CHAPTER 5

Credit Risk

After reading this chapter you will be able to

- Describe the major sources of credit and counterparty risk
- Identify common methods for managing credit risk
- Explain the basic types of credit derivatives

Credit risk is a factor in every business. It exists whenever payment or performance to a contractual agreement by another organization is expected, and it is the likelihood of a loss arising from default or failure of another organization.

Credit risk and the methods used to manage it depend to a certain extent on the size and complexity of exposures. Financial institutions, such as banks, investment dealers, trust companies, insurance companies, and credit unions, typically have significant credit exposure due to their emphasis on lending and trading. Although credit risk is traditionally associated with lending, it is also a major and often overlooked concern for other business entities such as corporations.

How Credit Risk Arises

Conventional credit risk arises through lending, investing, and credit granting activities and concerns the return of borrowed money or the payment for goods sold. Credit risk also arises through the performance

of counterparties in contractual agreements such as derivatives. When a financial obligation is not fully discharged, either because the counterparty cannot or will not fulfill its obligations, a loss may result.

Poor economic conditions and high interest rates contribute to the likelihood of default for many organizations. Credit or counterparty failure is also more likely when an organization has accumulated large losses, owes many other counterparties, or when an organization's creditors or counterparties have financial difficulty or have failed.

Credit risk is often considered a one-way risk, because it exists when an organization is owed payment or an obligation by another party.

Credit risks include:

- Default risk
- Counterparty pre-settlement risk
- Counterparty settlement risk
- Legal risk
- Sovereign or country risk
- Concentration risk

Default Risk

Traditional credit risk involves the default on a payment, typically related to lending or sales. For example, a debt issuer is said to be in default when it indicates it will not make a contractual interest payment to lenders. The likelihood of the default occurring is known as the probability of default.

Depending on the nature of the lending agreement, the amount at risk from a default may be as much as the entire liability. Amounts may later be recovered that reduce the size of the loss. The likelihood of a recovery depends on several factors, including the creditor's legal status. However, if

an organization fails because of large outstanding obligations or losses, which is usually the case, later collections may be difficult or impossible.

Counterparty Pre-Settlement Risk

A major source of credit risk in financial markets arises from exposure to counterparties in financial derivatives such as swaps, forwards, and options. These credit risks are referred to as counterparty risks since they arise from transactions with counterparties. The credit risk that results from such transactions includes pre-settlement risk and settlement risk, both types of default.

Pre-settlement risk or replacement risk arises from the possibility of counterparty default once a contract has been entered into but prior to settlement. In the event of a default, it might be necessary to enter into a replacement contract at far less favorable prices. The risk associated with the pre-settlement period is that a contract has unrealized gains, for example, in offsetting an exposure, and that the counterparty's failure will result in the loss of that benefit to the organization.

Should a counterparty fail to fulfill its obligation, the potential impact to an organization depends on how market rates have changed since the original contract was established. From a risk management perspective, the loss of a contract with no market value—or negative market value, as might be the case with an interest rate swap that has unrealized losses—is of much less concern than one with unrealized gains. However, note that bankruptcy laws and rules, which vary from region to region, play a role in the eventual outcome of such a default.

Losses from the failure of a counterparty can also be evaluated in terms of current and potential exposure to an organization. Current exposure is the organization's exposure if the counterparty defaulted on its obligation at current market rates. Potential exposure is an estimate of losses if a counterparty were to default under different rate scenarios.

Counterparty Settlement Risk

Settlement risk is a transaction risk arising from the exchange of payments between parties to an agreement. Settlement risk is the risk that payment is made but not received, and it may result in large losses because the entire payment is potentially at risk during the settlement process. The size of the loss depends on the size of the payments, whether both parties make payments, how payments are made, and whether any residual amount can be collected after a payment failure.

Settlement risk is often associated with foreign exchange trading, where payments in different money centers are not made simultaneously and volumes are huge. Counterparties traditionally pay one another in different currencies, with most transactions settling one or two days after the trade date. There is usually a time delay between an organization initiating an outbound settlement payment and the confirmation of the arrival of an inbound payment from the organization's trade counterparty.

