

■ Trading activity in credit derivatives and implications for financial stability

The tremendous increase in credit derivatives trading has given rise to an international debate on possible risks for the financial system. This article describes the development of the credit derivatives market and the implications for financial stability. An increased use of credit derivatives should, in principle, render the global financial system more resilient and at present the risks for financial stability appear to be slight. Today, Swedish banks trade in credit derivatives to only a limited extent but there is much in favour of greater use in the future.

Background

Since the late 1990s, when credit derivatives and other credit-related instruments began to be traded on a growing scale, credit risk trading has undergone tremendous developments. Credit derivatives are attracting rapidly rising international interest; since 1999 the notional amount outstanding globally has expanded from about USD 180 billion to over USD 12,000 billion today.⁷¹ Credit derivatives are still a relatively small segment of the total derivatives market but the rapid increase in trading has raised questions about possible effects on financial system stability.⁷²

Credit derivatives have made trading in credit risk simple and cheap, thereby contributing to a growing interest among institutional investors such as insurance companies, hedge funds and pension managers. One purpose of this article is to describe the role of credit derivatives in the global financial market in general terms. Another purpose is to assess the risks associated with trade in credit derivatives. First the article explains how credit derivatives function. This is followed by a picture of developments in the international market in recent years and the internationally active participants in this trade. The major Swedish bank's activity and trading in credit derivatives are also considered in this context. The article concludes with a discussion of the potential risks for stability in the global financial system.

What is a credit derivative?

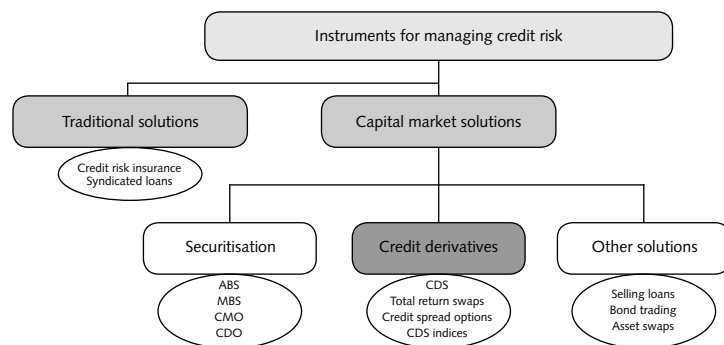
In the 1980s, credit risk trading was dominated by traditional solutions. The most common forms were credit insurance, where loan repayment is guaranteed by a third party, and syndicated loans, where a number of banks jointly fund a sizeable credit. The emergence of a widespread market for corporate bonds in the United

71 Fitch Ratings (2006), "Global Credit Derivatives Survey", September.

72 The implications of credit derivatives for how the global financial system functions have been thoroughly analysed and debated in recent years in a number of international fora, from a market as well as a supervisory perspective. See, for example, ECB (2004), "Credit Risk Transfer by EU Banks: Activities, Risks and Risk Management", May; The Joint Forum (2005), "Credit Risk Transfer", BIS Report, March; CRMPG II (2005), "Toward Greater Financial Stability: A Private Sector Perspective", July; CGFS (2005), "The Role of Ratings in Structured Finance: Issues and Implications", BIS Report, January; IMF (2006), "The Influence of Credit Derivative and Structured Credit Markets on Financial Stability", Global Financial Stability Report, April.

States paved the way for new, standardised credit instruments that had the advantage of being tradable in capital markets. The most important were various kinds of securitised products and credit derivatives, see Figure 1.⁷³ In simple terms, securitisation involves transferring a number of loans to a separate company that is then funded by issuing bonds; in this way, illiquid credits are converted into liquid bonds.⁷⁴ Structured products are a specific form of securitisation whereby the issued bonds are divided (structured) into different risk classes. Structured products for real estate loans (collateralised mortgage obligations, CMOs), and corporate credits (collateralised debt obligations, CDOs) have been successively established and are now standard instruments in the international credit market.

