

## Lars Nyberg: Credit derivatives – risks and opportunities

Speech by Mr Lars Nyberg, Deputy Governor of the Sveriges Riksbank, at a meeting at StartegiTarget Bank, Finans & Försäkring, Stockholm, 13 March 2007.

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Let me begin by thanking you for the invitation to come here and speak about the risks and opportunities offered by credit derivatives. Credit derivatives may appear complicated, but the principles as to how they work are essentially simple. They are a type of insurance, nothing else.

A person who owns a house runs the risk that the house may burn down. A person lending money runs the risk that the borrower will not pay back the loan. The house-owner usually wants to sign a home insurance policy covering the risk of fire and is happy to pay a premium for this. The bank lending money may correspondingly – although banks are actually specialised in managing credit risk – wish to sign a credit insurance to dispose of the credit risk, wholly or partly. The bank then also has to pay an insurance premium. A credit derivative is quite simply a modern form of credit insurance, adapted for trade in the financial markets.

Trade in credit derivatives has expanded enormously in recent years, which of course implies that credit derivatives offer advantages to their users. At the same time, a debate on the potential risks for the financial system has arisen and interest from the supervisory authorities and central banks has increased. If the credit risks disappear from the banks, where do they go?

Today I intend to speak a little bit about the risks involved in credit derivatives, which so far mainly concern the international market. Here in Sweden the use of credit derivatives is still limited, although increasing. Then I intend to mention the opportunities I see in Sweden. But let me first run through how credit derivatives are used and how the market has developed in recent years.<sup>1</sup>

### How do credit derivatives work?

A credit derivative is a financial contract between two parties. It insures the buyer of the contract against the credit suffering a credit event during a predetermined period. The credit event quite simply defines what the insurance covers, in roughly the same way as the conditions in a normal home insurance. I shall return to this shortly.

Take, for instance, a company like TeliaSonera. Then imagine a bank that has loaned money to this company. This may involve a lot of money as TeliaSonera is a large company. Although Telia's ability to pay is good when the loan is taken, the bank is exposed to the risk that it may deteriorate in the long term. If the bank considers the credit risk to be too high, it may choose to "sell" part of it to another investor. Then the bank can use the credit derivatives market.

For the bank, which in this case is the seller of credit risk, the credit derivative functions roughly like a normal insurance. The buyer of the credit risk (the insurance provider) commits itself to compensating the bank if TeliaSonera does not fulfil its obligations in some way during the contract period. The bank pays a regular premium for this, which is determined when the contract is signed. The definition of failing to fulfil its obligations is made clear in the contract between the bank and the investor. This is what is known in the jargon as a credit event. It could mean, for instance, that TeliaSonera doesn't pay the interest as agreed, that it defaults on payment of the outstanding debt or that it goes bankrupt. The premium the bank has to pay to the investor reflects the market's assessment of the risk that such an event will occur. The greater the probability, the higher the premium.

Most companies for which credit derivatives are traded also have bond loans issued on the international market for corporate bonds. How much an investor is willing to pay for these bonds depends of course on how he assesses the probability that the company will default on its interest payments or perhaps even go bankrupt – that is to say, that a credit event will occur.

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<sup>1</sup> A more detailed description of the credit derivatives market is provided in the article "Trading activity in credit derivatives and implications for financial stability" in the Riksbank's Financial Stability Report 2006:2.

The premium that is to cover the risk of a credit event corresponds to the premium the corporate bond commands over a government bond without credit risk. The prices of the credit derivatives are therefore strongly related to the prices of the bonds issued by the company. In actual fact, the market for credit derivatives is often more liquid than the market for the underlying bonds. In this case the prices of the company risks are determined in the credit derivatives market rather than the market for the underlying corporate bonds.

The most common credit derivatives are called Credit Default Swaps, abbreviated as CDS. A swap is usually an exchange of payment flows and one might wonder what is being exchanged in this case. It concerns what happens if the insurance needs to be used, that is, if a credit event occurs. Then the bank (the insurance policy owner) would have to sell a bond corresponding to the credit amount to the insurer at a nominal value. This is despite the fact that the bond has become worth much less or even worthless as a result of the credit event. The bank thus swaps the bond for a cash payment.<sup>2</sup> This is no stranger than a house-owner swapping his burnt down house for cash if he has paid his insurance.

### **Why are credit derivatives so popular?**

The example using TeliaSonera illustrates some of the properties that have made credit derivatives so popular. The bank can sell its credit risk on the company, entirely or partially, without needing to cancel the loan or to have any discussion at all with the company.