Settlement risk is currently being addressed with strategic global initiatives including continuous linked settlement (CLS), netting, and

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Herstatt Risk

Settlement risk is sometimes referred to as *Herstatt risk*. Bankhaus Herstatt was a small German bank that was active in foreign exchange before it failed in 1974. On the day German regulators shut it down, it had received payments from foreign exchange counterparties but had yet to make its own payments to others. Counterparty financial institutions in New York and elsewhere suffered losses as a result.

payment with finality. CLS, in particular, has had a significant impact on settlement risk in foreign exchange trading. These global initiatives are discussed in more detail in Chapter 10.

An additional source of settlement risk arises through the payment systems of various countries and the financial institutions that participate in them. Daylight overdraft limits may permit financial institutions to be overdrawn intra-day, thus increasing risk for the central bank, which in many cases acts as a guarantor.

Legal Risk

Legal risk is the risk that an organization is not legally permitted or able to enter into transactions, particularly derivatives transactions. The risk extends to the individuals who make decisions on behalf of counterparties and their level of authorization to enter into transactions.

It is necessary to assess the underlying legal entity with which a contractual agreement is undertaken. Derivatives trading activities, for example, may be conducted through subsidiaries rather than the parent company.

Legal risk is more complex when it involves international financial operations, since foreign laws apply to many aspects of an organization's transactions. In international financial management, legal risk is closely related to sovereign risk, since the activities of the sovereign government may alter the legal rules under which transactions are undertaken. It is critical to obtain the advice of professionals in this area.

Sovereign or Country Risk

Sovereign or country risk arises from legal, regulatory, and political exposures in international transactions. Every nondomestic credit exposure consists of exposure to the credit quality of the entity or issuer and

exposure to the credit quality and integrity of the sovereign nation where the issuer is domiciled.

Sovereign risk arises when transactions in other countries expose an organization to the restrictions and regulations of foreign governments. Even a counterparty or debt issuer with a high-quality credit rating can become problematic if the sovereign government makes it difficult to do business. Problems can arise with the issuer's ability to fulfill its own obligations in an environment that becomes financially or politically hostile.

From time to time, countries and governments have temporarily or permanently imposed controls on capital, prevented cross-border payments, suspended debt repayments, suspended convertibility of the currency, changed laws, and seized assets. Financial crises can sometimes precipitate, or be precipitated by, political turmoil, resulting in additional problems.

An organization with activities outside its borders should analyze sovereign risk and its exposure in those countries where it conducts business or maintains investments. Market intelligence about potential problems that is reasonably reliable from operations or contacts in other parts of the world should be monitored. Political and financial events can unfold quickly, and markets can move much more than would otherwise be expected.

Concentration Risk

Concentration risk affects organizations with exposure that is poorly diversified by region or sector, for example. Events or market changes may adversely affect all in an industry or sector. An organization that is diversified within a sector may still have poor diversification between sectors. As a result, the organization may suffer adversely if conditions worsen for those sectors.

A bank with a large number of borrowers in a particular industry sector is vulnerable to industry concentration risk. Similarly, an investment portfolio may be subject to concentration risk if it specializes in a particular industry or sector. Corporations affected by concentration risk include those with a customer base concentrated in a particular region, companies with one or two major customers, or significant real estate holdings with a single tenant.

Although counterparty and settlement risk are associated with transactions, concentration risk is associated with lack of diversification in exposure to countries, regions, or industries. Concentration risk, and therefore credit risk, is reduced through diversification of exposure.

Credit Exposure Management

A key credit risk management technique is the reduction of credit exposure. The techniques used depend to a certain degree on the type of organization. In general, there is more emphasis on active credit exposure management within financial institutions. This is not surprising given the importance of credit in the business of financial institutions as

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Notable Quote

"Banking supervision, like counterintelligence, is hard to judge from the outside, because the success stories don't get told and the failures are on the front pages."

Source: Martin Mayer, *The Fed* (New York: The Free Press, Simon & Schuster, 2001), p. 237.

a result of lending, trading, and asset management activities. However, these are techniques that can be used by any organization.

Some techniques that are useful for managing credit exposure follow:

- Formalize the credit risk function.
- Consider opportunities for credit exposure diversification.
- Require settlement and payment techniques that provide certainty.
- Deal with high-quality counterparties.
- Use collateral where appropriate.
- Use netting agreements where possible.
- Monitor and limit market value of outstanding contracts.

Credit Risk Function

An independent risk management function, as discussed in Chapter 8, provides important strategic and tactical support to management and the board of directors. Credit risk management and policy development may be included in the risk oversight function or, in larger organizations, as a separate function.