Chart 1. Overview of the market for managing credit risk



A credit derivative is tied to the credit risk in underlying assets, which are mainly corporate bonds. For the buyer of credit protection, a credit derivative functions in much the same way as conventional insurance. The seller of credit protection undertakes to compensate the buyer if the underlying bond suffers a credit event during the lifetime of the contract. In return, the buyer pays a regular premium that is set in relation to the asset's credit risk. The contract defines what qualifies as a credit event; this includes bankruptcy and default on outstanding debt.

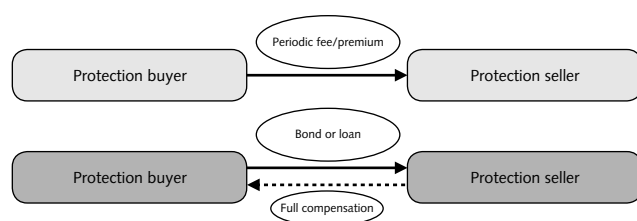
The most common instrument in the family of credit derivatives is a credit default swap (CDS) and most of the other credit derivatives

73 A number of products overlap the definitions in Figure 1. One example is synthetic structured products, which are based on credit derivatives.

74 An early example is asset-backed securities (ABS), which were introduced in the United States in the late 1980s.

are based on this. The cash flows in a typical CDS contract are illustrated in Figure 2. The credit protection buyer (the buyer of a CDS contract) pays a periodic premium to the seller (the upper part of Figure 2). If a credit event occurs, the contract leads to the transfer to the seller of the bond's nominal amount even though the credit event may have resulted in the bond being worthless (the lower part of Figure 2).⁷⁵

Chart 2. Cash flows in a CDS contract



The premium for a CDS contract follows the spread between the underlying corporate bond rate and the risk-free bond rate for the same maturity because both mirror market perceptions of the underlying risk of default. The market value of a CDS contract accordingly varies – just like the interest rate spread – with market estimates of the probability of various credit events.

The credit risk buyers in the credit derivatives market are mainly large institutional investors such as insurance companies and pension managers. They tend to aim for a certain amount of credit risk in their portfolios because the possibility of a higher yield is then combined with a portfolio that is more diversified and has a lower total risk. The major net sellers are banks, mortgage institutions and other credit institutions that need to dispose of credit risk, for example to meet statutory capital requirements or simply to use capital more efficiently. Trading is administered mainly by a small number of globally active banks. The ten largest primary dealers handle around 85 per cent of the total turnover. They include large investment banks such as Morgan Stanley, Goldman Sachs and UBS. Hedge funds are also sizeable participants; survey-based estimates indicate that at present around 25 per cent of the largest primary dealers' trading is with hedge funds. In the CDO market, hedge funds tend to dominate the segments with most risk.

⁷⁵ Settlement can also be arranged in cash, which is done by auction and the credit protection seller compensates the buyer when the bond's recovery value has been decided.

Index products and synthetic CDOs

While single-name CDS contracts are the most common type of credit derivative, growth is strongest for other types, such as index-related products and synthetic CDOs. A CDS index represents the development of a portfolio of CDS contracts – a portfolio of the credit risks associated with different companies – but the principles on which it functions are the same as for single-name CDS contracts. For example, iTRAXX Europe is made up of the 125 most liquid corporate names (investment grade) on the CDS market in Europe. The 125 CDS contracts are weighted equally in the index, which means that a buyer of credit protection for the equivalent of SEK 125 million in iTRAXX has one million kronor's worth of protection against each of the companies in the index. If a credit event occurs in one of the companies, the CDS contract

in that company name is settled (physically or in cash) and the periodic index premia are reduced. The indices have fixed maturities, typically 5 or 10 years.⁷⁶ The advantage of index products is the opportunities they provide of diversifying credit market investment. Indices are characterised by high liquidity, with standardised contracts.

