enhancement for investors is the dearth of investment opportunities in South Africa. As mentioned above, exchange control regulations have prevented institutions from investing abroad. This factor has meant that there are too many investors chasing too few credits. In addition, with the collapse of the small banking sector in South Africa, investors have tended to place their funds in three or four of the big banks – a factor that is considered to be undesirable as far as the need for diversification of portfolio returns is concerned. Credit derivative paper appears to be a viable investment alternative to traditional investment avenues. To summarise the position in the South African market, it appears that credit derivatives are used mainly for risk mitigation in the banking sector and yield enhancement in the institutional investment market. This is consistent with the way credit derivatives are used internationally i.e. hedging and yield pick up for institutional investors. However, there appears to be one exception. Internationally, there is a significant element of speculation in credit derivatives. For instance, in a total return swap, the total return payer does not have to own any debt obligations of the underlying reference obligation in order to enter into the total return swap. The total return payer can therefore use the total return swap to “short” the market and credit risk of the reference obligation. The total return payer will therefore benefit from any depreciation in the market value of the underlying reference

obligation as an equivalent amount will be due, under the terms of the total return swap, from the total return receiver. A particularly important feature in the use of credit derivatives internationally is obtaining capital regulatory relief on banking transactions. Although the local banks have not mentioned this particular aspect in their use of credit derivatives when responding to this question, it does become apparent that they do in fact consider reducing their capital risk weighting in the context of securitisation. This aspect will be considered later.

- The South African Reserve Bank has recently proposed substantial amendments to existing banking regulations to enable the practice of credit derivatives in South Africa. What, in the view of the respondents, are the most significant issues arising from the draft proposals?

Investec is of the view that the new regulations will enable banks to obtain regulatory capital relief on exposures to counter parties. A feature of banking legislation is that banks must reserve up to 10% of their total lending. As this is a non-economic loan, reserving represents a cost to the bank that must be included in the pricing of the loan. A credit derivative allows banks to offload credit exposure to willing investors, including other banks. As a result, the banks may be allowed to reduce the capital risk weighting from 10% to sometimes 0%. The bank may decide to pass these savings to the borrower or retain the savings to enhance its margins.

According to Investec, the draft regulations will also permit banks to run trading books and set up trading desks in much the same way as regulations allow the trading of interest rate derivatives. SCMB has a different though not necessarily contradictory view of the

effect of the draft legislation. In their view, the proposed legislation will have the effect of reducing uncertainty in the trading and treatment of credit. In addition, the bank believes that the draft legislation enables credit derivatives to be seen as an acceptable product or risk mitigation tool and, if used correctly, obtain capital offset. By this, the local banks will be allowed to offset one credit derivative exposure against the other. In the period preceding the release of the draft legislation, the local banks believed that should the legislation not allow capital offset, market growth may have been stymied. In the view of SCMB, these factors will contribute towards the development of the domestic market, as investors will be assured of proper regulation and control. NIB did not offer a response to this question, for reasons that are not exactly clear from the questionnaire. Internationally, the regulatory environment had been established for some time allowing credit derivatives to flourish. This has especially been the case in the United States and Europe. The regulatory model adopted in many countries is based on guidelines established by BASEL, an association of international banks. It is anticipated that changes to domestic legislation will largely follow the widely accepted BASEL model.

- What pricing model does your institution employ in determining the appropriate price of a credit derivative? Are there any shortcomings in the pricing model chosen?

The respondents were unanimous in their choice of a pricing model, namely a derivative of KMV, which is based on option pricing. Briefly, a credit product is regarded as a contingent claim on the assets of the issuer and is valued according to option pricing theory. Merton produced the first academic model in this class in 1974. Merton observed that corporate issuers have the option to default and will probably exercise it

should the firm's assets fall below the face value of the debt. The model relies heavily on the assumption that there is a strong relationship between credit risk and the price of equity. The time period to a potential default is determined by tracking the value of the underlying reference credit under various assumptions and is assumed to occur when this process meets a predetermined boundary. In its simplest form, the methodology prices credit risk as a deep-out-of-the-money put option on the assets of the firm with a strike price equal to the predetermined boundary.

- Does the respondent institution employ the same model to price all credit derivatives?

Once again, the respondents unanimously stated that all credit derivative instruments are priced using the same pricing model i.e. a derivative of KMV.