The management of credit exposure should include setting appropriate credit exposure limits and monitoring and reporting exposures against limits on an aggregate, legally enforceable basis. Collateral and other credit enhancement techniques also belong within the risk management function, along with determining the method and frequency for reviewing credit policies.

Consistent with principles of portfolio management, both the credit risk of individual transactions and the credit risk of a portfolio of exposures should be considered.

Diversification

The concept of diversification can be illustrated with a traditional financial institution. Financial institutions were conventionally most affected by credit risk through their lending operations. The traditional relationship between a financial institution and a customer was nurtured by a relationship manager or account officer, with lending taking a central role.

Historically, financial institutions were often regional in nature and grew up near their customer base. The fortunes of both the customers and the regional financial institution, therefore, hinged on regional prosperity.

Lending was usually based on real assets such as equipment or, alternatively, real estate. In the event of a customer default on a loan, the financial institution could seize the pledged assets and obtain at least a partial recovery. The maximum credit exposure was the loan amount, and the risk depended on the borrower's likelihood of repayment.

In the traditional financial institution's lending model, credit committees ensured that credit risk resulting from banking activities such as lending was not excessive. Among other things, the customer's relationship with a financial institution and the community was often a key consideration in determining its likelihood to obtain credit. Financial institutions diversified to the extent possible, within the confines of their regional businesses and the regulatory environment.

Today many organizations face concentrated credit exposure. It may be difficult for organizations to diversify business activities adequately to reduce exposure. For example, a manufacturer may have many customers in the same industry. It may undesirable from a business perspective to diversify in an attempt to reduce this exposure to the industry, since these customers keep the manufacturer in business. However, management can recognize the concentration, seek ways to manage the exposure, and diversify as opportunities arise.

Credit Rationing

The business of credit rationing is as old as the banking business, but it is not exclusive to banking. The key tenet of credit rationing is that credit is granted where the most attractive risk-to-return tradeoff is available. This involves assigning higher interest rates to higher risk transactions to compensate for the additional risk. It also involves rationing the finite quantity of credit granted between borrowers with varying credit risk.

Financial institutions use credit committees to diversify credit-granting decisions and formalize the process. Credit scoring models are used by lenders to improve the ability to forecast default. Economic analysis and forecasting helps to predict economic conditions that might hinder expansion or increase default rates.

The tradeoff between risk and return is the basic premise for risk-adjusted return on capital (RAROC) models that are widely used. These models and derivatives of them are also used in budgeting and management decisions to assist in developing a portfolio that represents the best expected risk-adjusted return.

Collateral

Collateral has long been used to support various lending agreements. Derivatives exchanges, for example, have used collateral in the form of margin for decades. Exchanges require margin to initiate a derivatives transaction. In the event of a subsequent decline in value, additional margin may be required.

Collateral is being used with renewed interest in financial markets due to its risk-reduction potential. In the wholesale financial markets, the increased use of repurchase transactions (repos) illustrates the usefulness of collateralization as a risk reduction technique. Repos function as an alternative to noncollateralized lending or borrowing.

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Collateral Use

Among derivatives dealers, there is an increased use of collateral. A 2004 International Swaps and Derivatives Association (ISDA) survey of collateral use in privately negotiated derivatives transactions and related margined activities found an increase in the volume of collateral of 41 percent over the previous year. The majority of the organizations using collateral are banks, and reduction of credit risk is a principal reason for its use.

A repo transaction consists of a sale transaction and a subsequent repurchase (sale-and-repurchase) or purchase-and-resale of securities, depending on the participant's perspective. Because title to the securities changes hands, the lender is effectively granted collateral over the term of the transaction, which may be as short as one day. Both the U.S. Federal Reserve and the Bank of Canada use repo transactions in their open market operations.

The requirement for collateral in a transaction can be dictated by a credit enhancement clause. The addition of such a clause in derivatives or lending transactions should be approached with caution, as the clause may apply to both counterparties. In the event of a credit worsening or significantly negative marked-to-market value in an outstanding position, an organization would be required to post additional collateral.

Netting Agreements

When a netting agreement is used, amounts to be exchanged between counterparties are netted, greatly reducing the counterparties' exposure to one another. Correctly undertaken, netting is one of the most important tools for managing credit exposure.