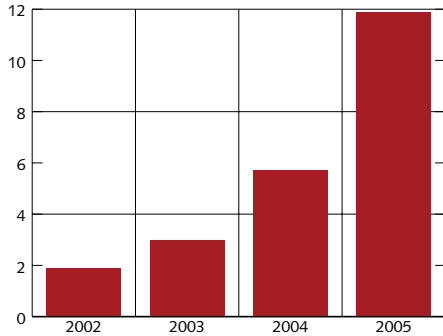
The portfolio underlying a synthetic CDO likewise consists of CDS contracts but here they are subdivided into tranches that represent different degrees of credit risk. The buyer of a tranche receives periodic payments of a premium that is proportional to the credit risk in that particular tranche. Like index products, one advantage of synthetic CDOs is diversification of investment; in addition, however, they enable the investor to choose the level of risk.

⁷⁶ A new index is released twice a year but the earlier indices continue to be traded to maturity. Trading in an index decreases as it moves towards maturity (off-the-run indices). The corresponding index in the American market, CDX, functions on the same principles.

Credit derivatives are advantageous for trading in credit risk. For one thing, they make it possible to trade in credit risk without having to buy or sell the underlying securities. For buyers, such as insurance companies and pension managers, not being obliged to purchase the underlying bonds means that investment in a particular credit risk ties up appreciably less capital. Investment in a given amount of credit risk accordingly involves smaller capital costs as well as lower transaction costs. In the same way, sellers of credit risk (primarily banks and other providers of credit) benefit from the lower costs, besides being able to retain the underlying loans or bonds on their balance sheets. That is an advantage for customer relationships, for example when it comes to prolonging or renegotiating loans. Sellers can also benefit from being able to dispose of the credit risk in the underlying bonds while retaining the interest rate risk.

For another thing, credit derivatives, like other derivatives, provide possibilities of going short in the underlying securities (selling the credit risk in bonds one does not own). This and the limited capital requirement make the market interesting for other participants than those directly involved in disposing of or investing in credit risk. Hedge funds and other financial institutions aim to profit from what they perceive to be market mispricing. This in turn gives a more liquid market and better price formation. As a result, the pricing of corporate risk (the spread from a risk-free bond or the premium for the credit derivative) has in many cases been transferred from the bond market to the credit derivatives market.

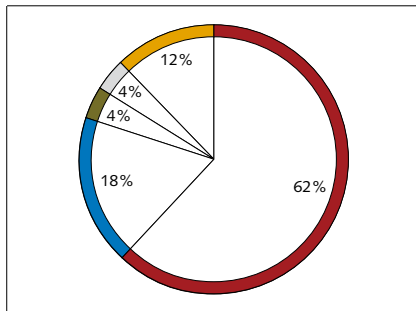
Figure 1. Global notional amount outstanding on the credit derivatives market
Period-end amount of sold contracts, USD trillion



Note. The instruments included here are single-name CDSs, index products, portfolio products (e.g. synthetic CDOs), and other instruments.

Source: Fitch Ratings.

Figure 2. Underlying reference assets in CDS (2005)



■ Corporates
■ Financials
■ Other assets
■ Asset-backed securities
■ Sovereigns

Source: Fitch Ratings

International market developments

Trading in credit derivatives has, as mentioned, grown dramatically in recent years; at end 2005, notional amounts outstanding totalled about USD 12,000 billion (see Chart 1).⁷⁷ Amount outstanding refers here to the total amount of the underlying assets on which the contracts are based and includes all the various instruments in the credit derivatives family. Note, however, that data on market size and turnover vary from source to source. The available statistics on the credit derivatives market are therefore described briefly in a box, together with an explanation of definitions and the selection of sources.

