Chapter III

Effects of consolidation on financial risk

1. Introduction

This chapter considers the potential implications of financial consolidation for financial risk. Financial risk is defined to encompass both individual financial institutions and a systemic financial crisis.

The chapter's objective is to assess the impact of *consolidation* on risk, *not* to judge whether consolidation in combination with *other developments* has led to a net change in the risk of either individual financial institutions or the financial system. Indeed, it is possible to argue that the probability that a given shock will either threaten the solvency of a particular firm or develop into a systemic event has, on net, declined over the last decade. Many of the reasons for such a judgement, such as regulatory reforms designed to increase bank capital and reduce moral hazard, and the development of efficient markets for a variety of financial instruments, probably have little to do with consolidation per se. Others, such as increased geographic diversification, may have resulted substantially from consolidation. In both cases, this chapter attempts to isolate the "partial" implications of financial consolidation.

As the previous paragraph suggests, the objective of isolating the effects of consolidation is much easier to state than to achieve. Consolidation, as discussed in Chapter II, is but one of several powerful forces causing change in the financial system, and each of these forces affects and is affected by the others.

The chapter begins by specifying a working definition of systemic financial risk (Part 2). The primary objective is to provide a common analytical framework for evaluating the potential impacts of consolidation. This definition is used throughout both the chapter and the broader study. It emphasises losses of economic value or confidence, as well as the probability of significant adverse effects on the real economy, as defining characteristics of systemic risk. It also argues that the possibilities for negative real economic effects generally arise from disruptions to the payment system and to credit flows, and from the destruction of asset values. However, it should be noted that the systemic risk aspects of the payments system are not discussed in this chapter, as this topic is covered in Chapter VI.

Once systemic risk is defined, the potential implications of financial consolidation on individual firms and systemic risk are discussed for three separate geographic regions: the United States, Europe and Japan (Parts 3, 4, and 5). Annexes focus on the potential effects of consolidation on systemic risk management in Canada and on the possible effects of strategic alliances on financial risk. The geographic distinctions were chosen in large part because each region has distinct economic characteristics, including the structure of its financial system, its position in the macroeconomic cycle, and the nature of its ongoing financial consolidation. These characteristics could significantly influence the ways in which consolidation is affecting and will affect financial risk. Each geographic section is organised in a similar manner, although the authors were given considerable latitude to pursue issues most relevant to their area.

The discussion of individual firm risk focuses on the question: Can we make a judgement regarding whether consolidation has led or will lead to financial institutions that are more or less risky on a standalone basis?

The discussion of systemic risk begins by considering whether financial consolidation has, or is expected to lead to the creation of a new class of firms that are too big to fail, liquidate, or

discipline effectively. The analysis of systemic risk then reviews the potential effects of consolidation on key characteristics of economic "shocks" that may become a systemic event. These characteristics include: (i) "direct" interdependencies between firms and markets through interfirm on- and off-balance sheet exposures, (ii) "indirect" interdependencies through correlated exposures to non-financial sectors and financial markets, and (iii) the degree of transparency of firms and markets, including the role played by market discipline. For example, consolidation could affect firms' direct interdependencies through the interbank market by reducing the number of players and counterparties. Consolidation could also affect firms' indirect interdependencies by encouraging greater reliance on markets for funding as well as by encouraging increasingly similar investment objectives; both could result in an increase in the correlation of firms' exposures. Finally, consolidation may induce firms to undertake larger cross-border and cross-product activities that may increase their complexity, thereby affecting their transparency to markets and regulators. Where relevant, both domestic and cross-border effects are discussed. In addition, the importance of both institutions and markets is emphasised.

The final portion of each geographic section identifies the key areas of policy concern raised by the previous discussion. As is the case with other portions of the study, specific policy recommendations are not the objective. Rather, identification and perhaps prioritisation of the most important concerns are sought.

2. A working definition of systemic risk

Systemic financial risk is the risk that an event will trigger a loss of economic value or confidence in, and attendant increases in uncertainly about, a substantial portion of the financial system that is serious enough to quite probably have significant adverse effects on the real economy. Systemic risk events can be sudden and unexpected, or the likelihood of their occurrence can build up through time in the absence of appropriate policy responses. The adverse real economic effects from systemic problems are generally seen as arising from disruptions to the payment system, to credit flows, and from the destruction of asset values.

Two related assumptions underlie this definition. First, economic shocks may become systemic because of the existence of negative externalities associated with severe disruptions in the financial system. If there were no spillover effects, or negative externalities, there would be, arguably, no role for public policy. In all but the most highly concentrated financial systems, systemic risk is normally associated with a contagious loss of value or confidence that spreads to parts of the financial system well beyond the original location of the precipitating shock. In a very highly concentrated financial system, on the other hand, the collapse of a single firm or market may be sufficient to qualify as a systemic event. Second, systemic financial events must be very likely to induce undesirable real effects, such as substantial reductions in output and employment, in the absence of appropriate policy responses. In this definition, a financial disruption that does not have a high probability of causing a significant disruption of real economic activity is not a systemic risk event.

This definition is consistent with most of the definitions of systemic risk proposed in the literature.[44] However, this definition is stricter than most because it explicitly requires (i) that the negative externalities of a systemic event extend to the real economy, and (ii) that this is highly probable to occur. The emphasis on real effects reflects the view that it is the output of real goods and services and the accompanying employment implications that are the primary concerns of economic policymakers.

Financial institutions and markets can be hit by shocks that originate in the real sector, in financial markets, or from within the financial industry. When considering a financial shock,

[44] See Kaufman (1999) and the Bank for International Settlements (1992).

and whether it may have systemic potential, it is useful to distinguish between *impact* and *transmission* effects. In addition, the *width* of a shock can be defined as the fraction of firms (in terms of their market share) or markets simultaneously affected at impact. The *depth* of a shock can be defined as the fraction of firms or markets subsequently affected by the shock during the transmission phase. Thus, a systemic financial risk event can be viewed as a shock whose impact and transmission effects are wide and deep enough to severely impair, with high probability, the allocation of resources and risks throughout the financial and real economic systems.

Once a financial event has become systemic, effects on the real economy are generally thought to occur potentially through three channels. First, payment system disruptions, including bank runs, may cause the failure of illiquid but solvent firms. Second, disruptions in credit flows may create severe reductions in the supply of funds to finance profitable investment opportunities in the non-financial sector. Third, collapses in asset prices, perhaps induced by a drastic decline in the aggregate money supply caused by bank runs or by a general decline in the liquidity of financial markets, may induce failures of financial as well as non-financial firms and households, and decrease economic activity through a decline in wealth and an increase in uncertainty.

Most systemic crises that have occurred in G10 and other countries in the past 50 years have exhibited at least one of the defining characteristics of systemic risk events just discussed. In addition, the economic significance of the real effects of systemic banking problems is witnessed by the large costs that have been associated with the resolution of banking crises and wind-downs of banking organisations. Such costs have been estimated to range from an average of about 4% of GDP in developed countries to an average of about 9% in developing economies.[45]

3. Effects of consolidation in the United States

This section discusses the potential effects of financial consolidation on the riskiness of individual US financial firms and on the potential for a negative economic shock, either financial or real, to become a systemic financial event in the United States.

Risk of individual financial institutions

This subsection focuses on the effects of three types of consolidation on the risk of individual financial institutions: (i) consolidation of large banking organisations in the United States, (ii) universal-type consolidation between US banking organisations and other types of US financial institutions, such as investment banks or insurance companies, and (iii) international consolidation involving US banking organisations. While not a comprehensive list, it covers the significant combinations involving those large US banking organisations that may impose substantial burdens on the safety net and whose failures may have systemic consequences.

The main topics covered are how consolidation may affect the risk of these institutions by altering their (a) geographic diversification, (b) product diversification, (c) managerial efficiency, (d) operating risk, and (e) market power rents. Before proceeding, an analytical framework that links these topics to the risk of an individual financial institution is outlined.

Under the so-called Altman z-score model, risk is measured as the number of standard deviations an institution's earnings must drop below its expected value before equity capital is

[45] See Caprio et al (1998), Caprio and Kinglebiel (1997) and Lindgren, Garcia and Saal (1996).

depleted.[46] Although this framework has its limits, it is useful to think of the contributions to risk in terms of factors that affect expected earnings (returns), the variation in earnings, capital, and the institution's trade-off along the efficient risk-return frontier.[47] For example, managerial efficiency and market power rents contribute primarily to expected earnings, whereas geographic diversification, product diversification, and operating risk primarily contribute to the variation in earnings.

It is important to recognise the endogeneity of the location of the efficient risk-return frontier, the choice of the point on the frontier, and equity capital k. That is, the changes in expected earnings and variations in earnings brought about by consolidation through altering managerial efficiency, market power, geographic and product diversification, and operating risk may be thought of as pushing in or out the efficient frontier. For example, a reduction in risk may raise future earnings and contribute to capital through retained earnings because a safer banking organisation may pay lower risk premiums on debt and other contingent claims, have reduced regulation or supervision costs and an increased capacity to issue credible financial guarantees. Furthermore, as discussed below, the improved geographic diversification brought about by bank mergers and acquisitions (M&As) tends to shift up the efficient frontier (ie lowers variations in earnings for given expected earning), but also tends to be accompanied by a shift into higher earnings, riskier lending (ie raises both expected earnings and variations in earnings).[48] Research also suggests that increases in market power rents increase franchise value, shift up the frontier, and tend to bring about safer lending and increased equity capital.[49]

Geographic diversification

To examine the risk implications of geographic diversification, this section focuses on theory and empirical evidence on the first and third main types of consolidation involving large banking organisations – consolidation of large banking organisations in the United States (first subsection) and international consolidation of US banking organisations (second subsection).

Geographic risk diversification effects of the consolidation of large US banking organisations

Consolidation of US banking institutions often involves geographic diversification, as institutions expand into new local markets. Geographic consolidation may diversify risks because the returns on loans and other financial instruments issued in different locations may have relatively low or negative correlations.

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[46] To illustrate, let $\mu \equiv$ expected earnings, $\sigma \equiv$ standard deviation of earnings, and $k \equiv$ capital. The z-score $\equiv (\mu+k)/\sigma$ is the number of standard deviations below the mean earnings that just wipes out capital. Under standard economic theory, a firm trades off between higher expected earnings and lower variation of earnings along its μ-σ efficient frontier, as well as choosing its capital k. For a recent empirical analysis of the cross-sectional relationships between a z-score measure of insolvency risk, charter value and bank size, see De Nicoló (2000).

[47] The z-score may be inadequate for measuring the risk of failure, since the extreme negative tail of the earnings distribution may not be well approximated by just the mean and standard deviation of the distribution.

[48] We also note the possibility that diversification can increase financial institution risk. An institution's risk may increase if the additional assets have low expected returns, low capital or high variation of returns (Haubrich 1998). In addition, the expanded institution may choose to take on more risk, for example, by reducing loan monitoring (Winton 1999).

[49] See Keeley (1990). Another potential effect of consolidation on risk not treated here regards the abilities of a firm to engage in credit risk and market risk modelling. On the one hand, lower fixed costs of implementation induced by consolidation may help a firm to push up its μ - σ efficient frontier and to choose capital k more efficiently. On the other hand, risk modelling might be harder for consolidated institutions involved in a broader range of activities, since the complexity of risk modelling might rise substantially, and appropriately aggregating the risks associated with each activity may be quite difficult.

Table III.1 gives information about the distribution of bank earnings across geographic regions in the United States. The table shows the means and correlations of bank earnings, as measured by return on equity (ROE), across the eight regions of the United States defined by the Bureau of Economic Analysis over the period 1979-98. These data suggest very strong diversification possibilities from cross-regional consolidation that may shift up the efficient risk-return frontier. Bank earnings in many region pairs, particularly when the regions are non-contiguous, have fairly low correlations, including one negative correlation. Consistent with these data, research generally finds that larger, more geographically integrated institutions tend to have better efficient frontiers.[50]

There is also some evidence regarding bank M&As that bears on this issue. Acquiring banks tend to bid more for targets when the M&A would lead to significant diversification gains, consistent with a motive to diversify risks.[51] Studies have also found that M&As tend to improve profit X-efficiency,[52] and that this improvement could be linked to an increased diversification of risks.[53] After consolidation, institutions tend to shift their asset portfolios from securities to loans, to have more assets and loans per dollar of equity, and to raise additional uninsured purchased funds at reduced rates. This evidence is consistent with a more diversified portfolio that allows institutions to shift to a higher risk-return frontier. Other studies that do not directly focus on M&As have found consistent results.[54]

This research suggests that consolidation of banks within the United States is likely to lead to reductions in risk due to geographic diversification. However, to the extent that larger organisations tend to take on larger risk exposures to individual obligors or industries, or tend to take part of the diversification gains as the opportunity to make higher risk investments, the reductions in total risk may be offset. [55]

Geographic risk diversification from international consolidation

There may be greater risk diversification benefits, on average, from cross-border consolidation than from within-nation consolidation, because nations can differ greatly in their macroeconomic cycles and their monetary and fiscal policies.