At the same time, the buyer of the credit risk (the seller of the credit derivative) does not need to tie up more than a fraction of the capital that would have been required to take over the credit directly. Moreover, the buyer of the credit risk can in turn easily sell the risk to another party, wholly or partially. Reinsurance thus becomes both simpler and cheaper to manage than with regard to traditional credit insurance.

Large investors such as mutual fund companies and insurance companies often want to have a particular amount of credit risk in their portfolios. The credits can actually reduce their total risk, as the prices of the credits do not have such large covariation with other prices, for instance, the prices of shares and real estate. A certain share of credits provides a more diversified portfolio, which gives lower risk for a given expected return.

Credit derivatives also makes it possible to divide up credit risks into small parts and to trade these parts at a low cost. This is not possible with traditional credit insurances. As the trade is so extensive, the pricing of credit risk becomes much improved.

From the economy's point of view, it is essentially positive that the credit risk is spread to institutions outside of the bank system. Although the banks are specialists in assessing credit risk, they are also sensitive to shocks. Deposits are liquid, while loans are in practice often tied for long periods. If the depositors suddenly want to withdraw their money, it may be difficult as the bank cannot as quickly call in all its loans for payment. In addition, the banks are of vital importance for ensuring that payments in the economy function. The fact that credit risks are spread to other institutions with significant equity, such as insurance companies, may thus reduce the risks in the financial system.

### **How has the credit derivatives market developed?**

Since its start in the mid-1990s, international trade in credit derivatives has expanded enormously. Developments have been particularly dramatic over the past five years. The outstanding volume in the credit derivative market has in round figures doubled every year since 2002 and amounted to almost USD 12,000 billion at the end of 2005. This incredibly large figure can be compared, for instance, to the total value of the world's stock markets, which at the same time amounted to just over USD 40,000 billion. Market growth has remained high since 2005 and shows no sign of slowing down. Perhaps the most important explanation for the large expansion in recent years is that the market has become increasingly standardised. This has made trading at a larger scale easier.

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<sup>2</sup> If the bank does not own the bond in question it can buy one on the market.

### ***Underlying assets***

The underlying assets largely consist of corporate bonds; these account for around 80 per cent. However, there are other types of credit, such as traditional bank loans and various forms of sovereign debt.

The corporate bonds market currently covers more than USD 6,000 billion in global terms. This means that the outstanding volume in credit derivatives is more than twice as large as the total amount of outstanding corporate bonds. The reason for this is that credit risks are resold on the market through new derivative contracts. This is not actually any stranger than insurance companies selling part of their risks by reinsuring themselves, but it may be good to bear this in mind when looking at the statistics.

Today, credit risk is priced on thousands of corporate credits through credit derivatives, although most of the trade is still in a few hundred very large companies. Companies in all types of industries and with different credit ratings are traded. Communication, such as the example of TeliaSonera, is one of the most traded sectors, together with the automobile industry and finance. The credit quality of the underlying bonds is generally very high. But appetite is increasing for underlying assets with low credit ratings. The standardised maturities have also increased in number with time and there is a tendency for longer maturities, five to ten years, to be traded more.

### ***Market participants and products***

The market for credit derivatives attracts a large number of market participants who have not been active in the credit market earlier. The most important buyers of credit risk are large institutional investors such as insurance companies and pension funds. Hedge funds are also large actors. The main sellers of credit risk are banks and other credit institutions who want to relieve themselves of parts of their credit risk, for instance to meet capital adequacy requirements from authorities or merely to use their capital more efficiently.

In practice, the credit derivative market is centred on a few globally-active banks, which function as brokers in the trade. The ten largest counterparties on the market account for a good 85 per cent of the total volumes traded and are represented by large investment banks such as Morgan Stanley, Goldman Sachs and UBS.

At the same time as the volumes have increased, the products have developed. The largest growth is currently in the new products, including what is known as index products. Somewhat simplified, a typical index product reflects a portfolio of credit risks in different companies, instead of reflecting the credit risk in a single company<sup>3</sup>. The index products increase the investors' opportunities to spread their investments in the credit market.

In this context, I would also like to mention that there are alternative credit insurance methods that have likewise developed strongly. One of these is traditional syndicated loans. A syndicated loan is a loan where a bank sells parts of the loan to other banks; this is usually done internationally. These loans, like credit derivatives, have the advantage of spreading the risk in a large credit exposure over many hands, but are not traded so actively in the market. Another means of selling risk is to put together a number of credits to form a portfolio and then finance this portfolio by issuing bonds. This is called securitisation. The portfolio is often sliced up into different risk tranches, and the bonds corresponding to each tranche are sold to different investors, depending on what risk the investors are willing to bear – and to what price. These products in themselves are sufficient material for a whole speech – so let me just note that credit derivatives are not unique when it comes to trading in credit risk.