The underlying assets in the credit derivatives market continue to be dominated by corporate bonds but also include traditional bank loans and various forms of sovereign debt (where this entails credit risk). It will be seen from Chart 2 that in 2005 about 80 per cent of all outstanding derivative contracts were based on corporate bonds. Credit derivatives are traded in about 2500 corporate names but trading is still concentrated to a smaller number. The number of actively traded names has risen from around 200 at the beginning of 2002 to about 700 at present. Some of the most traded sectors are the automobile industry, finance and telecommunications. The credit quality of the underlying bonds is generally very strong but market trends are pointing to a growing interest in high-yield bonds with more risk. Since 2002 the share of the credit derivatives market devoted to underlying assets with a credit rating below investment grade⁷⁸ has grown from about 10 per cent to over 30 per cent. The dominant maturities for credit derivatives are in the interval 1–5 years but longer maturities, around 10 years, are becoming increasingly common.

⁷⁷ It is not just trading in credit derivatives that has grown. The total amount outstanding for interest rate-related derivatives (excluding credit derivatives) in the OTC market rose from about USD 77,000 billion at end 2001 to USD 215,000 billion at end 2005. The amount outstanding for foreign exchange derivatives rose in this period from about USD 17,000 to 32,000 billion. So trade in credit derivatives is still small compared with interest rate and foreign exchange derivatives.

⁷⁸ Investment grade represents corporations with credit rating Baa or higher (in Moody's scale).

Statistical information on the credit derivatives market

There are a number of sources of information about developments in the credit derivatives market and they differ in the frequency with which the statistics are published as well as in the credit derivatives that are included. The presentation of the statistics also varies. Three of the main sources of the data on which analysis of the credit derivatives market is based are discussed below with reference to documented differences and mutual consistency.

Credit derivatives are traded in OTC markets, which are trader networks outside an organised exchange. One important consequence of this is that details of the trading are not published. Statistics therefore have to be derived from surveys and participants on a voluntary basis, which leads to considerable variations in the statistical base. Moreover, to preserve anonymity, the survey data are presented only at an aggregated level. This prevents the identification of individual positions and the tracking of specific risk exposures.

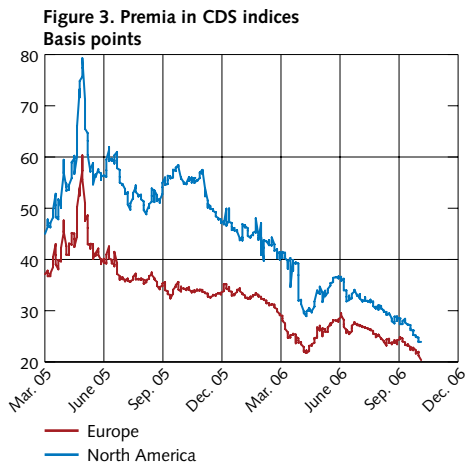
The International Swaps and Derivatives Association (ISDA) publishes its Market Survey twice a year and presents the total notional amount outstanding in CDS contracts in the international market. According to this source, in the first half of 2006, CDS exposures totalled approximately USD 26,000 billion. However, this figure includes both bought and sold contracts,

which means that many positions occur twice in the statistics.

For two years now the Bank for International Settlements (BIS) has also presented statistics on notional amounts outstanding in CDS contracts, against both single-name and portfolio contracts. This is done in the framework of the Bank's Semiannual OTC Derivatives Statistics. Unlike ISDA, BIS separates the amounts of bought and sold contracts; moreover, the material is decomposed by type of institution. If allowance is made for methodological differences, the aggregated statistics from the BIS and ISDA can be said to agree comparatively well.

The statistics in this article are largely based on Fitch Ratings' annual Credit Derivatives Survey, which is here considered to be the most detailed source of information on credit market derivatives. The statistics on amounts outstanding are based on sold contracts and make it possible, for example, to identify net sellers in different institutional categories. Besides a more complete picture of the total credit derivatives market, the Fitch Survey contains a wealth of qualitative information that is provided in connection with the quantitative data. The sample of participants ensures good coverage and the quality of the responses is considered to be reliable.⁷⁹

⁷⁹ For an account of the content of the Survey, see Fitch Ratings (2006), "Global Credit Derivatives Survey: Indices Dominate Growth as Banks' Risk Position Shifts", Special Report, September.