Unfortunately, there is little research that tests whether this potential for diversification benefits has been exploited. Correlations of bank returns on equity across nations suggest strong diversification possibilities for US banking organisations venturing abroad. Banks headquartered in the United States tend to be more profit-efficient than other banks both at home and in other nations. Most of the US efficiency advantage is on the revenue side of the income statement, rather than the cost side. Although it is difficult to disentangle the causes of these efficiencies, the results are consistent with the hypothesis that at least some US banks have been successful in taking advantage of international risk diversification.[56]

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[50] See eg McAllister and McManus (1993), Hughes, Lang, Mester and Moon (1996 and 1999), Demsetz and Strahan (1997) and Hughes and Mester (1998).

[51] See Benston, Hunter and Wall (1995).

[52] X-efficiency measures how close the performance of a firm is to the performance of a best-practice firm facing the same exogenous conditions.

[53] See Akhavein, Berger and Humphrey (1997) and Berger (1998).

[54] See Berger and Mester (1999) and Hughes, Lang, Mester and Moon (1999).

[55] Note that some of these gains from geographic diversification of risks may be achieved without consolidation. Institutions may engage in cross-regional lending or investments, or buy and sell financial instruments in national secondary markets (eg mortgage pools, securitised commercial loans and derivatives).

[56] See Berger, DeYoung, Genay and Udell (2000).

Product diversification

For analysing the effects of product diversification, the focus is on evidence regarding universal-type consolidation, where the change in product mix is most substantial. Universal-type consolidation may diversify risks (ie lower variations in earnings for given expected earnings) because the returns across different financial services industries may be less highly correlated than the returns within a single industry alone. However, consolidation with other types of financial firms could increase the risk of a banking organisation (ie raise variations in earnings for given expected earnings) if the other activity has low expected earnings, high variation of earnings, or a low capital ratio.

Again, there is relatively little research on this topic. Some simulation-type studies combine the rates of return earned by different types of assets in US institutions and mostly find relatively limited potential for diversification benefits.[57] A study of US banks and bank holding company securities affiliates similarly found very limited diversification benefits.[58]

Managerial efficiencies

To examine the managerial efficiency implications of consolidation, this section reviews evidence on all three of the main types of consolidation – consolidation of large banking organisations in the United States, universal-type consolidation and international consolidation of US banking organisations.

The consolidation of banking organisations can create cost scale efficiency gains through such effects as spreading fixed costs over more units of output, taking better advantage of technology, and issuing securities in larger sizes. Alternatively, consolidation may result in cost scale efficiency losses by creating organisational diseconomies in managing the larger organisation. Most empirical research has found that the average cost curve in the United States has a relatively flat U-shape, with medium-sized banks slightly more cost scale efficient than either large or small banks. For a detailed review of the evidence on scale economies, see Chapter V.

Universal-type consolidation may create the potential for changes in scope efficiency, or how well joint producers perform relative to specialists under the same exogenous conditions. Cost scope efficiency gains from consolidation may for example occur through sharing physical inputs, information systems, or databases. As noted in Chapter V, research on scope efficiency within a single category of financial institution in the US usually finds very little evidence of substantial cost scope economies or diseconomies within the financial sector.

International consolidation may involve any or all of scale, scope, or X-efficiency effects. As noted in Chapter V, limited research suggests some international diffusion in efficiency.

Operating risk

The term "operating risk" is a somewhat ambiguous concept that can have a number of definitions. Here the focus is on risks created because senior management cannot fully monitor and control its employees, creating the possibility of losses due to "mistakes" such as operating errors, fraud, crime, and unintended credit and market risks. The potential effects of consolidation on the operating risk of financial institutions are of concern because operating failures can quickly create losses that affect an institution's financial condition. Nonetheless, operating risk is the least understood and least researched contributor to financial institution risk. Also, operating failures occur relatively infrequently, and data on the internal operations of

[57] See eg Kwast (1989), Rosen, Lloyd-Davies, Kwast and Humphrey (1989), Boyd, Graham and Hewitt (1993) and Saunders and Walter (1994).

[58] See Kwan (1997).

a financial institution are typically not publicly available. Studies of bank risk and failure typically use balance sheet and income statement ratios, which are not useful indicators of financial institutions' internal operations.

However, it is reasonable to conjecture that operating risk might increase with all three of the main types of consolidation, ceteris paribus.[59] For consolidation of large banking organisations in the United States, the potential for managerial inefficiencies in operating and monitoring the institution arising from the organisational diseconomies associated with size and geographic distance also apply to operating risk.

As the organisational and geographic distance between senior management and individual employees grows, additional layers of management and policies and procedures tend to replace direct supervision, and may reduce managerial control. The disruptions from the M&A process itself may also contribute to difficulties in supervising employees who may not perform exactly as intended by management.[60] These same problems in monitoring and controlling employees who may create operational problems might occur for universal-type consolidation. Organisational diseconomies might be relevant for universal banks if senior management teams stray from their areas of core competency. International consolidation may create the same types of organisational difficulties in controlling operating risks as domestic consolidation. The larger distances and differences in time zones associated with operating international organisations may exacerbate these problems. Also, differences in language, culture and regulatory/supervisory structures faced by foreign affiliates may make it even more difficult to monitor and control employees who may create operating failures.

Market power rents

If consolidation increased a firm's market power, the resulting increase in franchise value, equivalent to an increase in capital, could lower the firm's risk profile. Indeed, such a view seemed to underlay restrictions on competition, such as severe limitations on intra- and interstate banking, that prevailed in the United States over much of the 20th century. In the long run, however, it may well be that a competitive and flexible banking and financial system is more stable.

In any event, research suggests that consolidation of US banking organisations has had and is likely to have only minor effects on market power for three reasons. First, most types of M&As do not increase local market concentration significantly, and local markets are where market power rents are most likely to occur. Second, antitrust authorities and potential market entrants are likely to restrain the exercise of substantial market power. Third, deregulation, advances in applied finance and technological change may be increasing the degree of competition in local banking markets.[61]

Conclusions

Existing research suggests some potential for both reductions and increases in the risks of individual US financial institutions from consolidation, and thus no unambiguous conclusion can be drawn. The greatest potential for risk reduction appears to be from geographic

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[59] As with other types of risk, technological improvements in risk management may offset potential increases in operating risk. Again, the discussion here is focused on the partial effects of consolidation.

[60] As it becomes more difficult to monitor and control individual employees, risks from operating errors, problems in monitoring the credit risk of counterparties and difficulties in monitoring intraday credit exposures in the payment system (eg Herstatt risk) might be more severe for large merged institutions. In addition, unintended overexposures to one industry, one nation, or one region (eg East Asia in 1997) fraudulent or criminal activities, and large, unauthorised or unwise positions in financial markets might all be more likely to occur.

[61] See Chapter V for a more comprehensive discussion of the effects of consolidation on competition.

diversification of risks from the consolidation of large banking organisations in the United States and (especially) international consolidation of US banking organisations. Some limited benefits from product diversification may also occur as a result of universal-type consolidation. Modest managerial efficiency gains are also possible from all three types of consolidation, which could lower risk by increasing expected returns, pushing up the efficient risk-return frontier, and providing more of a buffer against variation in returns. However, the managerial efficiency benefits appear to be less likely for universal-type consolidation, which could create scope diseconomies if managers stray too far from their areas of core competence. Because it does not appear likely that consolidation has led to systematic increases in market power in the United States, any resulting economic rents are unlikely to have had substantial effects on individual bank risk.

Increases in risk from consolidation might arise from operating risks due to the difficulty of monitoring and controlling the actions of individual employees in the consolidated organisations. This potential for harm might be more likely for universal-type and international consolidation, where there are greater organisational and geographic distances between senior management and employees. Organisations might be vulnerable to this kind of risk through operating error, failure to monitor credit risks and risk concentrations, fraudulent or criminal activities, or through exposures to unintended market risk. Yet, advances in risk management techniques brought about by technological progress may counterbalance the potential for an increase in operating risk following consolidation.

Systemic risk

In the United States, concerns regarding systemic risk have focused traditionally on the implications of bank deposit runs for the payment system, the money supply and financial intermediation. However, the advent of deposit insurance, an understanding of the need to maintain an adequate supply of money and money market liquidity, and the development of prudential supervision and regulation have essentially eliminated the threat of deposit runs by retail customers (primarily households and small businesses) of insured depository institutions (commercial banks, thrifts and credit unions).[62] Indeed, systemic deposit runs and flights to currency have not occurred in the United States (or any other G10 nation) since World War II. As a result, discussion of systemic risk has shifted more to consideration of issues raised at the wholesale level.[63] This refocusing has been reinforced by the forces causing changes in the US and global financial systems discussed in Chapter II. For all of these reasons, the discussion below concentrates on attempting to identify the potential effects of financial consolidation on systemic financial risk that may arise in the institutions and markets that provide wholesale financial services.

Creation of firms that may be "too big to fail", liquidate, or discipline effectively

There is no doubt that the evolution of financial institutions and markets, including their consolidation as defined in this study, has created larger and more complex banking organisations in the United States. Indeed, these developments have caused the Federal Reserve

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[62] Estimates from the Federal Reserve Board's 1998 Survey of Consumer Finances indicate that only 2% of US households that hold deposits have uninsured deposits in US depository institutions. Uninsured deposits are estimated to represent about 14% of total US household deposits. For more details on the 1998 Survey of Consumer Finances see Kennickell et al (2000).

[63] Wholesale financial services generally encompass the provision of intermediation, investment banking, securities trading, asset management and payments services to corporations and other institutions. Excellent discussions of the changing nature of systemic risk are found in Bank for International Settlements (September 1998) and Chapter IV of International Monetary Fund (1999).

to define a category of financial institutions called large, complex banking organisations, or LCBOs. In general, LCBOs (i) have significant on- and off-balance sheet risk exposures, (ii) offer a broad range of products and services at the domestic and international levels, (iii) are subject to multiple supervisors in the United States and abroad, and (iv) participate extensively in large-value payment and settlement systems.

The set of LCBO banking organisations is not homogeneous, and even simple comparisons reveal clear variations in business mix. The LCBOs may be divided roughly into five "peer" groups that also correspond approximately to a declining degree of complexity. "Active Trading" firms are distinguished from the others in terms of their trading and derivatives activities, as well as in other dimensions such as global and custodial activities. The characteristics of "Second Tier" companies resemble some aspects of the Active Trading firms, but with somewhat less across-the-board prominence. A group of "Trust and Custody" organisations have substantial fiduciary businesses and a range of complex trading or other activities that support those businesses. A "Cusp" set of banking organisations with predominantly traditional activities have commenced speciality businesses and expanded in ways that make them look somewhat like the Second Tier firms. Lastly, a group of relatively more "Traditional Intermediaries" continue primarily to fund themselves with deposits and make loans.

Despite their prominence, it would be seriously misleading to apply the term "too big to fail" to the LCBOs. It is the explicit policy of the US bank supervisory agencies that no banking organisation is too large to fail in the sense that it can be required to contract assets, divest affiliates, cut dividends, replace management, sell or close offices, and the resultant entity or entities be sold to another institution. Nor is there any commitment to assure payment, let alone full payment, to any uninsured depositor or other non-deposit creditor of any bank, bank holding company, or financial holding company. Given this policy, the practical challenge faced by US bank supervisors is how to achieve the orderly closure or "wind-down" of a troubled LCBO without raising systemic concerns. The changed nature of the problem is also illustrated by the fact that probably the most complex large banking organisation wound down in the United States was the Bank of New England Corp. Its USD 23 billion in total assets (USD 27.6 billion in 1999 dollars) in January 1991 when it was taken over by the government pales in comparison to the total assets of the largest contemporary firms (eg in December 1999 Citigroup had USD 716.9 billion and Bank of America Corp had USD 632.6 billion).

From the perspective of this section of the study, the key issue is therefore: Has consolidation, defined to include both increases in size and complexity, increased the risk that the failure of an LCBO would be disorderly?[64]

The answer to this question is complex, and no one can say precisely how the sundry and often subtle arguments should be weighed. Indeed, the answer to the question will surely depend on the exact nature of a given systemic risk event, each of which will inevitably have a number of idiosyncratic characteristics. Having said this, there are reasons to believe that financial consolidation as it has evolved in the United States has increased the risks that the failure of an LCBO would be disorderly.

The resolution of LCBOs has become more difficult and uncertain as the corporate structure and risk management practices of LCBOs have become, at least in part because of consolidation across product and international borders, more complex. LCBOs frequently define their principal business lines so that the same line is conducted in more than one of an individual

[64] Note that the question assumes that an LCBO has failed, or is about to fail. Thus, the discussion here is concerned with how consolidation has affected the probability of a disorderly workout, but not whether the probability of an LCBO failure has changed. The latter topic was addressed in part 1 of this section.