- In view of the infancy of credit derivatives in South Africa, what pricing challenges, if any, does the respondent face?

Investec argues that there were many factors currently inhibiting the effective pricing of credit derivatives in South Africa. Firstly, a lack of a corporate bond market in South Africa prevents a bank or trader from correctly identifying the appropriate price for an instrument. A lack of corporate bonds implies that there is a dearth of observable market prices to verify and test the appropriateness of a pricing model. Secondly, many companies in South Africa have not been formerly rated by a credit rating agency of international standing. A credit rating enables market participants to gain valuable insight into the financial and credit worthiness of a company, which, in turn facilitates

effective pricing. In the absence of a credit rating, the classical problem of asymmetrical information exists. In other words, the investor does not have access to the same level of information as the company owners do. This may lead to a situation where the owners of the company may exploit its informational advantage, a factor that causes market participants to refrain from assuming credit risk via credit derivatives or other instruments. Thirdly, the presence of wide bid/offer spreads also prevents the accurate pricing of credit derivatives by making it prohibitively expensive. The current spreads may in fact be a function a cause and effect of the factors above, causing a never-ending cycle of inaccurate pricing. Potential investors may be reluctant to enter the market until bid/offer spreads narrow significantly. Finally, Investec is of the view that a lack of market participants means that there is a lack of a viable market pricing mechanism to validate the pricing results of the models. Both NIB and SCMB are in agreement. Once again, the lack of market participants may be both a cause and effect of a number of factors mentioned above. In many ways, the pricing problems experienced in South Africa are consistent with the experience internationally, although there are some important differences. As discussed above, Kumar (2001) argues that protection against specific credit risk is still hard to find at the right price and at the right time. Until the market is liquid and competitively priced, many companies will often prefer not to hedge credit risks or may opt for traditional cover such as credit insurance, bank guarantees, factoring or state guarantees. According to Kumar (2001), non-financial firms are extremely reluctant to enter into any kind of hedge. Credit default swaps, for example, are often more expensive than letters of credit. But, as Kumar (2001) argues, this is often because credit derivatives are not priced accurately. However, insurance and capital

markets are converging, and credit is increasingly priced in the credit default market. As a result, such inefficiencies should disappear (Kumar, 2001). The bankers are apparently waiting for two things: for credit default spreads to narrow, and for stock market investors to start recognizing the value of companies actively managing their credit risk. Internationally, the problem is that credit default swaps have not evolved smoothly and logically (Kumar, 2001). Kumar cites a derivatives trader "interest in credit protection comes sporadically and it comes with market crises. It spiked after the Russian and Asian crises, and it has spiked again with the downgrade of the telecoms companies. But that interest comes too late for the markets concerned because protection prices have already widened too far."

Liquidity in the credit derivatives market has improved substantially, and it is now easy to place transactions worth \$ 500 million or more. This is, however, true primarily of major names that are generally listed. Unrated companies or those rated below investment grade remain illiquid, and these are precisely the kind of companies that most buyers of credit protection are exposed to. Internationally however, some industries may have no choice but to go down the credit derivative route despite the expensive price tags, if only to improve their declining credit ratings or obtain further financing (Kumar, 2001). Most international banks and investors may be lenient to companies willing to hedge their credit exposures. "Having an actively traded credit derivatives market for a certain name improves liquidity for the issuer. The kinds of products that can be issued vary greatly in such a situation", says Kumar (2001). She goes on to state, "credit risk is not standardized in the way it is confirmed and written. Sometimes it does not lend itself to being hedged. The exposure a company has with a counter party is not a bond or a

loan. These are standard in the credit derivatives market. So, if there is a default, you have a mismatch. If you want to fully hedge the exposure, they need a different contract from the credit derivatives floor business. So it becomes very expensive.” In summary therefore, despite the large volumes of credit derivative trades internationally, the accurate pricing of credit derivatives is still a difficult task. The market is confident, however, that problems relating to the lack of liquidity may improve going forward and anticipate a bright future for credit derivative pricing.

- Synthetic securitisation is widely believed to be the preferred model for securitisation in the future. Do the respondent banks agree with this statement? And why?