Note. Indices for Europe and North America are represented by iTRAXX and CDX, respectively, for 5-year maturities.

Source: Bloomberg.

CDS contracts currently make up over half of the total credit derivatives market. At end 2005 the notional amount outstanding in sold contracts was about USD 6000 billion. This figure can be seen in relation to the corporate bond stock in the international market, which totals somewhere between USD 5000 and 7000 billion. In other words, the amount of CDS contracts more or less matches the total stock of corporate bonds. The amounts related to specific assets are several times larger than the corresponding bond stocks. This is because the same underlying bond can give rise to a large number of outstanding CDS contracts and the statistics show the gross amount outstanding.

For assessments of credit derivatives' inherent risk, the notional amount outstanding can be misleading. The credit protection sellers are very unlikely to have to pay out the total amount outstanding since that presupposes default by all the underlying companies as well as zero recovery. A more nuanced picture of credit derivative risk is provided by the market value at a given time. This shows the contract's value subject to market assessments of the probabilities of credit events. According to BIS, at end 2005 the gross market value of all open CDS contracts was about USD 350 billion, which was equivalent to about 6 per cent of the global notional amount of contracts.

The growth of CDS trading has shown signs of slackening, while markets for synthetic CDOs and index-related products have developed strongly in the past two years. At end 2005 the latter two types of instrument made up around 40 per cent of the total credit derivatives market (10 per cent for synthetic CDOs and over 30 per cent for index products).

The premium for CDS contracts has decreased in the past year, in keeping with the narrowing spreads in the market for corporate bonds. Chart 3 shows how the premia for two broad CDS indices developed between March 2005 and November 2006.

Swedish banks' credit derivatives trading

Interviews with the four major Swedish banks indicate that their credit derivatives trading is slight. The number of transactions has grown in recent years but total exposures are generally small. Dealing is done primarily on behalf of large institutional investors.

The main explanation for the limited use is the small size of the corporate bond market in Sweden. This affects credit derivative trading because the underlying assets are almost exclusively corporate bonds. With the sparse supply of corporate bonds and low customer demand, Swedish banks have not been motivated to develop a market for credit derivatives in Swedish kronor.

The core operations of the major Swedish banks are largely based on long-term customer relationships and focus mainly on small- and medium-sized firms with local ties. Their exposures to customers whose bonds are involved in the credit derivatives market are of minor importance. The situation is different for large international banks, which have become central participants in the credit derivatives market, for example in their capacity as primary

dealers. Their business strategy has partly shifted from traditional credit management to attracting borrowers and then transferring the loans, a process in which credit derivatives play a leading role.

However, the interviews suggest that in time, credit derivatives will become more important for the major Swedish banks. To a large extent this has to do with the new capital adequacy rules that accompany the new EU directive, which is based on Basel II. The current Basel rules (Basel I) permit just a limited capital reduction for exposures hedged with credit derivatives and then only if another credit institution sold the credit protection. Under the new rules, capital requirements will be more in line with the measured level of risk and credit derivatives will be a more efficient instrument for managing risk. Moreover, the credit derivatives market may move towards the inclusion of traditional loans, which would increase the opportunities for Swedish banks to sell credit risk via securitisation or clearly structured loan portfolios.

Potential risks in credit derivatives trading

As the credit derivatives market has expanded, market participants, central banks and supervisors have increasingly debated the potential risks for the global financial system. The concern about the growth of credit derivatives does not primarily refer to the trading activity, which is still small compared with that of other derivatives. It has more to do with this being a new and relatively untested market: the possibility of “teething troubles” in the form of institutional shortcomings and untested risk control systems cannot be ruled out. The risks discussed in this section are mainly those that have featured in the debate: legal risks, counterparty and concentration risks, liquidity risks and mispricing risks.