LCBO's major legal entities.[65] The LCBO generally manages those business lines without regard to a given line's location in one or more legal entities, and the supporting management information systems and corporate control functions tend to be structured along business lines and not legal entities. The result may be a financial institution with substantial intragroup transactions and exposures that may be difficult to disentangle.

The complexities are magnified when the LCBO has significant international activities and the management and control structures straddle national borders as well as legal entity lines. For example, conflicting approaches to bankruptcy across countries and the possibility that host country supervisors will "ring-fence" portions of troubled institutions are long-standing, unresolved issues. In addition, OTC derivatives and foreign exchange activities may have offsetting positions that extend across both domestic and foreign legal entity lines. Another complicating factor is that several large US banks, including several that are LCBOs, are now owned by foreign banks. Although the US chartered banks would be subject to FDIC insolvency proceedings in the event of their failure, stresses and conflicts are likely to arise in the event of the failure of the parent organisation.

Indeed, the complexity and uncertainty of the overall legal conventions governing a failure resolution in the United States have almost surely been heightened by financial consolidation. While the FDIC will, as always, be the receiver of a failed insured depository institution, the parent holding company and most other non-bank entities, which may have become much more prominent as a result of consolidation, will be subject to a US Bankruptcy Code proceeding. An exception is a broker-dealer that is part of a consolidated financial services holding company; it would be liquidated under the Securities Investor Protection Act. In addition, an Edge Corporation, which is usually a subsidiary of a bank, could be liquidated under either the Bankruptcy Code or the Federal Reserve Act by the Federal Reserve Board. And, as suggested in the previous paragraph, it is currently unclear whether the foreign branch of a US chartered insured depository institution would be liquidated by the FDIC or by a separate proceeding in the nation where the branch is licensed.

The FDIC's choice of resolution methods is constrained by the least cost resolution standard imposed by the FDIC Improvement Act (FDICIA) of 1991. Under least cost resolution, the total cost to the FDIC must be the least costly method for meeting the FDIC's insurance coverage obligations.[66] One important factor is the relative size of domestic deposits in total liabilities. Domestic deposits are relevant because of the so-called "domestic depositor preference" of US law enacted in 1993. If domestic deposits are substantially less than the estimated realisable value of assets, liquidation may produce a net positive balance and thus result in no cost to the FDIC. Although such a scenario would not necessarily require a liquidation under the least cost test, at a minimum it would seem to complicate the choice of resolution methods in a systemic risk situation.[67] As a result, the probability of supervisors needing to invoke FDICIA's so-called "systemic risk exception", under which uninsured creditors can be protected, may have increased. However, because the exception has never been used, there is considerable uncertainty regarding how and when it might be applied.

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[65] Under the holding company structure prevalent in the United States, major legal entities are usually separately incorporated, but wholly owned subsidiaries of the holding company parent. In bank holding companies, the bank(s) is normally the primary asset of the holding company. As of the end of 1999, banking assets exceeded 70% of total bank holding company assets at 17 of the 21 largest US BHCs, all of which were LCBOs. However, banking assets exceeded 95% of total assets at only seven of these institutions.

[66] For a brief summary of FDICIA's major provisions see FDIC (December 1997). Further discussion is contained in Benston and Kaufman (1997).

[67] For example, if another resolution method would preserve more franchise value, the net cost to the FDIC could be lower.

Consolidation across business lines has helped to complicate the failure resolution process in other ways. Historically in the United States, government-led resolution has generally worked well for traditional banking intermediaries. However, new complications are likely to arise in managing some of the more "market-oriented" business lines that have become prominent activities at some LCBOs, partly as a result of financial consolidation. Such lines would require that the resolution process address the fact that they need active day-by-day expert management, continuous access to markets and funding, and a high level of market confidence.

OTC derivatives and foreign exchange trading are probably the most important examples of where resolution difficulties are likely to arise. These activities are highly sensitive to a bank's credit standing and market sentiment, and thus become increasingly difficult to maintain and manage as a bank's financial condition deteriorates. For example, if a bank defaults on any of its obligations, its counterparties in these markets may very quickly proceed to close out their transactions before the bank fails and the FDIC has a chance to intervene. An additional complication arises because derivatives transactions are often booked centrally or in a limited number of locations, rather than in the legal entity that originated them.

Extensive participation by LCBOs in securities and insurance underwriting activities would further complicate the winding down of a troubled institution. For example, the near or actual failure of an LCBO that was engaged in either or both activities as a major business line would raise issues of coordination among diverse supervisors and potentially conflicting supervisory priorities.

Another reason why the probability of an LCBO resolution being disorderly may have risen is the increased speed, observed in recent failures or near failures, at which a troubled LCBO is likely to decline. The speed of information dissemination via improved technology, and greater reliance by LCBOs on capital markets for risk management and funding (markets where prices can move quite rapidly), are contributing factors to strong and sometime late-emerging forces of market discipline by creditors and counterparties.

Although it is not clear that consolidation per se is a major factor in the increased potential for a rapid decline at an LCBO, it is possible that consolidation has played a role. For example, and as discussed in Section 1 of this chapter, the increased size and complexity of institutions may have reduced management's ability, as well as that of the supervisor, to recognise the severity of a problem and make hard decisions in a timely manner. As a result, problems that are not addressed promptly have the opportunity to deepen, and now seem to deepen more rapidly. Similar arguments may be made with respect to other market participants. For example, although there have been improvements in the transparency of financial institutions in recent years, the increased complexity of modern LCBOs can mask the full extent of an institution's problems from market participants, especially in the problem's early stages.[68] Such masking tends to increase the probability of a rapid decline in an LCBO's financial condition once market participants realise the full extent of the institution's problems.

Key characteristics of shocks that may become systemic

The likelihood of a shock becoming systemic, and the sizes of its impact and transmission effects, depend on firms' interdependencies. Interdependencies can be classified as *direct* and *indirect.* Direct interdependencies arise from inter firm on- and off-balance sheet exposures. Large direct interdependencies, which might occur if firms have large bilateral exposures, may make the impact and transmission effects of a shock to a set of firms large enough to become systemic. Indirect interdependencies can arise from correlated exposures to non-financial sectors and financial markets. If firms have highly correlated exposures to some non-financial

[68] The impact of consolidation on the transparency of financial institutions is discussed more fully below.

sectors or financial markets, a shock originating in one sector could have an impact large enough to become systemic.

An assessment of the potential impacts of consolidation on the vulnerability of the financial system to systemic risk requires measures of consolidation, measures of financial firms' interdependencies, and some means of relating such measures. As previously observed, detecting the existence of a *causal* relationship between consolidation and interdependencies is difficult, since it requires the explicit consideration of all relevant factors that affect interdependencies. To the best of our knowledge, a detailed analysis of the potential causal links between consolidation and interdependencies is unavailable for US financial firms, and such an analysis is outside the scope of this study.

Instead, this section focuses on measures of firms' interdependencies and on their *correlations* with a measure of consolidation. The finding of an increase (decrease) in interdependencies may signal an increase (decrease) in systemic risk. Moreover, if an increase in interdependencies *and* a positive correlation between interdependencies and consolidation were detected, this finding would suggest consolidation as a possible driving force of increases in systemic risk. Conversely, discovery of no or negative correlation would be consistent with the view that systemic concerns had not increased or had even declined. Although the finding of a significant positive or negative correlation would not necessarily imply that consolidation is a *cause* of interdependencies, consistently strong correlation results would be quite suggestive.

A sample of US-chartered and -owned LCBOs is considered. As was the case in the previous subsection, attention is restricted to LCBOs because difficulties at these firms are those most likely to raise systemic concerns in the United States today. Data for the LCBO sample extend from 1988 to end-1999. Accounting data are taken from the Federal Reserve's National Information Center (NIC) database at the bank holding company level. Sample selection and data construction proceeded in two steps. First, the 18 US-chartered and -owned LCBOs in existence on 31 December 1999 were included. Second, inspection of the sample led to the addition of four more LCBOs that did not "officially" exist at the end of 1999, but which, in our judgement, existed for a long enough proportion of the sample period to be included in the sample.[69] The resulting sample consists of 22 LCBOs.

The importance of the sample LCBOs has increased substantially in recent years. For example, their share of assets as a fraction of the assets of US commercial banks and savings and loans grew steadily from about 21% in 1988 to 54% in 1999. Both the aggregate of the LCBOs and five subsets are examined, with firms classified according to the five "peer" groups described previously.[70]

In order to measure consolidation, a proxy measure of c*onsolidation events* is constructed and a measure of *consolidation intensity* is derived. Consolidation events for an LCBO are measured by the yearly percentage growth of its assets *minus* the yearly percentage growth of assets in the entire banking system. For the sample of LCBOs considered, this measure is a good proxy of their net acquisition activity since LCBO internal growth is close to the asset growth of the entire banking system.[71] Consolidation intensity for an LCBO in a given period is defined as the *sum* of its consolidation events across all years during the period. Accordingly, consolidation intensity for the LCBO aggregate is measured by the *cumulative* percentage rate of growth of

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69 In order to deter inappropriate comparisons, specific LCBOs are not identified.

70 Again, the classification of firms as Active Trading, Second Tier, Trust and Custody, Cusp, and Traditional Intermediaries can be viewed as roughly ordering firms according to their decreasing degree of complexity.

71 For the sample LCBOs considered, inspection of the data indicates that any completed acquisition recorded by the National Information Center database is matched by a *jump* at the same date in an acquirer's yearly asset growth. Moreover, estimates of annual rates of growth of LCBO's assets net of jumps are on average close to and not greater than the banking system's asset growth.

the group's assets since 1988 *minus* the cumulative percentage rate of growth of assets of the entire banking system.[72] For the peer groups, consolidation intensity is multiplied by the group's share of LCBO assets in order to measure the impact of a group's consolidation intensity *relative* to the consolidation intensity of all LCBOs.

Chart III.1 shows consolidation intensity for the LCBOs (graph 1) and for each peer group (graphs 2-6). As shown in graph 1, LCBO consolidation intensity has steadily increased since 1988, with a sizeable jump in 1997. Consolidation intensity has been the highest for Active Trading and Second Tier firms (graphs 2 and 3), followed by Cusp and Traditional Intermediaries (graphs 5 and 6). Consolidation intensity for Trust and Custody firms has been the lowest among LCBOs (graph 4).

The next two subsections document the time patterns of various measures of interdependency during the 1988-99 period, and examine the correlations between firm consolidation intensity and measures of firm *total* and *direct* interdependency. Correlations are measured by correlation coefficients between consolidation intensity and "gross" measures of interdependency, as well as between consolidation intensity and the yearly *deviations* of interdependency measures from their pooled annual means (herein also called "de-meaned" measures).

The correlations between gross measures of interdependency and consolidation intensity embed effects common to all firms, as well as group- or firm-specific-effects. Because they measure total effects, these correlation coefficients are probably the most relevant for assessing the potential for systemic risk. The correlations between deviations of the interdependency measures from their pooled means and consolidation intensity are likely to capture primarily firm- or group-specific effects, since effects common to all firms are (partially) embedded in the time evolution of the pooled annual mean correlation.[73]

Total interdependencies

Total (direct plus indirect) interdependencies are measured by the cross-correlation structure of LCBO percentage changes in stock prices. Stock prices are ideally suited to this purpose, since they reflect market participants' collective evaluation of the future prospects of the firm, including the *total* impact of its interactions with other firms.

For each year in the 1989-99 period, cross-correlations of weekly percentage changes in stock prices (herein also called returns) are computed for each of the 22 sample LCBOs. The average cross-correlation in each year for LCBOs is given by the average taken over all LCBOs' cross-correlations. For each of the five peer groups, the average cross-correlation is obtained by averaging the correlation figures of each firm in a peer group.

Chart III.2 shows the average cross-correlation time series for the LCBOs (graph 1) and for each peer group (graphs 2-6). Graphs 2-6 also depict the time series of deviations of a group's correlations from the LCBO average, indicated with a dotted line. As may be seen in graph 1, until 1995 average LCBO stock return cross-correlations fluctuated significantly, but overall rose only modestly. Since 1995, however, cross-correlations have increased markedly. In particular, the average LCBO stock return cross-correlation jumped about 28%, from an average of 0.42 during 1989-94 to an average of 0.54 during the 1995-99 period, a difference that is statistically significant at the 5% level.

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[72] Consolidation intensity can be also viewed as a proxy of the cumulative change in the market share of LCBOs due to consolidation, since internal growth and net firms' entry in the industry during the sample period have been approximately constant.

[73] Results similar to those presented below were obtained with measures of interdependencies net of the impact of the macroeconomic cycle (as measured by levels and variability of GDP growth, inflation and short-and long-term interest rates), as well as with correlations of measures of interdependencies and consolidation intensity both expressed in deviations from their pooled annual means.

