BANKING RISK MANAGEMENT IN A GLOBALIZING ECONOMY

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Introduction: From Financial Intermediation to Risk Management

> Obviously banks make money by taking risks and lose money by not managing risks effectively. To produce superior shareholder returns in current markets, banks must take on higher levels of risk than in the past.
>
> Edward E. Furash (1994, 34)

> We bankers must develop cultures that foster and reward the management of risk. We must continually update our risk-management policies to ensure that they reflect changing industry dynamics.
>
> Marshall N. Carter (1995, 26)

At a mouse click, one can surf the Net and shop for the best Certificate of Deposit (CD) rates. At another click, one can shop for the best mortgage rates. At a third click, one can buy stocks, bonds, mutual funds, and insurance. Sometimes, the seller of CDs, mortgages, stocks, mutual funds, and insurance is a bank around the corner. At other times, the seller is a financial service or an investment securities company somewhere around the country, or around the globe.

New technology, government deregulation, and globalization are changing the financial service industry, and the banking industry in particular, expanding both opportunities and risks. Banking is no longer confined to traditional financial intermediation catered to domestic and local depositor and borrower in a highly regulated low-risk environment. Banking extends to a broad range of financial products previously offered by other segments of the financial service industry catered to the global individual and institutional investor. At the same time, banking is facing increasing competition from other segments of the financial service industry and volatile money and capital markets. Banking is turning into a dynamic and active risk management process of assets and liabilities in a low-regulated high-risk environment.

An inquiry into banking risks and their management in a globalizing economy, this book has a dual objective. First, to take a close look at the transformation of the banking industry from passive financial intermediation to active asset–liability risk management process, and at the sources of traditional and nontraditional banking risks, their measurement, monitoring, and control. Second, to review the conventional, "on-balance sheet," and modern, "off-balance sheet," risk management methods for controlling banking risks with emphasis on the application of financial derivatives to control three core banking risks: credit risk, interest rate risk, and foreign exchange risk.

For the four decades that followed the end of the Great Depression, multinationalization, the division of the world market into separate national and local markets, information inefficiencies, active government intervention and long-term relations created a sanctuary, a low-risk environment for many of the world's large multinational corporations. Tariffs and quotas limited competition across national markets while government regulation limited competition and price fluctuations in local markets. Information inefficiencies and the lack of knowledge of the peculiarities and specificity of certain industries discouraged market entry. A fixed foreign exchange and interest rate regime limited foreign exchange rate and interest rate fluctuations and contained them to one country or region only. Long-term relations between manufacturers, suppliers, and bankers on the one side, and manufacturers, distributors, and retailers on the other, further reduced price fluctuations and market risks.[1]

Multinationalization, information inefficiencies, government regulation, and long-term business relations were extended to the financier of multinational corporations and the banking industry, which also enjoyed its own sanctuary. Multinationalization, for instance, protected banks from foreign competition. Government regu-

lation, geographical barriers, close day-to-day supervision, and interest rate controls limited competition within the industry. Information inefficiencies and licensing requirements protected banks from competition from other segments of the financial industry, namely the securities and insurance industries. Long-term relations further limited banking to a selected group of corporate clients, especially in the Asian countries and most notably Japan, where banks were at the center of *keiretsu* relations, organizing loan consortia on behalf of their clients. Loans were extended at fixed rates for a fixed term and constituted only one of the many relations between lenders and borrowers. "Lending by banks has been at fixed rates for fixed terms, with only moderate discrimination between the best and the clearly less than best borrowers. The decision to be made is whether to make the loan or not. The sense of the price of the loan is complicated by the fact that the loan is normally only one of the number of relationships between the lender and the borrower" (Mayer 1999).

Banking was reduced to a routine process, the monitoring of money flows in and out of the bank coffers, and the mastering of relations with corporate clients. The banking industry as a whole could grow and prosper through financial intermediation, that is, by amassing deposits and dispensing loans, earning seigniorage income, especially in the 1950s and the 1960s, when the industry rode on three favorable trends. First, robust economic growth and disposable income provided for both a steady supply of deposits and a steady demand for loans. Second, a normal yield curve allowed banks to borrow low at the short end and lend high at the long end. Third, rising asset values, often placed as loan collateral, provided a hedge against borrowers' failure to repay their loans, government regulators, and central bankers.