LEGAL RISKS

A problem that affected the credit derivatives market initially was a lack of distinct market conventions. Credit events were not defined uniformly and contracts were not clearly structured. This led to uncertainty and contracts were liable to be disputed. These drawbacks have been largely overcome in recent years, for instance through the efforts of the International Swaps and Derivatives Association (ISDA). Standardised contracts have been introduced and are now used in the market to a large extent. A standard for the re-sale of derivatives contracts (Novation Protocol) was drafted in 2005 with the aim of making potential counterparty risks more transparent and in September 2006 ISDA launched a new standard for cash settlement of credit derivatives contracts. However, the feasibility of completely standardised solutions is limited by the large variety of credit derivatives and in the opinion of market participants, the legal risks in credit derivatives trading have by no means been entirely eliminated.⁸⁰

Routines and handling processes have not been able to keep up with the rapid increase in the number of contracts. To begin with, the intermediaries' back-office functions lacked the capacity to verify all transactions on a timely basis and this heightened the risk of problems being caused by a sudden credit event. However, primary dealers have made major efforts to reduce the backlog of contracts awaiting confirmation. In consultation with the relevant authorities, systems have been installed for automated confirmation and now handle about 80 per cent of all credit derivatives contracts.

Moreover, the large number of open contracts means that the settlement process is vulnerable. If numerous contracts have to be settled simultaneously, for instance because of a credit event in a company with a large outstanding amount in credit derivatives, the process could be disrupted. The credit risk in a bond may have been sold on through a series of CDS contracts and such cases can well give rise to problems, particularly if they require physical delivery of the underlying bonds.

80 Fitch Ratings (2006), “Global Credit Derivatives Survey”, September.

COUNTERPARTY AND CONCENTRATION RISKS

A bank that buys credit protection in the form of a credit derivative disposes of the credit risk but is exposed instead to counterparty risk, which is the risk that the credit protection seller is unable to meet commitments in case of a credit event. Counterparty risk is a feature of most financial contracts but the credit derivatives market calls for particular attention on account of its novelty and rapid growth. In an ECB survey, the respondent banks are not convinced that all institutions which sell credit protection are properly aware of their commitments in connection with a credit event.

Risk monitoring in the banking system has, however, undergone considerable developments since the mid 1990s. Banks which trade credit derivatives normally have routines for scrutinising and assessing counterparties, besides generally requiring cash backing for transactions, as they do for other derivatives. Moreover, many of the credit derivative sellers are insurance companies and pension funds, which have a great deal of capital for coping with any loan losses.

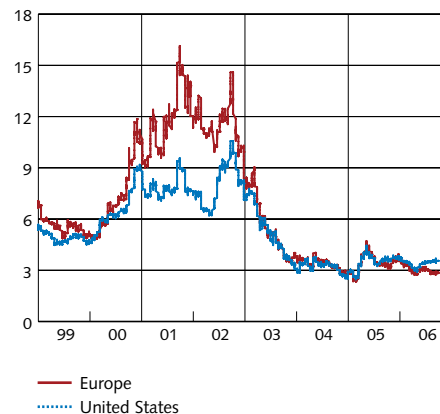
Under the current Basel accord (Basel I), credit exposures hedged with credit derivatives do not generally qualify as an item that reduces capital requirements for the bank that buys credit protection. The banks therefore tend to regard credit derivatives as additional rather than adequate loan collateral. So the failure of a credit derivatives transaction would not necessarily be a serious problem for a bank.

A central issue connected with counterparty risk is the concentration of risks. The extensive trade in credit derivatives could possibly result in concentrations of risk whereby groups of participants – for instance the primary dealers that dominate the market – become very vulnerable to market disturbances. With the inadequate statistics on the OTC market, assessing this risk is difficult. However, primary dealers seldom hold large net positions; as a rule their exposures are neutral. They also possess large, liquid balance sheets and thereby a large capacity for absorbing losses.