Graphs 2-6 indicate that the dynamics of stock return cross-correlations for each peer group are rather homogeneous. However, cross-correlation *levels* do differ somewhat across groups. The average deviation from the LCBO average during the entire period is *positive* for Active Trading firms, albeit significant only at the 10% significance level. For Trust and Custody firms, average deviations from the LCBO average are *negative* and significant at a 5% significance level. Notice that the Trust and Custody firms are those that exhibit the lowest consolidation intensity among LCBOs. For all other groups of LCBOs, average deviations are not significantly different from zero.

Table III.2 presents correlation statistics between average yearly firm-specific stock return cross-correlations and yearly firm-specific measures of consolidation intensity. As shown in column [1], LCBO average stock return cross-correlations are positively and significantly associated with consolidation intensity. However, an important difference emerges among peer groups. All peer groups exhibit positive and significant correlations *except* the Trust and Custody firms, which exhibit a negative and significant correlation. Again, these firms are precisely those firms whose consolidation intensity is the lowest among LCBOs. Looking at the de-meaned correlations (column [2]), stock return cross-correlations are still positively and significantly associated with consolidation intensity for the full LCBO sample. However, such positive average correlation mainly captures the positive and significant correlations of Active Trading, Second Tier and Traditional Intermediaries firms, since the correlation for Trust and Custody firms is still negative and significant, and that of the Cusp firms is not significantly different from zero. Interestingly, the Active Trading and Second Tier firms are precisely those firms whose consolidation intensity is the highest among LCBOs.

On balance, this evidence on total interdependencies suggests three general conclusions. First, total LCBO interdependencies, as captured by stock return cross-correlations, have significantly increased on average and for each peer group, particularly since 1995. Second, total interdependencies are positively (and significantly) correlated with consolidation intensity for the aggregate of the LCBOs. Third, the positive correlations between total interdependency and consolidation intensity appear to be the strongest for those firms where the degrees of complexity and consolidation intensity are greatest.

Direct interdependencies

Direct interdependencies, and their relationship to consolidation, are examined through measures of firms' exposures to (i) short-term interbank lending, (ii) medium- to longer-term interbank loans, and (iii) derivatives activities. Interbank lending exposures are clearly a potentially important channel through which difficulties arising in one bank may affect and be transmitted to the financial system with potentially adverse systemic consequences.[74]

Since 1995 the growth of derivatives markets and banks' activities in these markets has been dramatic.[75] In particular, the global volume of OTC trading of derivatives instruments rose more than thirtyfold between 1988 and 1998, with explosive growth in the last five years. By contrast, the size of exchange-traded markets increased a still impressive tenfold during 1988-98. As detailed in the previous section, OTC derivatives exposures are a likely spot for resolution difficulties to arise at large and complex banking organisations.[76]

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[74] Furfine (1999) and Bernard and Bisignano (2000) are among recent analyses assessing systemic risk arising in domestic and international interbank markets. Again, the potential effects of consolidation on interdependencies that arise through payment and settlement systems are discussed in Chapter VI.

[75] See Bank for International Settlements (1999a).

[76] For an extensive discussion of OTC derivatives markets and their relevance for international financial markets and systemic risk see Chapter IV, OTC Derivatives Markets, in International Monetary Fund (2000).

All measures of exposure are expressed as percentages of equity capital. Since the focus of this chapter is on risk, exposure-capital ratios are a straightforward summary measure of risk associated with exposure.

Short-term interbank lending

The evolution of short-term interbank lending as a fraction of firms' total equity capital is illustrated in Chart III.3 for all LCBOs (graph 1) and the peer groups (graphs 2-6). For ease of comparison, in graphs 2-6 the total LCBO short-term interbank lending-capital ratio reported in graph 1 is plotted as a dotted line. The interbank lending-capital ratio for the LCBOs has risen steadily since 1989, increasing about 57% from 70% of capital in 1989 to 110% of capital in 1999. It is important to note that total short-term interbank lending exposures have increasingly concentrated in LCBOs. In fact, short-term interbank lending-capital of all US commercial banks has decreased at an average rate of 2% per year during the 1991-99 period. Thus, interbank lending exposures of non-LCBOs have decreased significantly.

Differences among the peer groups are noteworthy. The level of the short-term interbank lending-capital ratio is highest for the Active Trading Firms, followed by the Trust and Custody group, and is approximately the same for the remaining three peer groups. Indeed, this ratio has increased sharply for the Active Trading firms and mildly for the Second Tier firms, has gone up substantially only in the last four years for the Trust and Custody firms, and has remained flat for the remaining two groups. Thus, direct interdependencies through short-term interbank lending exposures relative to capital have increased for the highest and medium complexity firms.

Panel A in Table III.3 reports measures of correlation between consolidation intensity and short-term interbank lending exposures. The correlation between short-term interbank lending-capital ratios and consolidation is positive and significant for the aggregated set of LCBOs (column [1]). Breaking the sample into peer groups, this correlation is *positive* and significant for Second Tier, Trust and Custody, and Cusp firms, and *negative* and significant for Traditional Intermediaries. These relationships hold for both interbank lending-capital ratios and their deviations from the pooled annual mean (column [2]) with the exception of Second Tier firms. Thus, the interbank lending-capital ratio is positively and significantly correlated with consolidation intensity for the peer groups of medium complexity. Note, however, that a positive and significant correlation between short-term interbank lending and consolidation intensity is found both for those peer groups that exhibit a relatively high level of consolidation intensity (Second Tier and Cusp) *and* for the group with the lowest level of consolidation intensity (Trust and Custody). In addition, the Trust and Custody firms exhibit the highest positive correlation among groups. This suggests that other factors beyond consolidation might be at work as driving forces of trends in short-term interbank lending.

Medium- to longer-term interbank loans

Chart III.4 illustrates the evolution of exposures to medium- to long-term loans to all banks (solid line) and to foreign banks (dotted line), expressed as a percentage of equity capital, for all LCBOs (graph 1) and the peer groups (graphs 2-6). As shown in graph 1, this ratio of loans to banks-capital has decreased on average. This drop is primarily due to the reduction of loans to domestic banks. The dynamics of these ratios are similar among firms that have lent the most to other banks (Active Trading, Second Tier and Trust and Custody), and are relatively flat for the other two groups, for whom this type of lending activity is quite small.

Panel B of Table III.3 reports measures of correlation between consolidation intensity and the ratio of medium- to long-term interbank loans to capital. The data exhibit no positive and significant correlations between consolidation intensity and direct interdependencies through medium- to long-term lending to banks. Indeed, the gross correlation is significantly negative for the Active Trading firms. Thus, these results suggest that this measure of interdependency has not been affected by consolidation.

Derivatives activities

The final measure of direct interdependency uses exposure data on derivatives activities. Derivatives activities include OTC and exchange-traded interest rate, foreign exchange, equity and miscellaneous other contracts. Where relevant, exposures on futures, forwards, options and swaps contracts are included. Up until about 1995 exchange-traded contracts were the most common type, but in the second half of the 1990s, OTC contracts came to dominate. Exposures are measured by gross positive market values: the sum of the market values of all contracts that are in a gain position at current market prices as of the reporting date. Thus, gross positive market value is a proxy indicator of exposure to counterparty credit risk, because it measures all claims on counterparties if all of a firm's outstanding contracts were settled at the reporting date. As before, exposure is measured relative to a firm's equity capital.

Chart III.5 shows the ratio of gross positive market value to capital for all LCBOs (graph 1) and the peer groups (graphs 2-6) for the 1995-99 period, the only period for which data for all LCBOs are available.[77] For the LCBOs (graph 1), this ratio increased through 1998 and then decreased markedly. The decrease is due to the sharp reduction in the ratio of the Active Trading firms (graph 2), whose gross positive market value is the bulk of total gross positive market value for LCBOs. The 1999 reduction in gross positive market value was caused by a severe reduction in foreign exchange contracts. This reduction was due in part to lower foreign exchange volatility in 1999 compared to 1997 and 1998, as well as to the introduction of the euro and the unwinding of positions following the Russian crisis in August 1998 and its international repercussions.[78]

The time pattern of the ratio of gross positive market value to capital of Second Tier and Cusp firms (graphs 3 and 5) is similar to that of Active Trading firms (graph 2). The time patterns of Trust and Custody and Traditional Intermediaries ratios differ from those of Active Trading firms only in 1999. In addition, although all groups exhibit impressive increases in their derivatives exposures during 1995-99, relative to capital the Active Trading firms are substantially more exposed than the other groups. Still, direct interdependencies through derivatives exposures have increased substantially across all peer groups in recent years.

Panel C of Table III.3 reports measures of correlation between consolidation intensity and the ratio of gross positive market value of derivatives positions to capital. The correlation between this ratio and consolidation intensity (column [1]) is positive and significant for the aggregate LCBO ratio. Such positive correlation is also found for deviations of gross positive market values from the pooled LCBOs' annual mean (column [2]). As far as peer groups are concerned, the correlation of the ratio of gross positive market value to capital with consolidation intensity is positive and significant only for the Trust and Custody firms and for the Cusp firms. Such correlation is positive only for the former group when the correlation of deviations of this ratio from the pooled annual averages is considered.

Summary

The evidence presented here suggests two general observations regarding direct interdependencies among LCBOs. First, average LCBO direct interdependencies through short-term interbank lending and derivatives exposures have increased substantially during the time period considered. Second, there is reason to believe that direct interdependencies are significantly and positively related to consolidation through short-term interbank lending and derivatives activities. Such evidence appears particularly robust for firms of medium complexity.

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[77] For the sake of readability, each graph has a different vertical scale.

[78] See Bank for International Settlements (1999b).

Degree of transparency of firms and markets and the role of market discipline

The evolution of large and increasingly complex financial institutions raises the question of whether private market participants' abilities to assess these firms' financial conditions have kept pace. The issue is important for at least two reasons. First, efficient financial markets in general, and effective market discipline in particular, require well-informed creditors, counterparties and market-makers. Put differently, high levels of market ignorance and uncertainty can be destabilising under any circumstances. But they can be especially dangerous in a potential systemic risk situation because ignorance and uncertainty increase the probability of liability runs, institutional and market illiquidity, and irrational contagion.[79] Second, if supervisors want to rely in part on market discipline to control risk-taking at financial institutions, then it becomes even more critical that market participants be well-informed.

As with all of the topics discussed in this section, it is extremely difficult to identify the "pure" effects of consolidation on firm and market transparency and the associated role of market discipline. On the one hand, the increasing size, complexity and international nature of many financial institutions have sparked widespread recognition of the need for enhanced transparency, and both the public and private sectors have taken an impressive variety of initiatives. On the other hand, discussions with institutional investors and market-makers suggest considerable room for improvement. In the light of these uncertainties, in mid-1998 the Federal Reserve began a major study of ways to improve public disclosure in banking and thereby augment market discipline. The results of this research were recently published as a Staff Study, and the discussion in this section relies heavily on this effort. [80]

Public disclosure in the United States, with its combination of regulatory requirements and private sector initiatives, generates a substantial amount of information for assessing the financial condition and risk of banking organisations.[81] The process has demonstrated responsiveness in the face of changes in the financial services sector. Indeed, in interviews conducted for the Federal Reserve Study with securities analysts, institutional investors and rating agencies, respondents tended to compare bank disclosures in the United States favourably with those of non-banks as well as with those of banks abroad.

Nevertheless, the Federal Reserve Study identified six areas where improved disclosures may be appropriate for banking organisations operating in the United States. These include risks retained in securitisations and loan sales, the distribution of assets by internal risk rating, explanations of loan-loss reserve calculations and adequacy, credit concentrations by counterparty, industrial sector, or geography, market risk, and risk by legal entity and business line.

Most of the items on this list appear to have more to do with the increased complexity of banking organisations and financial markets, including the ongoing blurring of traditional distinctions between different types of financial intermediation, and less to do with increased size or even a higher level of international activity. For example, securities analysts strongly recommended that banks disclose how much risk they retain in securitisations of bank assets and loan sales, including information relating to so-called bankruptcy-remote vehicles sponsored by banks. Analysts also recommended that banks report more information about hedges using credit derivatives, a financial innovation that appears only tangentially related to financial consolidation per se. Still, complexity and size can be complementary. For example, it is widely believed that certain complex market activities require a rather large minimum scale to be viable business lines.

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79 Bank for International Settlements (September 1998), pp 27-28 also discuss this point.

80 See Board of Governors (March 2000).

81 See Board of Governors (March 2000), especially appendices D, E, F and G.

As US banks have grown in size and complexity, many of the largest have begun to develop increasingly sophisticated internal systems for rating the credit risk of assets.[82] The development of such systems can probably be attributed in some degree to financial consolidation, although financial innovations (such as the increasing ability to separate risk into its component parts) and vast reductions in the cost of data processing have almost certainly played larger roles. Disclosure of the distribution of a bank's assets, both on- and off-balance sheet, according to its internal ratings of risks would provide the market with much more detail of a bank's assessment of its risk profile than is currently available. Interestingly, although some of the largest banking organisations provide information on the credit quality of their OTC derivatives counterparties, disclosure of comprehensive information on risk categories of loans is unusual.

