CHAPTER 10

Global Initiatives in Financial Risk Management

After reading this chapter you will be able to

- Understand the challenges that exist in financial risk management
- Identify initiatives for reducing risk in key areas such as settlements, trading, and payments
- Appreciate the significance of accounting and regulatory initiatives
- Evaluate how changes in capital adequacy can reduce systemic risk

In a global marketplace, there are many opportunities for risk. Losses may not be limited to one geographical or domestic market but could potentially arise due to a failure in settlement, regional financial crisis, or an unexpected geopolitical event almost anywhere. Efforts being made today are intended to ensure that global financial markets can cope with increased interconnectedness and the resultant risks in many types of market conditions.

Challenges

Financial institutions, due to the nature of their business activities and volume of transactions, have natural exposure to many financial risks. As

a result, many risk management initiatives—such as credit risk, settlement, and payment system initiatives—have been introduced by or for financial institutions.

Financial risk management is made all the more challenging by the fact that many organizations face global markets of significant size, complexity of participants and transactions, different legal and regulatory systems, and myriad unknown factors.

Several major international initiatives have been undertaken to reduce financial risk and therefore systemic risk. International initiatives by regulators, payments associations, central banks, and financial institutions to reduce opportunities for risk include:

- Financial institution capital based on risk
- More secure settlement between counterparties
- Trading initiatives to reflect risk-reduction techniques
- Changes in the operation of international payment systems

International central banks and regulators have been motivated to develop new standards and requirements because of the potential losses associated with financial risk on a large, interconnected global scale. More than volumes, it is the interconnectedness and prevalence of linkages that makes many risk managers uneasy. The challenge is systemic risk.

Financial Institutions

Financial institutions participate in a variety of financial market activities besides lending. Some significant activities include trading in currencies, interest rates, equity and fixed income securities, and a variety of derivatives, both on a proprietary interbank basis and on behalf of their customers.

In addition to market risk, trading exposes a financial institution to significant operational and credit risk. A financial institution may have

hundreds or thousands of trades per day. As a result, there is exposure to the possibility of default or failure of other financial institutions, as well as of nonfinancial institutions. These exposures have given rise to the need for new techniques for managing risk, and, in particular, credit risk.

Derivatives Trading

Derivatives trading volumes show no signs of slowing down. Even with occasional slowing growth in a region or market, rapid growth in many markets is ongoing. From a segmented market perspective, foreign exchange volumes remain the largest in the world. However, in over-the-counter derivatives, interest rate derivatives, particularly swaps, are the most popular.

IN THE REAL WORLD

Over-the-Counter Derivatives

In the over-the-counter derivatives market where much of the trading between financial institutions, corporations, and investment funds occurs, volumes are much larger than in the listed market.

According to the International Swaps and Derivatives Association (ISDA), an international organization of more than 600 financial institutions that tracks such statistics, outstanding over-the-counter interest rate derivatives were about U.S.$164 trillion in mid-2004.

Other outstanding derivatives include credit derivatives at $5 trillion and equity derivatives at nearly $4 trillion (both amounts in U.S. dollars).

Statistics such as trading volume and amounts outstanding do not necessarily represent amounts at risk. In many cases, the amounts at risk during settlement or as a result of default may be significantly smaller than the amounts traded.

Many contracts call for netted payments between counterparties or differential payments. For example, in an interest rate swap, the notional amount of the contract is not exchanged between the counterparties, significantly reducing settlement risk. In such cases, settlement risk is much less of an issue, although other risks such as market risk and replacement risk remain a concern.

Credit Risk

Credit exposure exists within most organizations, but it is especially significant in major financial institutions. As a result, financial institutions and their regulators are the source of many credit risk management initiatives, in particular Basel II, which is leading to the implementation of highly sophisticated credit risk management capabilities on a global scale.

Financial institutions and their customers are connected through their business activities with one another to a greater magnitude today than in the past. Credit risk is closely tied to systemic risk, where the failure of one or more major counterparties could trigger other failures.