With the exception of Investec, both SCMB and NIB agree that synthetic securitisation is the preferred model for securitisation in the future. In support of its view, NIB believes that synthetic securitisation achieves capital regulatory relief. In other words, the banks are able to transfer credit risk relating to its loan exposures to third parties thereby reducing regulatory capital required to be held. It is debatable whether this is something achieved by synthetic securitisation only. In fact, many practitioners would argue that securitisation per se (whether synthetic or otherwise) is structured so as to achieve capital relief and this is perhaps one of the main driving forces compelling banks to securitise their book. In support of its view, SCMB argues that synthetic instruments effect a transfer of credit risk more cheaply than an outright sale. Although not given, a plausible explanation might be that credit derivative documentation has been significantly standardised by ISDA. This does not appear to be the case with conventional

securitisation structures. In contrast, Investec does not believe that synthetic securitisation is the preferred model for securitisation. Although synthetic securitisation achieves the desired risk and capital relief, what it does not achieve is the ability to raise cash. In the view of Investec, this is often the primary reason for companies using securitisation structures. Investec refutes the view that institutions like SA Home Loans do not have a place in the market. SA Home Loans is a vehicle established to securitise home loans. By disintermediating (i.e. funds are raised via the capital market directly as opposed to banks), SA Home Loans is able to achieve savings from not having to reserve against exposures as in the case of banks.

Internationally, synthetic securitisation is the preferred choice for banks seeking to manage regulatory and risk capital, especially in Europe (Bund, 2001). By some estimates, synthetic securitisation represents about 25 % of total European asset backed securities (ABS) in 2000, and a similar portion of issuance in the US (Bund, 2001). As stated above, the picture is not so clear in South Africa. In cases where the raising of cash is not a primary consideration, synthetic securitisation will perhaps be the preferred model. In the banking sector, for instance, depositors are withdrawing funds from the small banks and depositing money with the large banks, caused by the collapse of the small banks. As a result, the large banks in South Africa have excess capital with very few opportunities to invest. Together with restrictive exchange control regulations prohibiting substantial investments offshore, banks certainly do not need to free up capital in the loan book portfolio. However, as far as the non-financial private sector is concerned, raising cash would probably be the driving force for implementing a securitisation transaction. In light of this, conventional securitisation structures are more

appropriate. The raising of cash via the securitisation route is an alternative means of raising cash and could leave vital credit lines from banks unencumbered.

- What factors, in the respondents view, would alternatively facilitate or threaten the development of credit derivatives in South Africa?

NIB cites the legal framework as a factor threatening the further development of credit derivatives in South Africa. According to NIB, credit derivatives are invoked when there is default and when markets are in turmoil. This leaves room for counter parties to mount legal challenges to determine what for instance constitutes default. NIB believes that clarity on the legal front would aid in the growth of the market. Interestingly, the initial debate internationally around the legal issues also related to the definition of “default” in the documentation. However, this debate has recently been resolved by the standardisation of legal documents in terms of guidelines produced by ISDA. The issue internationally is whether the current definitions in the ISDA document remain valid or require revision in light of developments worldwide. To some extent therefore, the debate internationally has progressed from initial controversies relating to the definition of a default. It does still appear, however, that the legal framework is still relatively unclear as far as credit derivatives are concerned. In this regard, the similarities locally and worldwide are quite evident. Investec, on the other hand, cites other factors threatening the further development of credit derivatives. Briefly, these are as follows: Regulations were recently introduced in South Africa that prevent money market funds from participating in credit derivative instruments. This appears to have reduced trading activity as an important distribution channel has been removed. Investec is currently

negotiating with the financial regulatory authorities to remove such restrictions and to revisit the function of the legislation. At this stage in time, it is not clear whether the outcome of the negotiations would be successful. This does not appear to be the case in the US or Europe, making it a unique problem to South Africa. SCMB, on the other hand, cites a lack of market participants as a stumbling block. Presumably, this means that the lack of liquidity is preventing the market from correctly pricing the instruments. Internationally, liquidity is only a concern in respect of private companies that are generally unrated. In the case of multi-nationals listed on the major bourses, there are a sufficient number of players/participants willing to conclude contracts. If anything, this remains the essential difference between the local and international market.

- In light of the recent turmoil in the emerging markets and the uncovering of accounting scandals, what effect do these developments have on the credit derivative market in South Africa?