Another area of bank transparency that has been affected directly by consolidation is the need for more information on concentrations of exposures by counterparty, by industrial sector and by geographic area. Such disclosures would help market participants determine if financial organisations that have increased their potential for diversification have in fact become more diversified. A good example is the need for more detailed disclosure of information on the geographic distribution of assets, especially by large multistate financial institutions in the United States.

The growth of financial markets, and particularly the increased level of bank participation in those markets over the past decade, raises the issue of whether public disclosures of market activities by banks and other financial institutions are adequate. A case study conducted to assess financial disclosures of trading activities at nine large bank holding companies and investment banks examined the usefulness of the information disclosed on trading accounts in connection with the financial market turmoil associated with the Russian default in the third quarter of 1998.[83] The review raised some questions about the current state of public disclosure. First, it is clear that disclosures regarding market risk vary considerably among institutions. Second, there appears to be little connection between the degree of risk as suggested by value-at-risk (VaR) disclosures by firms and their actual trading account performance in the wake of the 1998 financial shock. Although this case study is only suggestive, these results appear consistent with views of market participants.

Similar conclusions were reached by a presidential report.[84] It concluded that the central public policy issue raised by the Long-Term Capital Management (LTCM) episode was excessive leverage. However, it also concluded that another key aspect of the problems raised by LTCM was the breakdown of market discipline, caused in part by the complexity and the resulting opacity of LTCM. It recommended that both the public and private sectors take action to improve market discipline by improving the quality of information on the risk profiles of hedge funds and certain other highly leveraged institutions provided to market participants.

US financial markets demand information both at bank level and by lines of business. The demand for bank-level data in part reflects the need by creditors to assess banks as separate legal entities. As indicated earlier, however, activities of US LCBOs are frequently organised on a line-of-business basis that cuts across legal entities within the holding company. Securities analysts, investors and the rating agencies express a desire for more information related to business lines.[85] They emphasise that as large banking organisations expand the scope of services they offer, disclosure by business lines is becoming even more crucial for assessing bank and financial services holding companies. This is clearly the case regarding very different

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[82] See Treacy and Carey (1998) for an excellent discussion of the state of the art in the US.

[83] See Board of Governors (March 2000), pp 12-13 and Appendix G.

[84] See United States (1999).

[85] See Board of Governors (March 2000).

activities, such as insurance and commercial lending. However, a problem will arise as the activities of bank subsidiaries overlap more with the activities of non-bank subsidiaries of the same holding company. In such cases, disclosures along business lines are less informative about the bank subsidiaries.

As US financial institutions and markets have evolved, and especially as banking organisations have become larger, more complex, and more involved in both domestic and international financial markets, interest in using market discipline as a supplement to government supervision and regulation has increased. Indeed, market discipline has been enshrined as one of the "three pillars" for controlling bank risk-taking by United States and other G10 bank supervisors.[86] Because market discipline can only be effective if market participants are well-informed, government authorities have expressed considerable interest in improved disclosure.[87] If initiatives in this area proceed and are successful, financial consolidation can, at least from this perspective, be said to have stimulated market discipline.

Another area where the increased breadth and complexity of financial activities have increased market discipline is derivatives and foreign exchange trading. For example, a substantial and growing portion of trading activities are subject to mark-to-market collateral agreements, exchange-traded derivatives are subject to margin requirements, and OTC derivatives are increasingly collateralised. In addition, transactions in the OTC markets (derivatives, repos and securities loans) are documented under master netting agreements that allow counterparties to close out transactions, liquidate collateral, and net the amounts owned if a default occurs.

On balance, a case can be made that financial consolidation has helped to increase the demand for and the supply of transparency among US LCBOs and to some extent encouraged an increased degree of market discipline in the United States. The augmented market discipline (and possibly even more market discipline in the future) is likely to have reduced the probability that banking and other financial institutions will take excessive risks. Thus, at least from this perspective, the chances of maintaining financial stability may have been improved.

However, the net effect of financial consolidation in this area is impossible to judge. For example, despite the stated policy of the supervisory authorities, the evolution of the LCBOs themselves may have increased perceptions that some firms are "too big to fail", thereby increasing moral hazard and reducing market discipline. In addition, although market discipline may work to improve the chances of maintaining financial stability the vast majority of the time, these benefits may be partially offset by the risk that even rational markets can, and sometimes do, react in precipitous ways.[88] Moreover, it was noted in the section on the creation of firms that may be "too big to fail", liquidate, or discipline effectively that strong market discipline can emerge well after an LCBO has become financially impaired. Such late-acting discipline can result from masking effects caused by the increased complexity of LCBOs. Whether they derive from rational or irrational calculations, such forces could complicate the resolution of a troubled LCBO, and greatly complicate management of a systemic risk event.[89]

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86 See Basel Committee on Banking Supervision (June 1999).

87 Another current idea for improving market discipline (and encouraging disclosure) is to require large banks to issue a minimum amount of subordinated debt. A recent Federal Reserve Staff Study has investigated this issue. See Board of Governors (December 1999). In addition, the Gramm-Leach-Bliley Act, enacted in November 1999, required the Federal Reserve Board and the US Treasury to study the feasibility and appropriateness of requiring large insured depository institutions to hold a portion of their capital in subordinated debt. The joint study must be submitted to Congress within 18 months of the date of enactment.

88 For an evaluation of the range of ways investors in bank holding company subordinated debt can react see Board of Governors (December 1999).

89 It can be argued, however, that knowledge of this possibility will give both financial institutions and their supervisors incentives to deal quickly with a potentially systemic event, before it gets difficult to manage. Put differently, the risk of a rapid and extreme market reaction provides a strong form of market discipline.

Potential policy implications

It is important to begin any discussion of potential policy concerns by emphasising the fundamental importance of sound monetary and fiscal policies for achieving financial stability, and thereby minimising the chances that a given adverse economic shock will become a systemic risk event. Financial institutions and markets, like most economic activity, tend to thrive in a positive and stable macroeconomic environment. Indeed, the discussion in this chapter has pointed out that identification of the effects of consolidation (and other factors) in the United States has sometimes been made more difficult by the long period of strong economic growth with low inflation. Such observations are not a complaint, but rather a reinforcement of the importance of sound macroeconomic policies.

Market activities tend to play an important role in the activities of the largest US financial institutions, in part because these institutions operate in highly developed money and capital markets. Market activities can introduce new risk considerations, such as potentially accelerating the speed of a firm's deterioration. More broadly, however, financial markets and financial institutions are likely to play complementary roles in encouraging financial stability. For example, financial firms' increased reliance on financial markets may allow them to achieve better diversification, and developed financial markets foster efficient market discipline. Indeed, there is some evidence that institutions operating in countries with relatively developed financial markets may exhibit lower individual risk profiles.[90]

Assuming the continued existence of federal deposit insurance backed by sound monetary and fiscal policies and supervision of depository institutions, it has been argued here that systemic risk concerns in the United States should focus on financial institutions and markets that provide wholesale financial services. Although wholesale services are provided by more than just banking organisations, it does not necessarily follow that federal safety net protection should be extended to non-bank financial institutions. Expanding safety net protections to a wider range of institutions would almost surely increase the degree of moral hazard and thereby reduce the level of market discipline in the financial system.[91] Tilting the trade-off between market discipline and moral hazard in the direction of moral hazard could well increase the degree of systemic risk in financial institutions and markets. In addition, such a tilt would be fundamentally inconsistent with the direction of US legislation over the past 10 years. Starting with FDICIA in 1991 and extending through the Gramm-Leach-Bliley Act of 1999, the US Congress and both Republican and Democratic administrations have expressed the intent to narrow safety net protections and keep them focused on insured depository institutions.

This having been said, it must be acknowledged that the evolution of non-bank financial institutions in the United States, including their increasing ability to affiliate with banks, has reached the point where the scale and level of participation in financial markets of a number of these institutions is sufficient to make their financial impairment a potentially systemic event. Indeed, this development was recognised as early as 1991 when FDICIA clarified and simplified Federal Reserve authority to provide discount window loans to securities firms in emergency situations.[92] How best to resolve the resulting inevitable tension between protecting financial stability and inducing moral hazard is difficult to say, but clearly an issue that policymakers should address.

One approach that may have promise is to begin with a judgmental assessment of which markets, if disrupted, would pose the greatest risk to the real economy. For each of these markets, it would then be necessary to develop a clear understanding of the role of the key

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90 See De Nicoló (2000).

91 For an analysis of how the safety net has affected banks' cost of capital, see Kwast and Passmore (1999).

92 This authority is granted under Section 13-3 of the Federal Reserve Act, which allows expanded discount window lending in unusual and exigent circumstances.

institutions providing critical services. Fundamental questions to answer include: Who are the market-makers and key sources of liquidity? Who are the key providers of financing? How do market participants manage their risks? What are the main settlement banks and custodians? If there is a clearing mechanism, who are the leading clearing firms?[93] Interestingly, questions very similar to these were addressed as part of US bank and other financial supervisors' planning for responding to potential disruptions caused by the century data change, or Y2K. Although that effort was in response to a clearly defined specific event, it seems reasonable to argue that planning for less clearly defined systemic events could usefully begin by building on the lessons learned from the Y2K experience. Still, even this rather modest approach would have its dangers. Considerable care would need to be taken to avoid the impression that safety net protections had been expanded, moral hazard encouraged, and market discipline deterred.

With respect to the net effects of consolidation on the risk of individual financial institutions, especially LCBOs, existing evidence supports a continued need for vigilance in the supervision of such organisations. Indeed, research supports the value added of supervision in assessing an institution's risk.[94] The fact is that research has not been able to identify with sufficient precision which types of consolidation or which individual institutions are likely to have the greatest increases (or decreases) in risk from consolidation. Conventional credit risks clearly remain a high priority. But market risks, encouraged in part by the consolidation process, have also certainly become a matter of significant importance. In addition, it appears that supervision should, at least in response to the forces of consolidation, give extra attention to systems to control operating risks. For all three types of risks, a supervisory approach that is heavily focused on risk measurement, management and accountability seems called for.

These arguments reinforce the view that capital standards, and particularly more risk-based capital standards, are a critical complement to supervision. Conventional economic models (including those used in this study) agree that, in a private market economy, private capital is the first line of defence against incentives for excessive risk-taking by institutions that receive safety net protections. In addition, capital standards provide an anchor for virtually all other supervisory and regulatory actions, and can support and improve both supervisory and market discipline. For example, early intervention policies triggered by more accurate capital standards could prove to be important in crisis prevention.

Financial consolidation, especially the increased complexity and international activity of US LCBOs, appears to have increased the risk that, should it occur, the failure of an LCBO would be disorderly. Thus, consolidation alone provides a powerful case for developing additional supervisory and regulatory policies and procedures for winding down an LCBO in ways that would minimise disruptive effects.

The empirical analysis conducted for this study strongly reinforces the importance of improving supervisory and regulatory policies. This empirical research suggests that consolidation has probably increased the degree of systemic risk associated with US LCBOs. The degree of total interdependency among US LCBOs appears to have significantly increased since about 1995. Moreover, this increased interdependency is positively correlated with the degree of consolidation at LCBOs as a whole, and especially at their most complex peer groups.

With respect to direct interdependencies, empirical analysis indicates that the most likely areas of concern deriving from consolidation are short-term interbank loan exposures and derivatives exposures. Increases in both types of exposures at US LCBOs are positively correlated with consolidation. These correlations are particularly strong at LCBOs of high and medium degrees of complexity.

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[93] It is interesting to note that the answers to a number of these questions will involve bank-dominated markets. See also the discussion of clearing and settlement issues in Chapter VI.

[94] See Berger and Davies (1998) and Flannery and Houston (1999).

What are the highest priority areas that policymakers should pursue, given the increase in consolidation and its correlation with measures of interdependencies documented here? Several seem worthy of note. First, management of LCBOs should develop contingency plans for winding down their organisations under conditions of severe stress. It seems likely that such plans, which should be reviewed as part of the examination process, could greatly reduce the costs and risks of an actual wind-down. Second, a natural complement to contingency planning by LCBOs is similar planning by bank supervisors. Given the increasing complexity of cross-product and cross-border relationships at LCBOs, a core component of such planning should be the augmentation of existing communications links, policy understandings and other protocols within and among domestic and foreign supervisors. As discussed previously, the extensive planning in these (and other) areas conducted as part of the preparations for the Y2K event seem likely to provide useful experience and models for development.

Third, the organisational complexity of LCBOs, and the fact that safety net guarantees in the United States continue to apply only to insured depositories, suggest that both LCBO management and supervisors should be clear regarding the management of business-line structures that diverge from legal-entity structures. For example, policies and practices should be clear about such things as the role of management and boards of subsidiaries, lines of accountability, and the maintenance and sharing of necessary information at the legal entity level in easily accessible form.