One of the most fundamental aspects of credit risk management is the careful selection of a counterparty. In trading, the selection of counterparties is very important. Successful financial institutions screen and select counterparties and borrowers based on financial stability, ratings, familiarity, political stability, geographical location, and legal form of organization.

Enterprisewide Risk Management

The concept of enterprisewide risk management has been around for more than a decade. It involves organizations taking a broad and

IN THE REAL WORLD

Counterparty Risk Management Policy Group

The 1999 report published by the Counterparty Risk Management Policy Group in conjunction with the International Swaps and Derivatives Association (ISDA) addressed ways to improve counterparty risk management practices. Developed with a dozen major international banks, it is intended to promote enhanced counterparty credit and market risk practices among organizations involved in derivatives trading.

The report is aimed at financial institutions, investment managers, insurance companies, and hedge funds and includes specific recommendations for managing counterparty credit risk. These recommendations include measures to improve transparency and counterparty credit assessment, improve risk measurement and management, enhance risk reporting, and provide better market practices and conventions. In addition, the document outlines recommendations for improving regulatory reporting. The document can be viewed on the ISDA Web site at www.isda.org.

strategic view of all risks, including financial risks, business risks, and other related risks.

The goal of enterprisewide risk management is certainly a worthy one. The ability to measure an organization's exposure to a wide variety of risks, report on them, and use the information to make decisions throughout an organization is an excellent objective.

One of the challenges with enterprisewide risk management is the need to measure and estimate probabilities of loss for which a strong

risk management framework does not exist. Risks associated with insurance have been monitored and measured for decades by the industry. Financial risks have an advantage in that many years of study and analysis have been expended in order to better estimate them. Given that the estimation of risk is good only at the best of times, other risks may require similar time and experience to determine appropriate measures.

Settlement Initiatives

Continuous Linked Settlement

Trading in financial instruments and derivatives gives rise to settlement risk because each counterparty to a transaction faces the possibility of not being paid during settlement. Traditionally, large global trading volumes resulted in large settlements between trading counterparties, primarily large financial institutions.

Trading and settlement occurs between counterparties in international financial centers and different time zones. Settlements are made electronically, involving national payments systems and local banks for final crediting or debiting of accounts.

Potential losses arising from failure to settle are exacerbated when counterparties are located in different time zones and from settling currency transactions. Currency settlements often involve currencies in different global regions, such as Asia and North America, for example. This means that most settlement occurs nonsimultaneously during the 24-hour day, since it depends on local processing in the financial center where payments are initiated.

A major initiative to reduce the settlement risk associated with payments arising from foreign exchange settlements is continuous linked settlement (CLS), which began operations in 2002 and is supported by several dozen of the world's largest banks.

IN THE REAL WORLD

Foreign Exchange Trading

Foreign exchange trading volumes eclipse other types of trading. The 2004 triennial survey by central banks and the Bank for International Settlements (BIS) shows daily volumes of about U.S.$1.9 trillion. A significant proportion of this foreign exchange volume is interbank trading.

CLS Bank International is a special-purpose bank, central to the system and based in New York. The system operates a multicurrency settlement facility into which payments between financial institutions are made. CLS Bank connects to the real-time gross settlement systems operated by the central banks in each currency's home country. Within CLS Bank is an account for each currency.

With CLS, since trading and settlement occur in different time zones, it is necessary to find a short window of the 24-hour day when all regions can connect simultaneously. CLS uses a five-hour overlap time and links to country's local real-time gross settlement systems to settle for a particular date as though both parties were in the same time zone. CLS Bank works simultaneously with the various national payment systems during the time window when all the participating national payment systems are operational.

The *pay-in period* sees CLS member banks make payments to CLS Bank in currencies they owe to other counterparties. At the start of the payment period, each member bank receives a schedule detailing the net positions in each currency. Payments are made on a net basis. Simultaneous settlement, also known as a payment-versus-payment basis, is accomplished as funds are credited to CLS member banks that are expecting payment.