In Investec's view, the accounting scandals make fund managers nervous which has the effect of limiting the universe of acceptable investments. Investec further states that the scandals will have a marginal effect on credit spreads but given exchange control regulations, this will not be nearly as severe as happened internationally. SCMB is in agreement adding that the scandals will cause investors to be more risk averse. In contrast, NIB believes that the recent events are all positive for credit derivatives, as they have held up well in the face of recent defaults. Internationally, the perception of credit derivatives is embodied by Alan Greenspan, the Governor of the Reserve Bank of the United States. In his recent address in London, Greenspan had several words of praise for

securitisation and credit derivatives. As a result of financial innovation, Greenspan argued that the U.S. economy is more shock-resistant, adding that the economy has "held firm" through terrorist attacks, a stock market crash and a slump in the business environment. Addressing a meeting of central bankers, the Fed chairman consistently praised the innovative powers of world financial markets and urged regulators not to interfere. In the U.S., he said, the country's massive secondary-mortgage market has helped keep the economy afloat by letting homeowners cash in on increases in property prices.

In his view, credit default swaps, collateralized debt obligations and credit-linked notes have also helped make the economy shock-resistant. "Such instruments appear to have effectively spread losses from defaults by Enron, Global Crossing, Railtrack, WorldCom and Swissair in recent months from financial institutions with large short-term leverage to insurance firms, pension funds, or others with diffuse long-term liabilities or no liabilities at all," he said. Despite some views to the contrary, the recent scandals have appeared to enhance the value of credit derivatives internationally and in South Africa.

## 15 CONCLUSION

In the research undertaking, the literature relating to the role and practice of credit derivatives internationally was reviewed. In this respect, the following issues were identified as significant:

- The growth of the credit trading market internationally and in South Africa
- The identification of the basic credit derivative instruments.
- The uses, benefits, risks and advantages of credit derivatives internationally and in South Africa
- The pricing of credit derivative instruments and the determinants of credit spreads.
- The legal risks associated with credit derivative documentation, with particular reference to the efforts of the International Swaps and Derivatives Association (ISDA), and
- The use of credit derivative technology in the evolution of the synthetic securitisation market

A comparison between local and international practice was thereafter made. In the process, the major issues requiring discussion were identified. A questionnaire outlining the critical issues was distributed to the major players in South Africa and an analysis conducted in light of the literature reviewed. NIB, SCMB and Investec are currently perceived to be the major participants in the South African market. The following issues were canvassed in the questionnaire:

- The size of the credit derivative market in South Africa. In particular, the most frequently used instrument was identified
- The views of the respondents in respect of pricing were identified. In this regard, the issues relating to the problem of determining the appropriate price for credit derivative instruments were canvassed
- The questionnaire then proceeded to explore the complex issue of synthetic securitisation, and the extent to which this could be regarded as an enhanced form of traditional securitisation
- The effect of the accounting and corporate governance scandals taking place internationally (e.g. Enron) on the development of credit derivatives in South Africa was explored
- Finally, the respondents were asked to identify the factors that would, in their view, contribute or inhibit the growth of credit derivatives.

Credit derivatives are privately negotiated bilateral contracts that allow users to manage their exposure to credit risk. For example, a bank concerned that one of its customers may not be able to repay a loan can protect itself against loss by transferring the credit risk to another party while keeping the loan on its books. Credit risk is the possibility that a borrower will fail to service or repay a debt on time. The degree of risk is reflected in the borrower's credit rating, which defines the premium over the risk free borrowing rate it pays for funds and ultimately the market price of its debt. There are essentially three main types of credit derivative instruments used worldwide and in South Africa. These are (1) credit default swaps, (2) total return swaps and (3) credit-linked notes. Of the three basic instruments, there are many different variations. From an analysis of the