The development of netting agreements between counterparties has been instrumental in minimizing settlement risk, particularly in derivative transactions. The use of master agreements to cover most or all transactions between counterparties, such as an ISDA agreement, helps to set out the requirements for credit risk reduction. These agreements should apply to payments between counterparties and to close-out netting, which is used to close out a contract if a counterparty becomes bankrupt, for example.

Bilateral netting agreements, typically between two financial institutions, are used by many participants in the foreign exchange markets. Rather than make individual settlements between the counterparties, all payments for a given day and a currency pair are totaled and only the net payments are made.

Individual netting agreements may not entirely protect market participants if payments are still required to occur in different currencies, since payments may be made by both counterparties. However, the resulting payments will be smaller than they would otherwise be without netting, thus reducing exposure significantly.

Multilateral netting arrangements typically involve a group of organizations such as the participating financial institutions in CLS, discussed in more detail in Chapter 10. Many netting arrangements are supported by ISDA agreements for trading in swaps and other derivatives. Netting is also used among multinational corporations where multiple payments between the associated companies would otherwise take place.

Marking-to-Market

Marking-to-market is not a credit exposure management technique by itself but a tool used in conjunction with limits for reducing potential loss. Outstanding contracts that have large unrealized gains (unrealized

losses for the counterparties) are monitored closely by periodic marking to market. The intent is to manage the potential for loss in the event of the failure or unwillingness of the counterparty to realize its losses. Gains and losses are compared to limits, and steps can subsequently be taken to protect the gains.

Marking-to-market may be combined with a pricing reset if the value of a contract goes beyond a predetermined limit. Alternatively, periodically renegotiating the contract at market value on a regular, prescheduled basis is another way to manage the risk of counterparty's default.

In the event that a counterparty's unrealized losses exceed a predetermined limit, a risk-mitigating action can be taken. This action may be a payment from the counterparty with losses to the counterparty with gains to "reset" the rate on the outstanding contract, creating a new marked-to-market value of zero in the example of an interest rate swap. Gains and losses are paid out and permitted to accrue for only a short period.

Alternatively, the counterparties may decide to close out the existing contracts at current market prices, settling as necessary, and re-enter similar contracts to replace them. There may be tax or legal ramifications of such transactions, however, and these should be understood.

Credit Limits

Traditional credit risk management techniques involve careful counterparty selection. Diversification of borrowers and counterparties includes selecting counterparties with a minimum acceptable credit quality and diversifying to avoid excessive exposure to any particular region, country, or industry. Limits assist in aggregate counterparty exposure management arising from both financial and business activity.

The use of limits supports and formalizes the principles of diversification. Limits are used in credit risk management as they are in asset

management. A portfolio of weakly or negatively correlated exposures is expected to be less risky than a few highly correlated ones.

Financial institutions involved in trading actively use position limits to restrict the size of a trading position and the loss potential. Limits for individual traders and trading desks are set based on experience, performance, risk measurement and modeling, and the institution's risk tolerance, among other things. Both daylight limits (during the trading day) and overnight limits (for open positions and trading in foreign markets) are used. Many organizations and most banks also aggressively monitor counterparty limits on a worldwide, real-time, aggregate basis.

Contingent Actions

Contingent actions involve changes to an outstanding contract or agreement based on the occurrence of certain key events. Typically, these events are specified in a clause to a contractual agreement and might include the deterioration of a counterparty's credit quality, the

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Credit Limits

Organizations using derivatives or acting as industry creditors should consider counterparty or creditor, maximum contract size, or maximum term limits. Limits can be used to reduce exposure to sectors, regions, or sovereign governments. They may be included in investment policy statements, with acceptable issuer limits based on the ratings of major rating agencies. Country or sector limits may be used to minimize the exposure to a geographical region or industry.

marked-to-market value of an outstanding contract exceeding a predetermined amount, or both.

For example, if a counterparty's credit quality falls below a predetermined level, one or both parties may have the right to trigger a termination of the outstanding contract (sometimes known as a termination put), based on falling credit quality and significant changes in the value of the outstanding contract. Other credit enhancement clauses might specify the need for collateral to offset unrealized losses on an outstanding contract or for future contracts. Two-way payment provisions permit the parties to terminate the contract in the event of bankruptcy or similar.

Although a clause regarding a contingent action may give additional comfort in the event of a deterioration of credit quality, the end result of this action may be to worsen the credit impact for the counterparty. The result could lead to bankruptcy, adversely affecting all creditors. In addition, a clause added today may be used against an organization under circumstances that are not anticipated.