### **Where are the dangers in the market?**

I have now gone through a number of advantages with credit derivatives and described their remarkable growth. But at the same time, they have brought with them a number of risks. These are mainly related to the market being new and relatively untested. There is a possibility of "teething

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<sup>3</sup> For example, iTraxx Europe consists of the 125 most liquid company names in the CDS market in Europe. The 125 CDS contracts weighted equally in the index.

problems". Let me therefore comment one at a time on what I regard as the four major causes of concern with regard to the credit derivatives market.

### **1. Operational and legal risks**

The most concrete source of concern is how the trade is conducted in practice. The existing infrastructure in the market has not managed to keep up with the rapid development. Because of the explosive increase in the number of contracts, routines and handling procedures have lagged behind. The back-office functions at the largest counterparties have not been able to confirm all of the deals in time. This has entailed a risk of problems if "large" credit events were to suddenly occur. In these situations there could be confusion as to which deals have been completed and which positions are actually held, and these paves the way for legal disputes. The large number of outstanding contracts also makes the settlement process particularly sensitive. If many contracts have to be settled at the same time, there may be disruptions. The credit risk in one and the same bond may have been resold through a large number of derivative contracts. Problems can arise in this type of chain, particularly if the underlying bonds need to be delivered physically.

But much has already been done to reduce the problems in this area. The market participants have themselves made large investments to reduce the number of confirmations ending up in a queue. Today there are automatic systems for confirmations and these now process most contracts. Experiences have also shown that the settlement process can be managed smoothly even when a large number of contracts are settled at the same time. An increasing number of contracts are also being settled in cash rather than through delivery of an underlying bond.

On the legal side, there is always the fear of disputes. Will the person taking over the credit risk actually pay when a credit event occurs? It is not unusual for major disputes to arise in the insurance market regarding the interpretation of policy terms. But the problems of unclear rules and practice that existed when the market was new now seem to have been resolved for the most part. This is because they use almost exclusively international, standardised contracts. However, the possibilities for completely standardised solutions are still limited. There are so many different types of more or less complex credit derivatives. According to the market participants themselves, the legal risks in credit derivative trading have not been completely removed.

### **2. Counterparty risks**

The second source of concern is risk management. A bank that buys credit protection through credit derivatives will get rid of the credit risk, but instead expose itself to counterparty risk, that is, the risk that the party selling the credit protection cannot pay. Counterparty risks exist in most financial agreements, but as the credit derivatives market is so young and growth is so rapid, there is particular reason to be aware of them. There is insufficient statistical data available and it is difficult to assess where the risks will end up.

At the same time, risk management within banks has developed significantly over the past ten years or so. Banks that trade in credit derivatives normally have strict routines for checking and evaluating their counterparties. Moreover, the sellers of credit derivatives are often insurance companies and pension funds, and have large equity capital to deal with potential credit losses. I would also like to point out that the large trading volumes I mentioned earlier should not be translated directly into risks. It is, of course, very unlikely that a seller of credit protection would need to compensate the entire credit risk in his portfolio. For this to happen, all of the companies concerned would have to go bankrupt at the same time, and with zero recovery. To return to the example of house insurances, this would mean that all houses insured by a particular insurance company would simultaneously burn down to the ground. This is a worse scenario than any town fire in our history. But one should not forget that various shocks in the economy can lead to substantial total credit losses. Bank crises around the world have proved this.

### **3. Liquidity risks**

Thirdly, there is reason to be aware of possible liquidity risks. Problems may arise if the market actors rely on the market always being liquid and assume this when making their deals. What would happen, for instance, if several credit events were to occur simultaneously? Perhaps there would suddenly be only sellers and no buyers in the market. Then prices will plummet. This was the case during the Russian debt crisis in 1998, for instance, when the LTCM hedge fund suffered problems. A crisis of

this nature risks spreading rapidly to other financial markets and possibly threatening the lending banks.

Such situations do not last particularly long, as buyers always appear when prices fall. This was also the case after the LTCM crisis.

Remember also that the credit derivatives market and the market for the underlying bonds are tightly interwoven. If the premiums on credit derivatives increase substantially, this will mean that at the same time the return on the underlying bonds increases. Unless something important has happened that affects the credit rating of the company that has issued the bonds, it will sooner or later become profitable to buy them – or to buy the credit derivatives. Several large-scale credit events in recent years, such as the downgrading of Ford's and GM's credit ratings last spring, have also shown that more or less serious problems could be solved without liquidity in the market being affected to any great extent.