literature and practice internationally, credit default swaps appear to be the most commonly used credit derivative instrument. It is estimated to constitute about 25 % of all credit derivative trades. In contrast, the practitioners in South Africa tend to use credit-linked notes more often than other instruments, which are estimated to be in the region of about R 8 billion. A possible explanation may be that credit-linked notes provide protection against both market and credit risk while credit default swaps provide protection against credit risk only. In the context of the South African economic and monetary environment, this factor appears to be critical. The primary advantage in using credit derivatives is the ability to offload credit risk to participants willing to assume it and the flexibility to enhance portfolio yields. A significant disadvantage is the assumption of credit risk by investors not sufficiently knowledgeable in the financial state of the company and the complexity of legal documentation. As far as the pricing of credit derivatives is concerned, the literature suggests that most practitioners use a variation of KMV, which is based on the option-pricing model developed by Scholes in 1974. A fundamental requirement of the model is the availability of information, which is normally derived from credit rating agencies. A credit rating is ordinarily performed on listed companies. A consequence of this is that it is reasonably simple to value a credit derivative in respect of listed companies. This is on the basis that the option pricing methodology uses information peculiar to listed companies e.g. share price, expected default probabilities etc. A corollary of this therefore, is that it is difficult to value exposures in respect of private companies, a factor that is increasingly evident in the international sphere. Not surprising, the KMV model is also extensively used in South Africa. The problems experienced in pricing are exacerbated in South Africa by the lack

of ratings even in respect of many listed companies. Together with informational asymmetries arising from the lack of such information, many potential investors tend to be cautious in their approach to credit derivatives. A related issue is to what extent does the infancy of the market in South Africa impact on the pricing of the instruments. Liquidity is clearly important to establish a robust market that enables the price of instruments to be set by market participants. Internationally, the literature clearly demonstrates that as a result of the large volumes in the US and Europe, issues relating to liquidity is not a significant factor. However, a distinction has to be made between public listed companies and private entities. In respect of private entities, the literature clearly indicates there are no critical volumes to enable the correct pricing of instruments. In South Africa, the problem appears to be more deep-seated than this. In particular, regardless of whether the entity seeking protection is listed or not, there is simply no critical mass or volume. This causes unease amongst investors and protection buyers alike.

Synthetic securitisation is defined as a structured transaction in which the originating banks use credit derivatives to transfer the risk of a specified pool of assets via a bankruptcy remote vehicle ("SPV") to investors without actually selling the assets themselves. The pool of assets could be loans, bonds, derivatives, lines of credit and/or illiquid securities. The transfer into the SPV can be made using funded credit derivatives such as credit-linked notes and/or unfunded credit derivatives such as credit default swaps and/or total return swaps. Synthetic securitisation involves a transfer of risk and not a sale of underlying pool of assets. There are two types of synthetic structures, a

leveraged and an unfunded structure. Of the many benefits of synthetic securitisation, the primary is the offloading of credit risk and obtaining capital relief in respect of banks.

On the question of whether synthetic securitisation is an enhanced form of securitisation, the experience internationally is quite categorical. Synthetic structures largely outnumber conventional securitisation. In South Africa, however, the views are quite ambivalent. Some express the view that securitisation is normally undertaken to raise cash and therefore synthetic structures are not appropriate, bearing in mind that synthetic structures transfer credit risk only without there being an outright sale of the underlying assets. Others believe that risk mitigation and capital regulatory relief drives securitisation, which makes synthetic structures more suitable. As far as the impact of Enron on credit derivatives internationally is concerned, most commentators agree that the impact has been positive and anticipate a growth in the market. In their view, Enron provided an environment in which the viability of credit derivatives could be tested, the result being extremely positive. In contrast, the practitioners in South Africa were fairly divided in their assessment of "Enron". One of the respondents expressed the view that credit derivatives could be cast in a negative light and rejected as a potential investment tool while others believed, like the commentators internationally, that "Enron" could be positive for credit derivatives. This is certainly an issue that would need to be assessed in the future.

In the final stage, the factors prohibiting the further growth of credit derivatives in South Africa were identified. Although these factors can not be regarded as insurmountable, it would certainly need to be addressed before credit derivatives assumes the same level of importance in South Africa as does interest rate derivatives. In the first instance the