LIQUIDITY RISKS

More active capital market trading of credit risk, with more participants involved, makes it easier, as mentioned, to diversify the underlying risks. But problems can arise if the participants take their positions on the assumption that the market is invariably liquid. External events can lead to there suddenly being sellers in the market but no buyers. That happened, for instance, during the Russian debt crisis and it led to problems for, among others, the hedge fund LTCM. Such situations do not last long as a rule because falling prices always ultimately attract buyers. But they may persist for so long that repayment falls due on the loans with which many market participants are financing their positions. If assets cannot be realised on a sufficient scale, the only alternative is default. A crisis of this kind is liable to spread rapidly to other markets and perhaps even threaten the creditor banks.

Figure 4. Credit spreads for high-yield corporate bond issues in Europe and the United States
Percentage points



Source: Reuters EcoWin

The consequences of a liquidity crisis can therefore be grave and the possibility that inexperienced investors in credit derivatives might decide to sell simultaneously gives cause for concern. It should be borne in mind, however, that the credit derivatives market is closely interlinked with the market for the underlying bonds, so that a fall in the price of a credit derivative implies that the price of the underlying bond is also falling, which gives an increased yield. Provided nothing essential has happened to affect the creditworthiness of the company that issued the bonds, sooner or latter it will become profitable to buy either these bonds or the credit derivative. A number of sizeable credit events in recent years also suggest that the credit derivatives market is able to absorb major shocks. The 2005 credit downrating of Ford and GM, as well as a number of extensive bankruptcies, are clear instances of problems of some gravity that could be handled without a serious loss of market liquidity.

MISPRICING RISKS

A risk which is related to liquidity risk is that of mispricing. In the period with the strongest growth of credit derivatives trading, markets have been characterised by successively falling interest rates and rapidly expanding credit. The unusually low incidence of corporate defaults has resulted in a narrowing of credit spreads, that is, the difference between corporate and government bond yields (see Chart 4). Prices for credit derivatives have fallen correspondingly and compensation for risk has decreased to a level below the historical average.

This raises the question of what will happen when the business cycle levels off or turns downwards and defaults become more frequent again. If investors in general have underestimated credit risks, there could be a marked correction of risk premia and a corresponding fall in the price of corporate bonds and credit derivatives. Individual participants with large net credit risk exposures could then incur considerable losses. However, rising risk premia would affect most financial markets and there is nothing to suggest that the impact on the credit derivatives market would be greater than elsewhere.

Concluding remarks

Credit derivatives have turned out to perform a number of functions that are socially valuable. They have made it easier to redistribute credit risk from banks to other financial agents, which presumably helps to make the financial system more resilient to shocks. They have contributed to improved pricing of credit and thereby enhanced credit market efficiency. They have also enabled a wider circle of institutional investors to manage the credit risk in their portfolios in a simple, cost-effective manner. That in turn has made it possible for them to increase the yield for a given risk or reduce the risk of a given yield.

At the same time, the dramatic growth of credit derivatives trading has led to an international debate on the associated risks. There are no adequate statistics for identifying where or in which institution the credit risks are located. There is concern that the new participants may have underestimated the risks in the derivatives they have acquired. Today's credit risk premia are low – unduly low according to some observers – and there is a risk of prices being corrected abruptly when the business cycle turns. Moreover, whether or not the international investment banks that dominate the market would be able to maintain liquidity in such a situation has not been tested in practice and problems with liquidity can spread rapidly to other market participants. A feature which the LTCM episode in 1998 and the settlement problems in the aftermath of 9/11 had in common was that problems with liquidity arose, not in a single, systemically important institution but in the entire market.

As credit derivatives trading is still a very minor component of the Swedish banks' operations, the risk for the financial system is in the first place an external issue. For Swedish banks, the direct impact of credit derivatives on risk positions is slight at present. However, these banks will probably become more engaged in the credit derivatives market, both to meet customer demand and to manage balance-sheet risks. This may be driven, not least, by the new capital adequacy requirements (Basel II). In this context it is important that the banks present their credit derivatives dealing in such a way that both the trading as such and the aggregated credit risk are clearly visible. The future will show whether this will call for extended reporting to the authorities.