#### **4. Risk of mispricing**

Finally, I would like to bring up the risk of mispricing, a risk that in many respects is closely related to the liquidity risk. During the same period as the volumes of credit derivative have grown most, interest rates have gradually fallen and credits have increased. There have been unusually few bankruptcies. The interest rate differences between high-risk and low-risk bonds have therefore declined, that is, credit spreads have shrunk. The price of credit derivatives has fallen correspondingly. The compensation for risk has thus reached a level far below the historical average.

The question is what will happen when economic activity shows a downswing and the number of bankruptcies begins to increase again. If investors have in general underestimated the credit risk, we may see a substantial adjustment in risk premiums. This will also lead to a fall in prices of corporate bonds and credit derivatives. In this situation, individual actors with large net exposures in credit risks may be affected by significant losses.

But I would like to emphasise that this is a general line of reasoning. If risk premiums rise, this would have effects on most markets. There is no particular reason to assume that the credit derivatives market would be hit harder than others.

My opinion is that each of these risks should be taken seriously. But they are nevertheless not so large that they risk bringing about a serious systemic crisis in the international financial system.

I have now discussed the credit derivatives trade in the international market. Here in Sweden trade in credit derivatives is still very limited. But let me nevertheless round off with a few comments on the Swedish market and its potential.

#### **How are credit derivatives used in Sweden?**

As you may know, Sweden currently has one of the world's most developed derivative markets. This is seen in relation to the size of the economy and the turnover on the stock market.

But when it comes to credit derivatives, the situation is different. Here the trade is much more limited. This is primarily due to our corporate bond market being so small. And without corporate bonds, it has been difficult to trade in credit derivatives.

The major Swedish banks base their core activities on long-term customer relations. Credits to small and medium-sized companies are predominant. The banks' exposures to companies traded actively in the credit derivatives market are relatively small. Moreover, the banks have had plenty of capital and the need to sell credit risk to outsiders has been limited. The number of deals in credit derivatives has increased in recent years, but the total exposures remain small, on the whole. The major part of the trade has been on behalf of customers. This means that the banks mediate deals for customers, for instance, insurance companies, which for various reasons want to buy or sell credit risk.

If we look ahead, there is reason to believe that credit derivatives will gain increased significance. This is partly related to the new capital adequacy rules, Basel II. The Basel rules, the old and the new, regulate how much capital a bank needs to cover the risks in its credit portfolio. The risks depend, for instance, on how well-diversified the credit portfolio is. The more concentrated it is to certain industries and countries, the greater the capital requirement. A portfolio where the risks are well spread instead reduces the total risk in the portfolio and thereby the capital requirement. This means that the banks

may have reason to sell some of the risks that arise in their own credit granting and to buy others instead. The current rules do not allow the banks to reduce their capital very much when they use credit derivatives. Basel II increases the opportunities here.

It is also likely that the credit derivatives market will to a greater degree develop to include traditional loans. It is already possible to obtain prices for credit derivatives for companies that do not have bonds issued on the bond market. This is on condition that the loan documentation meets the predetermined requirements. It increases the opportunities for Swedish banks to use credit derivatives to sell parts of their own credit risk.

### **Concluding remarks**

Let me round off. My assessment is that the advantages of credit derivatives exceed the risks for the economy. They have revolutionised the trade in credits in important aspects. The problems related to the market infrastructure are being dealt with successfully and there are many indications that the risks in this field are declining as the market matures. The financial sector has also improved its routines for risk control over the past ten years.

I am therefore not particularly worried that the situation in the credit derivatives market could cause serious problems for financial stability. The important thing is that the systemically-important banks manage exposures to their counterparties – that is, that they take sufficient collateral, they have sensible limits and they are capable of managing potential liquidity problems. But the Riksbank will, of course, continue to follow developments and act to ensure that the risks I have mentioned today are managed properly.

With regard to Sweden, the direct impact of credit derivatives on risk in the bank sector is currently small. But I assume that we will see increased activity among the Swedish banks, partly because the banks' customers are calling for it and partly to manage the risks in their own balance sheets. The new capital adequacy rules may well contribute to this. It is therefore important that the Swedish banks report their management of credit derivatives in a way that makes both the trade and the total credit risk transparent. Here there is room for further development.

So don't forget credit derivatives – they will continue to increase in importance. And don't forget that they are essentially insurances, neither simpler nor more complicated than a normal home insurance.

Thank you.