At the core of this "relationship banking" was the bank branch. Staffed with professional accountants, credit analysts, and customer relations experts, the branch performed a dual function. First, it closely monitored money flows in and out of the bank coffers and intuitively managed liquidity risk.[2] Second, it collected loan requests, devised lending application procedures, analyzed customers' financial history and personality, and intuitively assessed the probability of loan defaults. "Defaults cannot be entirely avoided. Yet loan charge-off can be reduced by the systematic application and review of lending procedures. Once a credit request is obtained, credit department personnel should analyze the borrower's financial history and character in detail. This analysis should reveal strengths and weaknesses in past performance and indicate the likelihood of timely payment" (Koch 1988, 138).

Since the mid-1970s, globalization, the increasing integration and interdependence of world markets, government deregulation, and the spread of information technology that supports and reenforces it have created an entirely new world for large multinational corporations and the banking industry. On the one side, globalization, deregulation, and the spread of information technology have been a source of opportunity for both multinational corporations and banks. Globalization, for instance, expanded overseas opportunities in both mature and emerging economies. Government deregulation expanded opportunities in domestic and local markets, while the spread of new technologies lowered transaction costs, and contributed to the development of new products and product delivery systems.

On the other side, globalization has eliminated market sanctuaries, compounding risks and uncertainties, especially financial risks. The lifting of government regulation, for instance, has intensified both international and domestic competition, causing wild resource and commodity price fluctuations. The lifting of trade protectionism and the intensification of cross-border competition raised the risks for banks' corporate clients, especially those with a large exposure to the emerging markets of the former communist countries; and the liberalization of foreign exchange and domestic money markets has introduced two additional risks, the foreign exchange and the interest rate risk. The liberalization of foreign exchange and domestic money markets has further increased interdependence among world markets. Like a snow avalanche that gains momentum, economic instability in one region quickly spreads in other regions, magnifying economic and financial risks. "The call to reality came with deregulation and globalization. Deregulation forced financial institutions to pay more attention to the financial markets. Increased trade forced firms to recognize the truly global nature of competition. As a result, corporations cannot afford to ignore financial risks any more" (Jorion 1997, 7).

For the banking industry, government deregulation has allowed banks to diversify their operations by expanding to new geographical territories both in the domestic and global market, and provide products and services previously offered by the security and insurance industries or other segments of the financial service industry. The spread of information technology has lowered the cost of banking services: ATM machines are less expensive and more convenient than traditional branches, telephone banking is less expensive and more convenient than ATM machines, and internet banking is even less expensive and more convenient than telephone banking.

Government deregulation and new technology have intensified competition within the banking industry and between the banking

industry and the other segments of the financial service industry, which has drawn the outcry of bank executives. "We're being replaced by Wall Street firms that scrutinize almost anything. These competitors are taking loans out our back door faster than we can bring them in the first door. . . . The banking industry isn't just dwindling—it's dying! We won't be around in another five years unless we face reality and radically change how we treat—and what we offer—our customers" (Crutchfield 1994, 52).

Government deregulation and new technology have severed the one-to-one relationship between banks and their clients, fostering competition and price wars.

> The traditional relationship between a bank and its customer had been a one-to-one link, with the bank and the consumer meeting across a table to negotiate a loan or some other deal. But in the new structure, the innovative finance house put itself between the bank and its customer, suggesting ideas to the customer, and expecting the banks to compete on price and quality to provide whatever financial instruments the customer wished. This new marketing structure thus accelerated the introduction of innovations, and at the same time forced more competitive pricing. (OECD 1987, 59)

Compounding the problem of increasing competition and price wars, interest rate and foreign currency liberalization have further introduced two new risks, the interest rate and the foreign currency or foreign exchange risk. Banks with interest rate–sensitive liabilities, for instance, experience a rise in their interest expense when interest rates rise, while banks with interest sensitive assets experience a loss in interest income when interest rates fall. Banks with foreign currency denominated earnings will experience an earnings shortfall should the domestic currency appreciate. Banks with foreign currency denominated assets will experience a decline in the value of these assets, should the domestic currency appreciate against the foreign currency.