IN THE REAL WORLD

Continuous Linked Settlement

Continuous linked settlement is supported by several dozen of the world's leading financial institutions. It permits simultaneous settlement of foreign exchange transactions between counterparties, significantly reducing risk. Although additional currencies are planned for implementation, 15 currencies are currently eligible for CLS settlement as of 2005:

1. Australian dollar
2. British pound
3. Canadian dollar
4. Danish krone
5. Euro
6. Hong Kong dollar
7. Japanese yen
8. Korean won
9. New Zealand dollar
10. Norwegian krone
11. South African rand
12. Singapore dollar
13. Swedish krona
14. Swiss franc
15. U.S. dollar

The system provides a simultaneous settlement to both parties, providing assurance that parties to a transaction will receive value for their payment. Like the payments made by the national payment systems, CLS payments are made with finality and are irrevocable.

By the end of 2004, CLS had settled more than $3.6 trillion on a single record day, with $1.9 trillion representative of an average day. This represents a significant proportion of daily foreign exchange and derivatives settlement volume. With this volume comes a reduction in nonsimultaneous settlement risk, and an increase in control over liquidity because banks can see exactly when settlements will occur.

Users of CLS include major banks and investment custodial firms operating on behalf of fund managers. Nonfinancial institutions typically participate through a financial institution.

Trading Initiatives

Derivatives are contractual agreements, and the integrity of each counterparty and the likelihood of it performing its obligations under predetermined terms of the contract are paramount.

Users of exchange-traded derivatives have relied for many years on specific risk management processes. Exchanges employ various mechanisms to manage risk, among them clearinghouses for settling exchange trades. The clearinghouse acts as the guarantor to every trade, including a defaulted trade, as a mechanism to ensure that counterparties fulfill their obligations.

Exchanges also use daily market value of all outstanding positions, margin, and, in most cases, daily maximum price fluctuations. The combination of market value, margin, and price limits provides a theoretical worst-case one-day scenario for the exchange and its clearinghouse.

As derivatives trading volumes have increased, specific efforts have been made to reduce the risks inherent in the trading and settlement of derivatives. The model from exchange-traded derivatives minimizes counterparty risk through straightforward but effective methods.

In the over-the-counter derivatives markets, netting agreements and initiatives such as CLS are similar attempts to reduce counterparty risk. In addition, margin-like collateral and repricing of agreements is taking place more often.

Collateral Usage

Among financial institutions and dealers trading in derivatives, there is an increased use of collateral. Collateral, most commonly cash or government

securities, reduces the exposure associated with the potential for default by a counterparty. The use of collateral also permits financial institutions to free up trading credit facilities that might otherwise be unavailable.

A 2004 ISDA survey[i] of collateral use in privately negotiated derivatives transactions and related margined activities found a significant increase in collateral usage. The survey also found that 50 percent of all derivatives transactions, measured either by volume or by exposure, were covered by collateral at the survey date.

The majority of organizations that were surveyed by ISDA are banks. When surveyed about their reasons for the use of collateral in agreements, the most common answer was a reduction of economic capital or credit risk.

New Products

Trading in new products reflects the new realities of business and financial markets. For example, the venerable London Metals Exchange has developed trading products in polypropylene and linear low-density polyethylene plastics. These contracts provide a new way for manufacturers and consumers to manage the financial risk associated with price fluctuations. Like metals contracts, these reflect the economic realities of industry today.

In other markets, inflation derivatives, such as inflation futures and swaps, provide a means for hedging and trading inflation risk separately from market risk and credit risk. The Chicago Mercantile Exchange lists futures contracts on the U.S. Consumer Price Index (CPI) and products also trade in the over-the-counter market.