Fourth, the heightened importance of derivatives, foreign exchange and other market activities at LCBOs suggests that policymakers should be clear regarding how such activities would be treated in a distress situation. How to wind down these activities is an obvious example. A less obvious case is perhaps the need for the Federal Reserve to be prepared both legally and operationally to make discount window loans to the insured depositories of an LCBO with non-traditional businesses, and therefore potentially non-traditional collateral. More generally, the ability to distinguish quickly between a liquidity crisis and an insolvency crisis at one or more LCBOs will likely be an ongoing challenge for bank supervisors as consolidation proceeds.

Financial consolidation also appears to have increased both the demand for and the supply of transparency by US financial institutions, particularly LCBOs. The resulting increases in disclosure, combined with other supervisory, regulatory and market developments, have encouraged an augmented level of market discipline in the United States. Still, counterarguments can be made, and the net effect of consolidation on the ability of market discipline to limit a potentially systemic event is impossible to judge. This is especially true given that the long period of economic prosperity in the United States has not, other than during the relatively short period of financial market turmoil associated with the Russian default in August 1998, forced a test in the United States of new supervisory and regulatory policies and supporting market developments. Nevertheless, a recent study by the Federal Reserve suggests that, on balance, a strong case can be made for encouraging more disclosure by LCBOs.

The judgement that more market discipline should be encouraged derives in part from the view that the increasing size and complexity of LCBOs will make it increasingly difficult for supervisors to assess the financial condition of these organisations in a timely and efficient manner. Under this view, supervisors would benefit from additional discipline provided by the market, especially if such discipline were exerted by market participants with risk preferences similar to those of supervisors.[95] The results of the current study certainly support the conclusion that consolidation has substantially complicated the job of bank supervisors in the United States. In this regard, it is important to note that on 27 April 2000 the Federal Reserve Board, the Office of the Comptroller of the Currency and the Securities and Exchange Commission jointly announced formation of a private sector working group sponsored by the

[95] Such discipline would be likely to be provided in certain circumstances by holders of subordinated debt. See Board of Governors (December 1999).

Board to develop options for improving public disclosure of financial information by banking and securities organisations.

4. Effects of consolidation in Europe

The process of consolidation in Europe may have implications for both individual firm risk and the risk to stability of the financial system as a whole, both at the national and the European levels.

Risk of individual financial institutions

Geographic diversification

It is widely recognised that a larger coverage of geographic areas, industries, types of loans and maturity structures contributes to reducing the risk of bank insolvency.[96] Consolidation that increases diversification reduces vulnerability to external shocks and thus improves bank safety, whereas an increase in the size of institutions per se tends to be associated with a greater appetite for risk and thus a greater probability of insolvency.[97] In Europe, most bank mergers have occurred within national borders. In this respect it is important to assess to what extent national economies offer enough scope for diversification.

The existing evidence concerning Europe is somewhat mixed. While individual economies in Europe are relatively small compared to the United States, as well as being more open to international trade, they tend to be quite diversified domestically. On the other hand, in those countries that subsequently formed the European Monetary Union (EMU) there was considerable convergence of macroeconomic measures during the 1990s compared with the 1980s, as greater coordination of policy reduced the cross-country variation of economic cycles. Looking forward, the single currency in conjunction with the Maastricht Treaty will narrow the scope for national discretion with respect to economic policy.

The same does not hold for finer geographic divisions such as regions within countries. In the run-up to EMU, European regions became less synchronised, indicating that regions have grown increasingly more specialised in fewer economic sectors.[98] This result is consistent with the notion that with further integration of markets for goods and services within the context of the European Union, there is more specialisation at the regional level. It suggests that banks that remain regional in focus are increasingly susceptible to large non-diversifiable shocks, while those that are able to spread their lending across regions – even if they still remain domestic in character – should be in a better position to reduce asset risk, at least in principle. This is not necessarily true, of course, for other types of intermediaries, such as insurance, which are exposed to risk factors that are less correlated with the business cycle. Interestingly, banks merge largely with other banks within the same country, while mergers by insurance companies represent the largest component of the cross-border transactions.[99] By contrast, the influence of country - specific factors dominates the sector-specific factor in the pricing of a sample of 952 large individual company stocks in Europe.[100] This result is fairly robust over the period

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96 See Berger, Demsetz and Stahan (1999), Berger (1998), Mishkin (1998), Pilloff and Santomero (1998).

97 See Hughes, Lang, Mester and Moon (1999).

98 See Fatas (1997). Forni and Reichlin (1998), using more sophisticated techniques reach a similar conclusion. Similarly Fuss (1997) has found that heterogeneity among European regions is greater than among European countries.

99 See Berger, DeYoung, Genay and Udell (2000) and Chapter I of this report.

100 See Rowenhorst (1999).

1978-98 suggesting that, at least based on the pre-EMU period, country-specific shocks and investor attitudes are still very important determinants of company stock valuations despite the underlying process of economic convergence.

A similar conclusion can be drawn from the low cross-country correlations of earnings for European banks.[101] Also, empirical research on statistical models on credit risk measurement indicates that cross-border diversification continues to be more relevant.

The contradiction between these two sets of results regarding the scope for geographic diversification across borders and across regions within the same country can be partially reconciled by noting that the first refers to trends in correlations over the recent past, while the second focuses more on the levels of these correlations. In other words, while significant asymmetries still exist at a country level, these have tended to decline as economic integration in the European Union has progressed, and at the same time regions within countries have tended to become more specialised.

These results suggest that it is difficult to derive generalised implications for banks' portfolio risk. The answer is dependent on the initial profiles of the merging institutions, the scale of their operations and the complementarities in their geographic focus. Moreover, although it is hard to deny the significance of risk factors that are intimately connected to the business cycle for bank profitability and financial strength, it is important to recognise that financial innovation, in the form of securitisation and credit derivatives, can help institutions to better control their exposure.

Product diversification

The concept of financial conglomerates and close cooperation (based on formal or informal links) between providers of different financial services is not a new concept in Europe. Many banks (often the larger ones) are also engaged directly, through subsidiaries, or through alliances in the provision of insurance products.[102] In this respect, consolidation may not necessarily add a new qualitative dimension to individual institution risk. However, a number of factors have contributed to the intensification of the desire by institutions to offer a broad array of products to their customers, thus multiplying the cases when a main objective of a corporate transaction becomes the acquisition of productive capacity in another financial sector.[103]

One such factor that offers the motivation for merger activity among larger banks is the pressure from corporate customers, which are themselves growing in size either organically or through M&As, in combination with the advent of the euro. Companies with a substantial presence across several countries in the single currency area have a cost incentive to consolidate their banking relationships and probably centralise part, or all, of their treasury and other financial operations. In order to become (or remain) a reference bank for such clients, it is important for banks to be able to offer more complex services and operate in a larger number of markets. A similar motivation for pursuing growth, and a more relevant one for smaller institutions, is that an enlarged customer base makes it more economical for banks to offer a wider array of products (cross-selling) and to increase the proportion of their income derived from non-interest sources. In the traditionally bank-oriented European financial systems, asset management activity is already performed by large bank institutions, either directly or through subsidiaries.

M&As often result in the creation of *financial conglomerates* that combine two or more types of intermediaries (banks, asset management companies, stock brokers, private banking entities,

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[101] See Berger, DeYoung, Genay and Udell (2000).

[102] Dinenis and Nurullah (2000) found that all of the 100 largest European banking institutions have some form of direct involvement in insurance provision.

[103] For additional discussion of this point see Chapter II.

insurance companies). However, mergers across financial sectors in European countries have occurred less often than within sector. Nonetheless, conglomeration has sometimes been an important motivation in European cross-border transactions. A number of conglomerates on a cross-border basis have been established in recent years (eg Fortis, Dexia, Unidanmark-Merita Nordbanken).

An important development along this dimension is the emergence of the so-called *bancassurance*, which combines banking with insurance business. The link is mainly established through the creation or the acquisition of separate corporate entities.[104]

The limited empirical literature on the implications of the combination of banking and insurance on individual institution risk presents a relatively sceptical view of the potential for risk reduction. Hypothetical mergers between UK building societies and mutual life insurers would bring about significant risk reduction, but the benefits of other combinations of different types of intermediaries in the United Kingdom would be small or ambiguous.[105] Among large European banks, only in the case of insurance brokerage would hypothetical mergers have potential benefits in terms of risk reduction.[106]

The emergence of a stronger "investment culture" among European retail savers, supported by increasing wealth levels, a benign financial environment and the drive towards funded pension systems, has fuelled a record inflow of funds into Europe's mutual fund industry and a strong interest in equity investments. Many banking institutions have seized this opportunity to leverage their name recognition and customer franchise, and thus offer asset management and broker services. Banks in most European countries are the main providers of mutual fund products. This shift has helped to reduce their reliance on low-margin traditional deposit taking and lending activities and increase their share of revenue derived from fee-based activities. At the same time, however, it has altered the character of risk undertaken by banks, marking a shift from the role of a principal (ie the ultimate bearer of risk) to that of an agent (ie someone acting on behalf of a principal).

A key issue in evaluating the implications of this expansion for the risk profile of institutions is whether the chosen structure for the corporate umbrella is one that permits explicit cross-subsidisation of different activities. In general, these activities are performed by distinct entities, which are separately capitalised and subject to regulatory requirements specific to the particular industry. Moreover, since an appropriate European legal structure is lacking, cross-border operations have usually been performed through financial holding company structures with subsidiaries operating along different business lines. It is, however, reasonable to assume that the holding company will be proactive in the face of financial troubles in one of its subsidiaries, and it will try to reallocate liquidity and resources within the group to address the problem. This is more likely given that one of the motivations for creating a conglomerate is to capitalise on the brand name, reputation and client base of the holding company.[107]

Also, as mentioned earlier, the combination of different financial activities under the same corporate roof may allow for economies of scope in the field of risk management. While the potential gains from combining portfolios with complementary exposures to risk factors can be significant, a common problem that newly created conglomerates have to confront from the beginning is how to merge together the risk control structures of the different businesses. Risk management structures inevitably reflect the realities of the specific environment within which

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[104] The development of *bancassurance* is discussed in Chapter I.

[105] See Brown, Genetay and Molyneux (1996).

[106] See Dinenis and Nurullah (2000). Their study of actual post-merger performance confirms the above results.

[107] The readiness of Deutsche Bank to absorb the initial losses of its investment banking operation in the United Kingdom is a case in point.

they were created and tend to differ substantially both at the conceptual and technical levels across different business lines. Combining them in a meaningful and consistent way is a complex task that can easily be underestimated.

Managerial efficiencies

This section deals with the effect of M&A activity on the management of financial institutions. It focuses specifically on the impact such transactions may have on (i) the ability of management structures to respond to the challenges posed by the fusion of two different organisations into one, and (ii) on the incentives of management with respect to financial and other risk.

When the acquired institution is large and is operating in a wide range of markets it can be difficult to evaluate its fair value and the risk of paying too high a price may materialise. This may in turn create the incentive for the management team of the acquiring institution to pursue more aggressive (and riskier) business strategies in an effort to generate results that will provide an ex post justification of the initial valuation.

In general terms, the main risk implicit in M&As is represented by cultural differences between the managerial teams of the banks involved.[108] In the European context, most cross-border transactions have been mainly intended to acquire *financial know how* (eg the acquisition of foreign investment banks and private banking entities on behalf of German banks). Merging the often distinct cultures of two corporate entities is a major managerial challenge, especially as differences are particularly pronounced in transactions that are across borders. In the short run, it is important to avoid the risk of disrupting and demotivating staff and management of the acquired institutions, especially in cases where the acquired bank is operating in a field of activity in which the acquirer is a relatively new entrant.

The complexity of the post-merger organisation could prevent a clear evaluation of its risk profile by the market. Market discipline might become ineffective. For this reason, supervisory authorities are (or should be) concerned about the completeness of the information flows to the public.

Apart from the beneficial diversification effect, consolidation strategies may be connected with a substantial increase in risk-taking, especially when the acquiring bank is entering a new market or a market that is characterised by a higher volatility of returns. Moreover, if the initial goals of the operation become less likely to be achieved, the management could be encouraged to take more risk in order to meet profit objectives.

The effects of M&As on bank performance are also dependent on the characteristics of the labour market, since rigidities can impede thorough restructuring. For example, in Italy agreements have only recently been reached between banks and trade unions to allow a reduction in the number of employees.

Market power rents

Financial institutions' incentives for risk taking are powerfully influenced by the presence of rents derived from market power or other characteristics of the operating environment of the specific institution. The higher the value of the firm as a going concern for its owners and managers, the less likely it is that these decision makers will adopt riskier strategies in their pursuit of higher yield and profits. In this context, examination of the presence of scale economies (either on the cost or revenue side of the firm's income statement) is relevant for the assessment of the impact that the merger wave might have on financial risk.

[108] See Dierick (1999).