Banking is gradually being transformed from a routine personal financial intermediation process to an active impersonal risk management process, from "relationship" banking to "commodity" banking. The banking industry as a whole can no longer grow and prosper through seigniorage income alone, especially in periods of slow economic growth and asset deflation. It must find new sources of income in the other segments of the financial service industry assuming higher risks. "Banks seeking to keep the deposits of customers unhappy with current yields on CDs and earn fees in the process have turned to investment products, but now they must also be prepared for risk" ("Managing Risk" 1994, 86–92). But even

banks which have stayed with traditional lending are now assuming higher risks for two reasons. First, fixed rate and fixed term loans and investments have been replaced by floating rate and variable term loans and investments. Second, top quality borrowers have fled to alternative sources of financing, leaving banks with low quality/high risk borrowers. "Business and consumer lending, once stable markets for commercial banks, have become significantly riskier as top-quality credits have fled banking for securitization or the securities markets" (Furash 1994, 34).

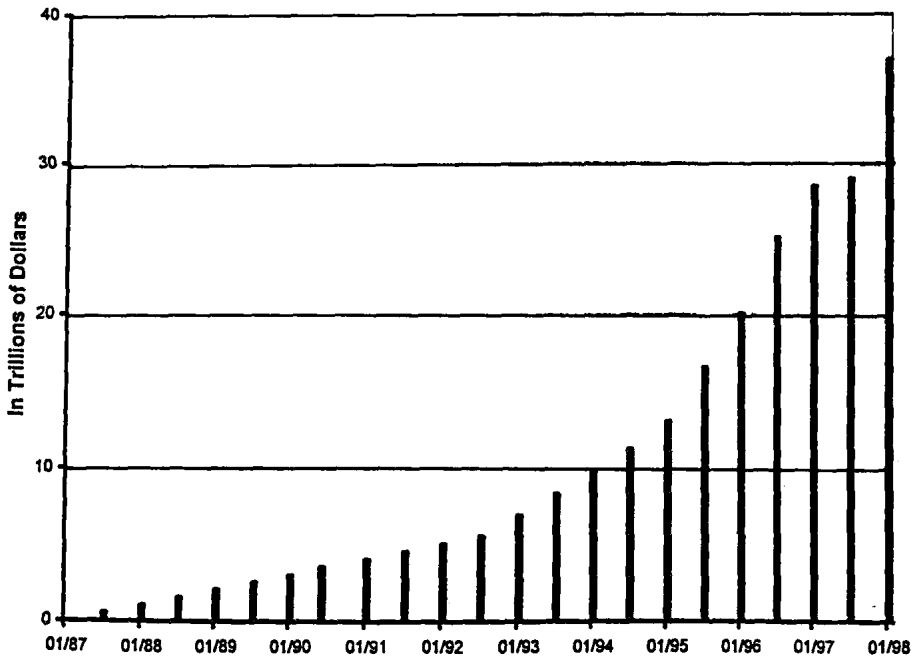
Accommodating the transformation of the banking industry are three major developments: First, the revival and extension of risk measurement methods such as Maculay's Duration Analysis, a measurement of the average time it takes for a financial asset to complete its stream of coupon payments; Markowitz's portfolio selection model; and Sharpe's, Lintner's, and Black's Capital Asset Pricing Model, measurements of investment risk; and Value at Risk (VAR), a measurement of market risk. Second, the development of both hardware and software technologies for monitoring financial risk exposure. Third, financial reengineering, the development of financial derivative products, such as Forward Rate Agreements (FRAs), Futures, Options, and Swaps.

Deriving their value from an underlying interest, an equity index, a debt instrument, a currency, and so on, financial derivatives allow financial institutions and investors in general to hedge their balance sheet against financial risks:

- To hedge their balance sheet against short-term interest rate fluctuations, banks can enter Forward Rate Agreements (FRAs), interest rate futures, and interest rate futures options contracts.
- To hedge their balance sheet against medium term interest rate fluctuations they can enter interest rate cap, floor, collar, and swaption agreements.
- To hedge their positions against long-term interest and foreign exchange fluctuations, banks can enter interest rate and foreign currency swap contracts.