Weather derivatives usage has increased significantly, both in the over-the-counter and the exchange-traded market. Cooling degree days (CDD) and heating degree days (HDD) allow hedgers and traders to manage temperatures, in addition to regional contracts that cover

TIPS & TECHNIQUES

Weather in Chicago

The Chicago Mercantile Exchange offers a number of weather-related products for hedgers. Futures contracts, and options on futures, are available in three global regions. Among the weather-hedging products are the following:

- CME Seasonal Cooling Degree Days Index
- CME Seasonal Heating Degree Days Index
- European Monthly CAT Index
- European Monthly Heating Degree Day
- European Seasonal CAT Index
- European Seasonal Heating Degree Day
- Japanese Monthly Average Temperature
- Japanese Seasonal Average Temperature

averages or indices. In the over-the-counter market, customized products can be structured to meet the particular need of a hedger.

Other new trading products include environmental derivatives. Environmental derivatives are the current new frontier, and significant growth is likely to occur in this area in the future. Carbon and sulfur emission allowances are now trading at the Chicago Climate Exchange. More growth is likely in this area.

Payment Initiatives

On any given day, millions of payments make their way through various international payments systems. Improvements to payment systems have

been made with the intention that the default of even a major financial institution would not adversely affect the rest of the system.

As a result of the exposure that exists within the business of global financial institutions, international initiatives are being undertaken to reduce the possibility of such an occurrence. The players include regulators, payments associations, financial institutions, and central banks. Changes in the way payments occur is one such initiative.

International payments systems are adapting to better manage the risks that arise from an interconnected global financial community. Many electronic systems for large-value payments have migrated to a real-time (or quasi-real-time) environment. This intentional shift may reduce the systemic risk arising from credit and settlement risk in financial transactions, as the risk of a default occurring between bilateral settlements is reduced.

Payment systems in major countries reduce risk through the finality component of the payment. One of the risks associated with older payment systems was that receipt of funds was sometimes uncertain. Payments received could subsequently be reversed at a later date, thus providing little comfort to financial institutions, or their clients, concerned about payment default. As a result, new high-value payment systems offer finality of payment.

Capital Adequacy Initiatives

The impact of fewer, consolidated financial institutions has changed the financial landscape in many countries significantly. One of the particular concerns with respect to consolidation is that risk among financial institutions is now more concentrated, making systemic risk a greater potential issue.

The Basel Accord is an agreement between the central banks of major countries to develop consistent minimum capital standards for financial institutions in those countries. The introduction of capital

IN THE REAL WORLD

Payments Systems

In the United States, two systems facilitate high-value payments. The FedWire system, operated by the U.S. Federal Reserve, processes electronic large-value items with same-day value and finality of settlement.

The Clearing House Interbank Payments System (CHIPS) is operated by The Clearing House in New York, which is owned by a group of international banks. It processes more than U.S.$1.3 trillion in about 260,000 transactions on an average day, the majority resulting from settlement of foreign exchange and Eurodollar trades. The CHIPS system is unique in high-value systems because it can transmit large amounts of remittance information along with payments.

In Canada, high-value payments use the Large Value Transfer System (LVTS), operated by the Canadian Payments Association. The LVTS system provides payments that are final and irrevocable.

The Trans-European Automated Real-time Gross settlement Express Transfer (TARGET) system for high-value euro payments is an interlinking system that connects the domestic real-time gross settlement systems of 16 European countries. These payment systems include those of the 12 euro countries, plus Denmark, Sweden, and the United Kingdom. TARGET is operated by the individual country central banks and the European Central Bank.

adequacy requirements beginning more than a decade ago was a major milestone in financial risk management. "Managing risk at the source," as some called it, represented an international convergence of capital measurement and standards.

Capital requirements are the mandated minimum capital that a financial institution must maintain in relationship to its banking activities. One of the core principles of capital adequacy is that more risky activities should have more capital allocated to them.

Capital adequacy requirements were foremost intended to strengthen the stability of the international financial system, particularly against credit risk (a major risk faced by every financial institution), but also against market risk and operational risk.