As discussed in Chapter V, economies of scale seem to be widespread in Europe among relatively small banks. With respect to the impact of M&As on bank performance in Europe, studies generally reject the hypothesis of improved post-merger efficiency but show significant cost cutting and profitability gains in some cases. Bank consolidation and cross-sector operations have allowed financial institutions to take advantage of the increasing demand for asset management services and to invest resources into providing low-cost remote banking services.

Conclusions

Overall, the evidence suggests that the current merger wave is likely to create value for the merging institutions in ways that have not been observed in past transactions. This is likely to mitigate risk-taking incentives for these institutions and thus counterbalance other factors discussed above that could lead to greater financial risk. This beneficial influence is more likely to be evident in Europe where there is considerable scope for realising economies given the current structure of the industry. However, the fact that the potential for gains may be greater in Europe does not reduce the significance of inherent risks that are also part of the consolidation process. Indeed, as past experience has shown, the planning and execution of a merger is an equal if not more important factor for success as the fundamental economic underpinning of the transaction. Also, given the diversity of institutions and structural factors that make up the European financial landscape, it would be naïve to assume that the potential for benefits that may exist on average will necessarily mean that these benefits will be there for every transaction. A case by case evaluation of individual deals is therefore warranted both by the principals of the individual institutions involved and by the relevant authorities.

Systemic risk

Consolidation in Europe, especially the merging of large financial institutions, has raised the issue of whether some, or more, institutions are now "too big to fail", ie whether the failure of a large firm may disrupt the financial system as a whole unless the authorities intervene to either keep it alive or manage its "wind-down". There is also a question of whether the systemic linkages of firm failure, both domestically and internationally, have changed because of the ongoing consolidation process.

Creation of firms that may be "too big to fail", liquidate, or discipline effectively

Traditionally, "too big to fail" applied to large *domestic banks* mainly because the externalities associated with their failure, particularly due to the central role they play in the domestic payment and monetary system, were thought to be larger than those associated with non-banks (or foreign-operating banks).[109] However, disintermediation has made this distinction less clear, since banks can increasingly be weakened by the failure of non-banks either through direct exposures or indirectly through the disruption caused to financial markets (see the subsection on indirect interdependencies below). Moreover, consolidation between traditional banks and non-banks has blurred this distinction, particularly when non-banking activities within conglomerates cannot be ring-fenced and thus can cause losses to the banking business.

In contrast with the United States, the absence of legal barriers in Europe has meant that the concepts of both universal and cross-European state banks have long existed. The question here is whether the recent spate of consolidation has led to a greater emphasis on non-banking and cross-border activity.

[109] Because of mismatches between their assets and liabilities, traditional commercial banks are also thought more likely to fail than other financial firms even when fundamentally solvent following an ill-informed liquidity run.

Domestic aspects

Because the adoption of economic union has not been accompanied by political union, financial stability in Europe, as elsewhere, remains primarily a national concern. Consolidation involving domestically operating financial institutions (including those acquired by foreigners), and thus firms whose failure may have implications for domestic systemic stability, is more of a public policy issue for national authorities than domestic firms' acquisitions of assets in other financial markets.[110]

Table III.4 shows the total value of acquired firms in European countries over the 1985-97 period through domestic mergers between banks, securities firms and insurance companies.[111] Almost two thirds of the acquired assets involved mergers within the same business lines, particularly mergers between domestic banks. Although part of this merger activity, especially in Germany, has involved consolidation among small banks, banking concentration has increased in most European countries. The more recent very large merger between NatWest and Royal Bank of Scotland in the United Kingdom and the abandoned one between Deutsche Bank and Dresdner Bank in Germany suggest that concentration ratios may be rising further in some of the larger European countries. In a number of smaller European countries, concentration ratios have already risen to very high levels. In the Netherlands, for example, three banks account for almost 80 % of domestic assets. This increase in consolidation has raised the issue of whether "too big to fail" concerns have increased in some European countries, and if so, what policies should be adopted to prevent or manage large failures to avoid systemic repercussions.

There have also been a number of bank-security firm and bank-insurance (bancassurance) mergers between domestic firms in some European countries in recent years. As shown in Table III.4, such mergers accounted for USD 63 billion of acquired assets over the 1985-97 period – around 25% of the total value of acquired firms by domestic buyers. An important question is whether the non-banking activities can be incorporated within conglomerates without affecting the banking activities. In principle, an institutional structure consisting of subsidiaries with separate capital bases could limit contagion. In practice, there may be large transactions between subsidiaries and, in any case, there remains the possibility of reputational contagion. For example, losses at Barings Brothers were large enough to lead *directly* to the failure of Barings Bank, and despite a separate company structure, Deutsche Bank absorbed losses at Morgan Grenfell Asset Management in order, inter alia, to avoid reputation contagion. In addition, a number of banks are expanding into investment banking where there are thought to be economies of scale, particularly in the euro area, and away from traditional retail banking. For example, the aborted merger between Deutsche Bank and Dresdner Bank had planned to concentrate on asset management and to sell off their retail business. This increase in emphasis on investment banking activity may increase the complexity of banks' balance sheets. This would make it more difficult for public sector authorities to distinguish between illiquidity and insolvency problems especially in the time frame required and, in the latter case, it would complicate winddown procedures.

Cross-border aspects

Within Europe

Cross-border consolidation *within* Europe presents two "too big to fail" policy issues. The first arises when locally operating branches of foreign banks are more systemically important to the host country than the home one. For example, the failure of a bank from a large country that has a branch in a small country may have bigger systemic concerns in the latter – where the branch

[110] Although, as discussed in Section 3, below, the latter would have implications for cross-border cooperation between national supervisors and central banks (where separate).

[111] See Berger et al (2000).

may be large in relation to the financial system and economy – than the former. But according to "home country rule", it is the responsibility of the supervisory authorities or central bank from the large country to decide whether or not to intervene in the case of the bank's failure. Therefore, financial stability of smaller countries may be vulnerable to the behaviour of foreign banks, and domestic authorities may also have limited powers in the event of a systemic situation. The second policy issue is whether cross-border consolidation will result in the emergence of pan-European banks that are large in relation to the European financial system as a whole.

So far, cross-border activity *into* most European banking systems has been limited. For example, the value of bank acquisitions in Europe by banks from other European countries over the 1985-97 period was one sixth that of domestic bank acquisitions (see Table III.5). This is in contrast with merger activity amongst insurance companies in Europe, which have occurred as much across as within country. Most intra-European banking mergers have occurred in smaller countries or in those on the outskirts of Europe; for example, between Merita (Finland) and Nordbanken (Sweden) and between ING (Netherlands) and BBL (Belgium), both in 1997, and between BSHC (Spain) and Champalimaud (Portugal) last year. More recently, MeritaNordbanken (Finland and Sweden) has announced a planned merger with Unidanmark, a Danish bank with an insurance subsidiary in Norway.

In most European countries, assets of subsidiaries and branches of foreign-owned banks still account for less than 10% of domestic banking system assets (Table III.6). The main exception is the United Kingdom, where foreign banks account for half of domestic banking assets. [112] Despite the important role that foreign banks play in the UK financial system, particularly branches, individually they remain quite small compared to the main domestic banks. So far then, the potential threat to domestic systemic stability from the local operation of very large foreign banks has not materialised.

However, the continued progress to a single market for financial services in Europe, and especially the euro, may result in large banks, as well as securities firms and insurance companies, increasingly regarding the "market" at the European, rather than the national level. This is especially likely in the smaller European countries where the home banking market may already be close to saturation point. But in some of the larger countries too, where large parts of the banking system are owned by the public sector or on a mutual basis, such as in France or Germany, cross-border acquisitions or alliances may represent the most likely avenue for rapid expansion.

Outside Europe

Cross-border acquisitions by European banks in recent years have been at least as large outside Europe as within it, while the assets outstanding of European banks held abroad are, for most countries, currently much larger than foreign banks' assets held domestically. For example, the assets of both German and French banks' subsidiaries and branches operating abroad in 1997 were 30% of total domestic banking assets – seven and three times respectively as large as the assets of foreign banks operating in their domestic markets (see Table III.6).[113]

This increase in cross-border consolidation involving European banks, albeit gradual in most countries, raises issues of whether current cross-border arrangements – both between European authorities and with those from other countries – are adequate to ensure effective cooperation and information flows between different supervisors (both bank and non-bank), central banks

[112] Foreign banks also account for a large share of domestic assets in Luxembourg and Ireland. Of course, a foreign presence can also arise from foreign banks setting up a subsidiary or branch in another country rather than through M&A activity.

[113] See ECB (1999).

and governments. The complexity of international conglomerates is also likely to complicate winding-down procedures, especially since bankruptcy laws differ across European countries.

Key characteristics of shocks that may become systemic

Systemic instability can occur either because of a *common* shock to a number of institutions or markets, as occurred to the Scandinavian banks in the early 1990s, or an *idiosyncratic* shock, such as the failure of Barings in 1995.[114] The latter could be caused by an internal weakness, such as fraud, or deterioration in the external environment. As discussed in Section 1, the potential diversification benefits from consolidation could reduce the probability of firm failure following an adverse shock. However, the mirror image of this is that when a failure does occur the *impact* of the shock will be larger than before and may affect more than one business line (conglomerate) or country (cross-border merger). Also, if large firms' assets are now more correlated by instrument or geographical location, then should an adverse shock occur it would hurt, on impact, more firms than in the past. The consolidation process may also have increased the propagation of shocks – both within national financial systems and across countries – through increasing the extent of contagion.

Authorities in the euro area have limited ability to use macroeconomic policies to offset nation-specific shocks. Monetary policy is set at the euro level based on the average euro-wide inflationary conditions, while national fiscal policies are constrained by Maastricht criteria and the Pact of Stability and Growth. In principle, therefore, banks whose operations are concentrated in a single euro area country may be more exposed to nation-specific shocks than they were prior to the formation of the economic and monetary union or than banks operating in countries not yet part of the economic and monetary union. In practice, since industrial structures are similar across countries in the euro system, nation-specific shocks will probably be rare. Moreover, the discipline imposed by anti-inflationary monetary and fiscal policies in Europe has created a more stable financial environment.

Despite the recent increase in the role of financial market intermediation, the European financial system remains largely dependent on bank intermediation. In the euro area, bank assets account for more than half of the sum of total bank assets, bonds and equities, compared with less than one quarter in the United States, and are three times as large in relation to GDP as in the United States. This suggests, ceteris paribus, that channels of contagion involving banks rather than markets are more likely in Europe than in the United States.

The propagation of an *idiosyncratic* shock from one bank to another may occur through a number of channels. On the liability side of a failed bank's balance sheet, uninsured depositors may incur credit losses. Consolidation may have increased the average size of such bilateral exposures.

Also, and despite the universal presence of explicit retail depositor insurance schemes in Europe, it is possible that liquidity runs will cause insolvency rather than the other way around because of *expectations* – rightly or wrongly – of insolvency. Although any liquidity runs nowadays are likely to be induced by better (although not perfectly) informed uninsured wholesale depositors, consolidation may have increased the complexity and thus reduced the transparency of firms' activities.

On the asset side, direct interbank loans may be recalled in a crisis, causing liquidity problems for the borrowing financial firms. This could have particularly large implications for financial stability through depressing financial prices if the borrowers are themselves important investors or market-makers in financial markets. In addition, correlated exposures may increase the propagation of an idiosyncratic shock. For example, a marked decline in asset prices caused by

[114] Although the failure of Barings was not considered a systemic threat.

heavy selling by a weakened financial firm would hurt indirectly the balance sheets of other firms holding the same asset.

Deposit withdrawals will often be based only on partial information of a bank's credit worthiness. To the extent that such runs are irrational rather than information-based, this represents a market failure that could be reduced through an increase in disclosure on firms' performance (see the section on Potential Policy Implications below).

Direct interdependencies between firms through interfirm exposures

Consolidation may affect the size of interbank exposures. On the one hand, firms' total exposures may have fallen to the extent that transactions are internalised within the merged firm; on the other hand, the average size of exposures may have increased with fewer firms in the industry. But the contagious impact will also depend on the distribution of exposures. A small number of strong interbank links would affect some counterparties significantly while leaving others unaffected. Alternatively, a large number of weaker links could individually have more modest effects but will accumulate with the number of links.

Within Europe, there seems to have been a convergence in the level of interbank lending during the 1990s unrelated to changes in concentration (a reasonable proxy for M&A activity – see Chart III.6a). Interbank lending has generally risen relative to capital and as a share of total assets in the smaller countries, particularly those on the periphery of Europe, where it tended to be lowest, and fallen in the larger countries. Despite this trend, banking systems with higher levels of concentration – the smaller countries – still tend to be those weakly associated with *lower* interbank lending/capital (Charts III.6f-h). One interpretation is that a large degree of consolidation, proxied by concentration, results in an internalisation of interbank lending. Alternatively, there may be economies of scale in interbank activity implying that interbank lending (relative to capital) is higher in larger banking systems. Supporting this latter view, at least in the European context, is the clear positive association between the size of national European banking systems – measured by total assets – and interbank lending relative to capital (see Charts III.6i-k). The latter interpretation would suggest that interbank lending relative to capital, and thus the susceptibility of the system to an interbank shock, might rise with the advent of the euro as the market is seen increasingly at the European rather than national level.