One of the major advantages of financial derivatives is that they can be incorporated into a bank's risk management strategy. Financial derivatives provide banks with protection against risks and improve their financial performance by shifting risks to third parties. "With a solid grounding in the basics of derivatives, bankers can appreciate the potential of these instruments to manage a host of risks and to increase profitability through improved performance" (Casserley and Wilson 1994, 42).

Figure 1.1
Financial Derivatives Value (1988–1998)



Source: U.S. Comptroller of the Currency, *Quarter Derivative Fact Sheet.*

Financial derivatives also provide protection against financial risks to the world's major corporations.

Southern Company is exposed to market risks in both its trading and non-trading operations. The non-trading operations are exposed to market risks, including changes in interest rates, currency exchange rates, and certain commodity prices. To mitigate changes in cash flows attributable to these exposures, the company has entered into various derivative financial instruments. (Southern Company Annual Report 1997, 28)

The company transacts in foreign currencies, primarily European, and may be exposed to financial and market risk resulting from fluctuations in foreign currency exchange risks, particularly the British pound sterling. The volatility of the pound and other currencies will be monitored in the coming years and the company may utilize hedging programs, currency forward contracts, currency options and/or other derivative financial instruments commonly used to reduce financial market risks. (MTI Technologies Annual Report 1999)

The growing use of financial derivatives by both banks and their corporate clients has created its own fast growing industry, especially in the late 1980s. According to the U.S. Comptroller of the Currency *Quarter Derivative Fact Sheet*, the value of financial derivatives held by U.S. banks reached $38 trillion in the second quarter of 1998 (see Figure 1.1). This staggering figure consists of $10 trillion in futures and forwards contracts, $11 trillion in swaps, and $7 trillion in options; $20 trillion are in interest rate derivatives, and $8 trillion in exchange derivatives. Chase, J. P. Morgan, City Bank, Nations Bank, and Citibank are some of the biggest U.S. bank holders of derivative contracts.

To perform their new function, risk management, banks have been shifting the focus of their organization from branch expansion and relations management to risk monitoring, measurement, and control. Banks have further shifted the focus of their personnel recruitment and retention policy from account executives and credit officers to financial engineers and rocket scientists imbued in mathematical and statistical models rather than in customer relations.

At the core of the new banking organization is the risk management department which, together with senior management, develops and implements risk management strategies:

- Writes risk management guidelines
- Sets risk tolerance levels, and approves risk measurement and risk control methods
- Devises risk monitoring procedures that allow senior management to assess its risk exposure to market risks
- Develops procedures to minimize the misuse of financial derivatives by bank traders and asset managers.

An introduction into banking risks and risk management in a globalizing economy, the remainder of the book takes a more detailed look at banking risks, their measurement, monitoring, and control, with emphasis on the use of financial derivatives to control three major banking risks: the interest rate, exchange rate, and credit risks that are at the core of banking business, in seven chapters. Chapter 2 begins with the definition of risk and the discussion of the different philosophical approaches to risk management and continues with the discussion of a number of risk management operational issues, such as banking risk identification and classification, banking risk measurement, monitoring, and control with on-balance sheet and off-balance sheet methods. Chapter 3 discusses

the evolution of banking risk management and the banking environment and industry in the twentieth century. Particular attention is paid to the difference in risk management methods during the fragmented and highly regulated economy of the first three-quarters vis-à-vis the highly integrated global economy of the last quarter of the century. Chapter 4 reviews major financial derivative products: forwards, futures, option, caps, collars, and swaps, and their uses as risk management and speculation products. Chapter 5 discusses in more detail the management of credit risk. Particular attention is paid on an on-balance sheet risk management method, scoring, and rating, and on two off-balance sheet methods, credit options and credit swaps. Chapter 6 discusses in more detail the management of interest rate risk. Chapter 7 discusses in more detail the management of foreign currency risk, and Chapter 8 summarizes the discussion.

NOTES

1. Indeed, according to the U.S. Labor Department Handbook, between 1925 and 1973, the Consumer Price Index displayed a relatively small fluctuation. The same is true for interest rates after the 1933 banking regulations, and for the exchange rates after the 1947 Bretton Woods Accord.

2. According to the Board of the Federal Reserve System's 1982 *Historical Chart Book*, for the period 1940–1980, the number of U.S. banks remained roughly the same, while their branches increased from 4,000 in 1940 to 40,000 by 1980.