Although the Basel Accord is largely unseen, its impact has been felt by financial institutions worldwide. Within the banking system, compliance has meant significant explicit and opportunity costs, with addi-

IN THE REAL WORLD

Notable Quote

"An excessively prescriptive approach is an invitation for regulatory arbitrage and for practices that respect the letter of the standards but violate their spirit. Hence, the major efforts by regulators to develop standards in close cooperation and consultation with the regulated communities in the private sector, to stress the adequacy of risk management processes and to strengthen disclosures. These are all welcome trends that should be encouraged further."

Source: Malcolm Knight, General Manager of the BIS, "Markets and Institutions: Managing the Evolving Risk," speech at the 25th SUERF Colloquium in Madrid, October 14, 2004.

tional costs for amendments to the accord. The increased cost of capital is initially borne by the financial institution, its customers, and its stakeholders, but all market participants benefit from a more secure financial system and ultimately pay for its costs.

Headquartered in Basel, Switzerland, the Bank for International Settlements (BIS) is a central bankers' bank. The Basel Accord is facilitated by the BIS and the Basel Committee on Banking Supervision. The committee consists of senior representatives from banking authorities and central banks from Belgium, Canada, France, Germany, Italy, Japan, Luxembourg, the Netherlands, Spain, Sweden, Switzerland, United Kingdom, and the United States.

Revised Framework

Amendments to the Basel Accord present opportunities to revise the existing system. An amended accord, known as Basel II, was approved in 2004 and involves more risk-sensitive capital requirements.

The new accord permits the additional use of risk assessments by a bank's own internal systems for capital calculations. The accord will not specify risk management policies or practices. Rather, Basel II provides options for banks and banking supervisors to calculate capital requirements for credit risk and operational risk.

Basel II is designed to further increase international banking stability by improving capital adequacy requirements. The new document will require substantially increased sensitivity of the capital requirements to risk. Basel II aligns capital requirements with risk management practices and includes three key areas (called *pillars*):

1. Minimum capital requirements (pillar 1)
2. Supervisory review and processes (pillar 2)
3. Market discipline (pillar 3)

Financial institutions will determine the risk sensitivity of the various transactions on their books, including an assessment of the type of counterparty or borrower. Capital requirements will be based on application of a set of predetermined formulas to the risk data provided by the financial institutions. This includes metrics such as the probability of default (PD), the amount of loss given a default (LGD), the exposure at default (EAD), and maturity assumptions of the various exposures.

Banks can use three approaches for calculating credit risk capital:

1. Standardized approach (regulator provides risk measurement data for probability of default, loss given default, and exposure at default)
2. Foundation Internal Ratings-Based approach (bank provides its own estimate of probability of default, while regulator provides loss given default and exposure at default data)
3. Advanced Internal Ratings-Based approach (bank provides its own probability of default, loss given default, and exposure at default)

Minimum levels of capital will continue to be mandated under Basel II. This means the total amount of regulatory capital will not change but some banks may require less capital and others more, depending on the risk profile of their portfolio. One key issue is that banks will be required to set aside regulatory capital for operational risk under Basel II.

Although minimum capital requirements for financial institutions will not change under Basel II, risk measurement will change. Important changes in the treatment of credit risk will include the recognition that collateral, guarantees, and credit derivatives can be used for credit risk mitigation. In addition, given the importance of retail lending activities for many financial institutions, the accord makes some changes to the risk weightings associated with retail lending, including the risk weighting on mortgages.