corporate bond market would have to grow in leaps and bounds. Although significant progress has been made in the last twenty-four months in this regard, the market is currently unstable and could easily disappear. This could be caused by, *inter alia*, rising interest rates with the consequence that debt becomes more expensive than equity as a form of finance. This does not appear to be the problem internationally in view of the large issues of corporate bond paper. The significance of an active corporate bond is the creation of a liquid and transparent credit market. Additionally, and as consequence of the factors above, the number of market participants would need to increase substantially to further enhance the liquidity of the market. A liquid market enables participants to price credit derivatives correctly. An issue that causes considerable concern in South Africa is the promulgation of regulations prohibiting money market funds from participating in the credit derivative market. An important distribution channel has been eliminated and that has had a noticeable effect on volumes in the last year. A further stumbling block appears to be the legal risks assumed in credit derivative documentation. As definitions and contracts continue to be standardized as a result of the initiatives of ISDA, this factor may become less important in the future. In contrast, the drafting and proposed promulgation of banking regulations enabling banks to participate in the market, will almost certainly cause credit derivatives to be regarded as a viable instrument. In the view of the research undertaking, the growth of credit derivatives in South Africa will ultimately be driven by two factors. Firstly, banks intent on reducing their capital risk weighting, will seek to offload credit exposure. This could easily be achieved via a synthetic securitisation structure. The second factor is the lack of investment opportunities in South Africa caused by, *inter alia*, the existence of restrictive

exchange controls. An undesirable consequence of this is that funds under management tend to be invested in a few entities. Credit derivatives could provide a viable investment vehicle to investors in desperate need of yield enhancement and diversification.

On balance, credit derivatives are an exciting innovation in South Africa. Although there are many factors inhibiting its growth, these are by no means insurmountable. In the view of the writer, credit derivatives are destined to become an important feature of the South African financial landscape.

- Neal, R.S. (1996) Credit Derivatives: New Financial Instruments for Controlling Credit Risk. Federal Reserve Bank of Kansas City Economic Review, 2<sup>nd</sup> Qtr, pp 15-27
- Vinod Kothari (2001) A primer on Credit Derivatives. [www.credit-deriv.com](http://www.credit-deriv.com)
- Chance, D.M. (1997) Credit Derivatives. [www.google.com](http://www.google.com)
- Das, S.R. (1995) Credit Risk Derivatives. The Journal of Derivatives, Vol. 2, pp 51-59
- Hart, D. (1995) Credit Derivatives: Managing Credit and Market Risk. Journal of Commercial Banking Lending, Vol. 78, pp 38-43
- Margabe, W. (2000) Credit Risk Management. The Derivatives Zine. [www.margabe.com/CreditRisk.html](http://www.margabe.com/CreditRisk.html)
- James, J. (2002) How Much Should They Cost. [www.financewise.com/public/edit/riskm/credit/cre-deriv.htm](http://www.financewise.com/public/edit/riskm/credit/cre-deriv.htm)
- Douglas-Jones, J (2001) Credit today and yesterday. Futures and Option World, Autumn, pp 9-13
- Choudry, M. (2001) trading credit spreads. Futures and Option World, Autumn, pp 14-16
- Reyfman, A. and Toft, A (2001) Evolution of a standard. Futures and Option world, Autumn, pp 20-23
- Kohler, J. and Cocco, A. (2001) Credit Derivative Documentation. Futures and Option World, Autumn, pp 17-19

- Moore, C. (2000) Securitisation-Synthetic Structures.  
[www.gtnews.com/articles4/2394.html](http://www.gtnews.com/articles4/2394.html)
- Mcnee, A. (2002) Credit derivatives boosted by corporate woes. Erisk Portal.  
[www.erisk.com/portal/news/analysis/news\\_analysis2002](http://www.erisk.com/portal/news/analysis/news_analysis2002)
- Kothari, V. (2002) OTC derivatives data published by OCC:credit derivatives grow smartly. Credit Derivatives Website. [www.credit-deriv.com/crenewsmar02.htm](http://www.credit-deriv.com/crenewsmar02.htm)
- Parsley, M. (1996) Credit derivatives get cracking. Euromoney, March p 7
- Controller of the Currency Administrator of National Banks (1996) Credit Derivatives: guidelines for national banks. OCC Bulletin, OCC 96-43, p 11
- Das, S. (2000) Modeling Credit Risk – Part 1. Futures and Option World, January, p 8
- Lynn, B. (2002) All credit to South Africa. Futures and Option World, July, pp 36-38
- Sumitar, K. (2001) A Slow Burning Fuse. Risk, June, pp 30-32
- Masters, B. (1996) Credit Derivatives Come Good. Risk, July, pp 22-25
- Kaki, N. (2002) The Impact of Enron. Futures and Option World, June, pp 20-25
- Davies, J. and Hewer, J. and Rivett, P. (2001) The Financial Jungle: A Guide to Credit Derivatives. London. PriceWaterHouse Coopers