As a result, use of such clauses and follow-up action should be considered carefully, from a risk management standpoint and within permitted actions by local laws and regulations.

Other Credit Risk Management Techniques

Other credit exposure management techniques include secured lending transactions, where lending is secured with assets of value, and credit insurance, such as receivables insurance provided by a third party to protect against payment default.

Debt covenants are designed to protect creditors and require a borrower to maintain certain financial conditions. For example, a covenant may prohibit a borrower from paying dividends to common shareholders unless earnings are maintained above a predetermined level. Other covenants might limit debt to a specific percentage of capital.

Credit Derivatives

The emergence of credit derivatives offers a new mechanism for managing credit risk. Credit derivatives enable participants to offset risks that arise as a result of their core business or from an inability to diversify. Given the importance of credit risk, the market for credit derivatives is potentially larger than the market for other financial derivatives.

Participants in the global credit derivatives markets include financial institutions, governments, corporations, and fund managers. The largest participants in the credit derivatives markets are commercial and investment banks. A number of global financial institutions are active participants and make markets to others in various types of credit derivatives. Insurance and reinsurance companies and hedge funds are also participants in the credit derivatives market.

Credit derivatives are contractual agreements based on credit performance—typically swaps or options. Credit performance may be based on events such as default, insolvency or bankruptcy, nonpayment of loan obligations, or downgrading by a rating agency, for example. To be part of a contractual agreement, the event must be predetermined and readily identifiable when it occurs.

Credit derivatives can be classified according to the type of underlying credit that they are designed to hedge. The major credit categories are sovereign or country risk, financial institution risk, and corporate risk. A contract's underlying interest may be a particular credit name or a basket or portfolio of credit names. The terms *protection seller* and *protection buyer* are used commonly to differentiate the perspective of parties to a credit derivatives transaction.

Advantages of Credit Derivatives

Like other derivatives, credit derivatives provide a mechanism permitting the transfer of unwanted risk between willing counterparties, from

organizations with too much credit risk, or the wrong type of credit risk, to organizations willing to assume it.

The credit derivatives business has similarities with the insurance underwriting business. In the credit derivatives business, the protection buyer seeks credit protection from the protection seller. There may be an outright exchange of risks, or one party may pay for risk reduction. Like the insurance business, changes to factors beyond management's control, such as weather or the economy, can result in increased or decreased claims and a resultant profit or loss.

Credit derivatives facilitate a portfolio approach to credit risk management and diversification. Changes to a credit portfolio can take time. A financial institution that perceives its credit portfolio to be too risky can enter into a contract to transfer some of its credit risk to another organization while it focuses on ways to refine the underlying portfolio.

Credit derivatives also allow market participants, especially financial institutions, to separate credit risk from market risk. There is an important distinction between credit risk and market risk. As a result, credit derivatives are useful in situations where credit risk needs to be mitigated without altering the underlying portfolio of transactions that initially created the risk.

The existence of credit derivatives provides some additional price transparency to the business of credit. Financial market participants may benefit from a better understanding of the value of credit even if they are not participants in the credit derivatives business.

Credit Default Swaps

The most common credit derivatives are credit default swaps, which have had significant increases in trading volumes and participants.

In a credit default swap, the protection seller makes a contingent payment to the protection buyer if a predetermined credit event occurs.

In exchange for assuming the credit exposure, the protection seller receives a premium that may be paid upfront or periodically (e.g., annually).

Credit default swaps specify the contingent credit event that must occur for compensation to be made, and therefore, it must be specifically and unambiguously outlined in the swap agreement. Although expressed with more clarity, the general nature of the credit event might be one of the following:

- Bankruptcy of the reference entity
- Restructuring of the reference entity
- Failure to pay by the reference entity

The underlying reference asset, such as a particular bond, is referenced in the contract and may be settled in cash or with delivery of the underlying reference asset. Depending on the agreement, the compensating payment from the protection seller to the protection buyer might be a fixed payment, a payment compensating for a partial recovery based on the contract's strike price, the underlying asset's par value, or an agreed-upon amount based on recovery, for example.

Other credit swaps designed to hedge a credit portfolio permit the protection buyer to receive compensation based on the first default that occurs in the underlying portfolio. This is known as a *first-to-default* basis.