IN THE REAL WORLD

Risk Weightings

Basel II necessitates that capital be based on the underlying risk associated with an activity. Consider the following example of risk weightings for claims on sovereigns and central banks in the following table under the standardized approach. These risk weightings use ratings published by Standard & Poor's for illustrative purposes:[a]

Credit Assessment	AAA to AA–	A+ to A–	BBB+ to BBB–	BB+ to B–	Below B–	Unrated
Risk Weight	0%	20%	50%	100%	150%	100%

Basel II is expected to be appropriate for countries and financial institutions beyond the G10 and expected to take effect at the end of 2007. More information on the New Basel Capital Accord, including the original Basel Accord and current documentation, can be found on the BIS web site (www.bis.org).

a "Part 2, First Pillar, Minimum Capital Requirements, II Credit Risk—The Standardized Approach, A (Regulatory Capital), #53," *Basel II: International Convergence of Capital Measurement* and *Capital Standards: A Revised Framework*. Standard & Poor's is a registered trademark of its owners.

Accounting and Regulatory Initiatives

International accounting standards for derivatives continue to evolve toward marking to market and fair value. Regulatory initiatives are attempting to reduce fraudulent activities and reporting, particularly those introduced with the Sarbanes-Oxley Act in the United States and the additional requirements of other countries following Sarbanes-Oxley.

Many organizations have incurred costs in the shift in the accounting treatment of derivatives. However, the changes have also meant a significant increase in transparency for investors and lenders.

FASB 138

In the United States, the Financial Accounting Standards Board (FASB) introduced Statement No. 133, Accounting for Derivative Instruments and Hedging Activities (FASB 133) in 1998, since updated by FASB Statement No. 138. Currently, under U.S. generally accepted accounting principles (GAAP), recognition of gains and losses can be delayed if specific hedge requirements are met, as modifications were made to make it easier to conform for hedging purposes.

IAS 39

The International Accounting Standards Committee Foundation is an oversight body for the International Accounting Standards Board (IASB). IAS Standard 39, which deals with financial instruments, is also a fair value model.

Sarbanes-Oxley Act 2002

The Public Company Accounting and Investor Protection Act of 2002,[ii] also known as Sarbanes-Oxley, has resulted in perhaps the most sweeping reforms in the U.S. securities arena in decades, leading to significant changes in the way that U.S. publicly traded companies undertake business.

The changes and obligations required by Sarbanes-Oxley have resulted in significant implicit and explicit costs for corporations to comply. This is particularly so since the changes went into effect relatively quickly. Since 2002, a number of similar initiatives, though often smaller in scale and less widespread, have been proposed or implemented in other (non-U.S.) jurisdictions.

The Sarbanes-Oxley regulations cover a number of key areas, including the creation of the Public Company Accounting Oversight Board, auditor independence, corporate responsibility, enhanced financial disclosures, analyst conflicts of interest, corporate and criminal fraud accountability, white-collar crime penalty, corporate tax returns, and corporate fraud and accountability.

One area that may be of interest to corporations is the section that deals with enhanced financial disclosures (Title IV of the original document), with the following sections:

401 Disclosures in periodic reports

402 Enhanced conflict-of-interest provisions

403 Disclosures of transactions involving management and principal stockholders

404 Management assessment of internal controls

405 Exemption

406 Code of ethics for senior financial officers

407 Disclosure of audit committee financial expert

408 Enhanced review of periodic disclosures by issuers

409 Real-time issuer disclosures

In addition to the U.S. Sarbanes-Oxley Act, other countries have adopted, or are in the process of adopting, rules and regulations similar to specific aspects of the Act within their own markets and regulatory environments. It is too soon to determine how extensive these actions will be.

Summary

- Management of financial risk is vital for the existence of the international financial system. A number of initiatives are underway to better manage these risks.
- The risk of a failure of one or more counterparties is being addressed with new initiatives in settlement systems to reduce the potential for harm. The intention is that even a major default would not necessarily result in a systemic reaction between market participants.
- International central banks and regulators are building on an important framework for the stability of the international financial system. Enhanced capital adequacy standards, such as the Basel II Accord, are designed to provide additional protection against a major financial event, thus improving financial risk management globally.

Notes

i ISDA Margin Survey 2004.

ii The Act can be viewed at the Securities and Exchange Commission Web site at www.sec.gov.