Credit Spread Derivatives

Other credit derivatives are based on the interest rate differential between the debt of different types of issuers. A realized or expected rating change of an issuer will impact its cost of borrowing compared with a benchmark rate. All else being equal, a credit upgrade or improvement, particularly by one of the major rating agencies, will result in the ability to borrow at lower interest rates. Conversely, a credit downgrade will result in an increase in the cost of borrowing.

Credit spread derivatives may be structured as options or similar to forwards. A credit spread option requires upfront premium in exchange for protection against (typically) a widening credit spread between the underlying credit and a benchmark government yield, for example. The protection (put) buyer pays premium to the seller and in return receives a contingent payment if the spread widens past a predetermined level. With a credit spread forward, payment depends on whether the spread is above or below the contracted credit spread.

Since changes in the level of market interest rates should affect both the issuer and benchmark yields similarly, they should not affect credit swap payments unless there is also a change in relative credit spreads. A change in credit spreads will affect the value of the contract and therefore the obligations of counterparties to the contract.

Other Credit Derivatives

Other credit derivatives include total return swaps and credit-linked notes. Total return swaps involve an exchange of the total return from an underlying reference asset, such as a bond, against a predetermined fixed or variable reference rate. The total return from the asset includes

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Spreadlocks

Spreadlocks are contractual agreements that protect an organization's ability to enter into an interest rate swap at a predetermined spread over government yields. In the event that the organization's credit quality declines, the spreadlock provides protection. Spreadlocks may be structured as forwards or options.

changes in value arising from market interest rates, changes to the issuer's credit rating, and the potential for default. One party receives the total return (comprising both market and credit gains or losses) and in exchange pays a predetermined return to the other.

Credit-linked notes are debt instruments with an embedded credit derivative. The investor receives par at maturity unless a predetermined credit event occurs (e.g., the reference credit defaults), in which case the investor receives less than par value (the recovery amount).

Credit Derivatives Challenges

Trading in credit derivatives has increased dramatically and has the potential to represent a significant proportion of all derivatives activity. Credit derivatives provide certain advantages to market participants that otherwise are difficult to obtain, including better transparency in the pricing of credit risk and the ability to diversify credit exposures.

Some critics charge, however, that rapid growth in credit derivatives presents particular risks. One concern is that market participants may become more aggressive in credit and counterparty transactions if they can transfer credit risks to someone else. Other criticisms include lack of transparency, potential pricing issues, and legal issues, particularly with cross-border transactions or reference credits. It has also been argued that, like other derivatives, credit derivatives spread risk around but don't actually reduce it, thus increasing systemic risk.

Modeling the probability of borrower default, and the potential for default correlations, like modeling the probability of market movements, is a science that is still being refined. It is critical to ensure that credit derivatives are priced accurately to reflect the underlying risk.

Liquidity remains another challenge. Although the number of dealers and trading volumes are growing, they are still relatively small. As a result, it may be difficult to find an appropriate counterparty to close

out or offset an existing transaction, particularly in times of market stress or if the contract contains unusual terms.

The development of derivatives markets often precedes the legal and tax infrastructure to support them, and credit derivatives are no exception. Legal systems vary from country to country, and what constitutes law or legal precedence in one country may not be valid elsewhere. Credit derivatives may not have been subject to legal testing in all jurisdictions, and their potential overlap with insurance may also complicate matters in some legal systems.

Within an individual contract, clarity is very important. The definition of a credit event is critical in credit derivatives contracts. There may be complexities in deciding whether or not a contractual condition has been met, particularly if the underlying credit has operations in a number of legal jurisdictions or is rated by several rating agencies.

Although credit derivatives are specialized transactions, there is a need for standardization and documentation, which has been an important focus of ISDA.

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ISDA Documentation

Credit derivatives have been an important focus of ISDA, an industry association made up of around 600 of the world's leading financial institutions. Among other risk management initiatives, ISDA provides standardized documentation that is used in a wide variety of derivatives transactions, including credit derivatives. These documents can be obtained directly from ISDA. Future efforts at standardization will further streamline trading and settlements for hedgers and traders.

Summary

- The credit risk component of financial risk management is significant due to interrelationships between global issuers, markets, and regions.
- Methods to reduce credit exposure include netting arrangements, marking to market, use of limits, and actions contingent on credit quality.
- Credit derivatives permit market participants to offset risks that arise as a result of their core business or as a result of difficulty in diversification.