Although total cross-border interbank lending by EU banks in aggregate has increased only modestly (relative to total assets) since 1990, there has been a marked shift towards intra-European lending from less than half the total in 1990 to two thirds at the end of 1998. Moreover, there has also been a steep increase in aggregate intra-euro area interbank lending since the introduction of the euro (see Table III.8) and (unsecured) overnight interbank rates have converged. Thus an unsecured interbank market at the European level has been established since the introduction of the euro. A two-tiered system has developed with the largest banks providing liquidity across the euro area, and with smaller banks confined mainly to national markets. However, *secured* interbank markets remain segmented at national levels. Consolidation in secured money markets is constrained by differences in national tax and legal systems and a number of infrastructure difficulties including unifying securities settlement systems and back office functions across institutions.

Nonetheless, interbank exposures with and to banks in other European countries remain significantly less than domestic interbank linkages. For example, in Germany and France domestic interbank loans remain eight and four times larger than loans to banks in other euro area countries respectively (see Table III.7). The United Kingdom is an exception where (unconsolidated) cross-border interbank assets in other European countries are about 30% of the total assets of the domestic banking system – about the same magnitude as domestic interbank loans – and outside Europe a further 25% of total assets (Table III.8). This suggests the possibility for international banking contagion following the weakening or failure of UK operating banks, and that banks operating in the United Kingdom are susceptible to shocks occurring to banks in other countries. For example, the problems in the Japanese banking

system resulted in the failure of Hokkaido-Takushoku Bank and Yamaichi Securities in London in November 1997.

Despite the advent of the euro, the bulk of interbank activity in nearly all European countries remains to a large extent within national borders. Given this situation, the repercussions of bank failure would likely affect, in the first instance, domestic counterparts. However, the ongoing integration of European money markets should increase the likelihood of national shocks having Europe-wide effects. On the other hand, a fully integrated European interbank market would reduce the likelihood of national liquidity (as opposed to solvency) failures since banks would have greater access to funding from banks located elsewhere in Europe rather than primarily from the domestic market.

An indication of the interdependencies of financial institutions or their susceptibility to a common shock is given by the correlation in returns on bank equities. If the market thinks that banks have similar asset structures or are highly interconnected, equity returns should be highly correlated.

Charts III.7a-m plot the co-movements of stock returns, measured by the average annual correlation of weekly changes in share prices, for a selection of banks in 13 banking systems in Europe during the 1990s against bank concentration measured by the combined market share held by the five largest firms. The sample consists of large banks – ranked within the top 10 in the domestic banking system by asset size in 1999 – that are currently traded on the respective national stock markets and have been so continuously since the early 1990s. Thus the sample of banks varies somewhat across countries and since there are usually only a few banks in the sample, the national banking system correlations should be treated with a degree of caution.[115] Bearing this caveat in mind, the charts suggest that correlations in the growth of share prices are quite volatile from year to year in most European countries and there does not appear to be a clear-cut relationship with annual changes in bank concentration. Moreover, there does not appear to be a uniform trend across European countries of correlations in the growth of stock prices during the 1990s. Correlations increased in half the countries and fell in the other half between 1990-94 and 1995-99. The European average of national correlations in bank returns was little different in the second half of the 1990s than the first half (see Chart III.8).

In order to assess whether there has been a change in interdependencies between banks *across* European countries as a whole, all 45 banks in the 13 countries were correlated against each other. As expected, the average annual correlation of the growth in bank share prices across Europe (0.4, on average, 1990-99) is usually lower than that within each country (0.5, on average, 1990-99). Moreover, there is no evidence from these data that correlations in the growth of bank share prices across Europe have increased so far with the approach and adoption of economic and monetary union (see Chart III.9a-b).

In sum, based on the co-movements in the growth of bank share prices on this sample of banks, there is no clear evidence of an increase in total bank interdependencies either within or across European banking systems during the 1990s. Moreover, there does not appear to be a clear relationship in the past between consolidation, proxied by changes in bank concentration, and direct interdependencies, measured by interbank activity. That said, the more recent introduction of the euro has led to an increase in both interbank lending between large banks across Europe and consolidation, albeit mainly so far at the national level.

[115] Adding smaller banks to the sample involves a trade-off. On the one hand, an enlargement of the sample size will increase the statistical validity. On the other hand, consolidation of very small banks would not be expected to affect concentration ratios. We found that the *level* of correlations amongst all available quoted banks in national banking systems were generally lower than amongst the largest banks. However, the *movement* in correlations over time were similar to those reported above as are the conclusions drawn.

Indirect interdependencies through correlated exposures to non-financial sectors and financial markets

The shift towards non-banking activity of large financial conglomerates in Europe discussed above, particularly towards asset management, has increased financial firms' exposures to financial markets. This could have increased both the impact and propagation of shocks.

An adverse shock to asset prices may directly affect more institutions than in the past because many large banks and other financial institutions, such as hedge funds, have grown simultaneously through increasing trading activities and investing in marketable assets (see Table III.9). Such shocks are also likely to more quickly impair the creditworthiness of a financial firm than would occur through the deterioration in a loan book which is not marked to market. On the other hand, as banks' assets have become more liquid and marketable, the likelihood of underlying illiquidity problems has probably declined.

The combination of consolidation and increased market activity may help an idiosyncratic shock to an individual firm to propagate more widely. For example, if a weakened firm sells a large quantity of marketable assets this could depress prices significantly, and thus weaken institutions that are holding similar assets. Illiquidity of a key market-maker, which could be more likely following consolidation in the sector, may result in a dislocation of financial asset markets which in turn could adversely affect financial firms more generally. Although the precise role of consolidation in such effects is unclear (see Annex III.3), these kinds of shocks have occurred in the United States (eg the failure of Drexel which was important in the junk bond market, and a number of LTCM's counterparties were important in the US securities markets), but not recently to European firms.[116]

Along with firm consolidation, there is currently a parallel consolidation in European capital markets, particularly since the introduction of the euro. A private sector bond market at the European level is quickly emerging, while in the equity market there have been recent announcements of the merging of the London Stock Exchange and the Deutsche Börse on the one hand and between the Paris, Amsterdam and Brussels stock markets on the other. This will increase the ability of large firms, at least, to raise finance from capital markets at a pan-European level. This potential increase in non-bank finance for corporates may reduce the systemic impact of a bank crisis if it occurs independently from a marked reduction of liquidity in the capital markets (a "market crunch"). On the other hand, European banks are themselves currently the largest borrowers from the bond market in Europe, perhaps increasing the possibility of a combined bank and market crunch in Europe.

Potential policy implications

The increase in financial consolidation raises a number of questions for the design of public sector safety nets.

Consolidation may have increased the number of banks, or possibly non-banks, that are *thought* by the private sector to be "too big to fail", particularly in some of the smaller European countries where bank concentration is now very high, and in countries where consolidation is not accompanied by the development of capital markets that would offer borrowers an alternative source of funding. Those firms *thought* covered by the safety net may receive a funding subsidy compared with those that are not. This could affect competitiveness both within national financial systems – between large and small banks and between banks and non-banks where business overlaps – and across countries between banks depending upon where the financial institution is incorporated. The regulatory framework in Europe leaves some discretion to national authorities for interpretation and translation into national legislation. These

[116] Johnson Matthey - a key market-maker in the London Gold Market - was supported by the Bank of England in 1984 because it was thought that its failure would have disrupted the London financial markets more generally.

differences may be positive from a viewpoint of financial stability, since national authorities should be best suited to take into account the specific characteristics of local markets. On the other hand, this could potentially result in regulatory arbitrage and an unlevel playing field. However, the scope for providing risk capital support by governments is very limited in a European context since the European Commission is directly involved in scrutinising whether state aid is compatible with the Community's competition legislation.

In principle, the creation of firms thought by the private sector to be "too big to fail" could make financial instability *more* rather than less likely if firms take more risks in the expectation of being supported by the safety net – the moral hazard problem. But excessive risk-taking could be constrained through regulating the activity of risky banks through more intensive inspection, and ensuring that such banks have sufficient capital and adequate risk management systems to absorb unexpected losses. This is recognised in the proposed changes to the Basel capital standards for international banks. Supervision is likely to be increasingly focused on firms' risk management systems rather than formulaic capital standards. Also, central banks usually make it transparent that any financial support will be conditional on disciplinary measures on those responsible for the failure, particularly managers and shareholders.

More generally, given that the systemic costs of a firm's failure, although not the likelihood of failure, have probably increased because of the consolidation process, additional policies may be required to avoid the need for official emergency support. These could include policies which ensure that firms and markets are better able to withstand shocks, reduce the likely contagion once firms fail, encourage support from the private sector where failed firms are likely to be systemic and increase transparency (see below). The development of a liquid and deep pan-European interbank market would reduce the likelihood of national liquidity problems. The development of a secured rather than unsecured interbank market at the European level, in particular, would also minimise the potential for banking problems to spread across banks and country boundaries. This would parallel the increase in safety of the payment system following the introduction of a collateralised European-wide system (TARGET). Also, most central banks and regulators currently try to organise private sector support before risking public funds, such as facilitating liquidity support or organising a takeover in a situation of insolvency. In Germany this is formalised with the operation of a semi-private liquidity institution (Likobank) which for the past quarter of a century has provided lending of *penultimate* resort to failed illiquid but solvent banks, albeit small ones. There is a question here of whether a more consolidated financial system increases or reduces the likelihood of support from other banks when a firm fails. This depends on the balance between the costs to other banks of a bank failure with the potential competitive benefits and the ability of private banks to coordinate support where these costs outweigh the benefits. Everything else equal, having resulted in fewer banks, consolidation may reduce the coordination problem, thus making it easier for central banks or supervisory authorities to organise private sector support.

Public sector safety nets have traditionally been centred on banks rather than other financial institutions. Banks' expansion into investment banking and trade in securities and derivatives may reduce the likelihood of true liquidity problems but, on the other hand, may make their exposures more sensitive to changes in market developments. Conglomeration has blurred, to some extent, the distinction between banking and other financial activity. The creation of conglomerates raises two issues for safety net policies. First, it widens the potential safety net, and thus moral hazard, if banking activities cannot be ring-fenced from the non-bank part. Secondly, non-banks that are part of a banking group would gain a competitive advantage compared with those that are not.

The Scandinavian countries and the United Kingdom have reacted to convergence in financial firms by creating conglomerate supervisors, while in other European nations cooperation between bank supervisors and those of other financial institutions is the preferred model. Nonetheless, central banks still tend to regard the distinction between banks and non-banks as sufficiently clear to concentrate any potential central bank liquidity support on banks. But, as in the case of banks, where non-banks are thought to pose a systemic threat, the central bank or

supervisor may attempt to orchestrate private sector support. If current trends continue, the distinction between banks and non-banks may become increasingly difficult to sustain.

Although monetary policy in the euro area is now set by the euro system of central banks, policies for financial crisis prevention and management remain largely the responsibility of national authorities. This is consistent with the principle that the costs of support are borne by the country which most benefits from the support. Supervision remains the responsibility of national authorities whether inside or outside the central bank, whilst lender of last resort (LOLR) to individual institutions remains the responsibility of national central banks. Although, to avoid increasing moral hazard, no central banks in Europe give precise details on the terms, conditions and circumstances in which they would provide LOLR, some make transparent their general principles, while others deliberately provide no guidelines. There are also wide differences in the generosity of explicit national deposit insurance schemes above the minimum set by the European Union, while bankruptcy laws and winding-up procedures continue to be set at the national level.

Central banks focus their concerns on liquidity crises whereas consideration of solvency support, and thus explicitly using taxpayer money, is also an issue for ministries of finance. All the recent episodes of large support operations in Europe have been of the latter type – Nordic countries in whole banking systems and Credit Lyonnais and Banco di Napoli for large individual failures. Consolidation may increase the need for government involvement in crisis management. First, the increased complexity of financial firms' balance sheets and the potential increased speed of the development of financial crises, as shown in the Barings failure, make it more difficult to clearly distinguish a liquidity problem from a solvency one, especially in the time frame required. Second, the likely increase in size of individual bank failures in the future will increase the size of possible losses and thus potential costs to the taxpayer. The current euro arrangements for crisis management are compatible with the possible need for government involvement in crisis management. Since the responsibility of lender of last resort in the euro area is at the individual state level, decisions on support are made by those bearing the costs. In any case, given the potential costs of financial crises, the EU fiscal budget would be too small to finance such a rescue at the EU level.

Nonetheless, the growing integration of international financial markets and expansion in cross-border merger activity witnessed in the last few years are likely to accelerate following the euro. This may reduce financial risk through the benefits of geographical diversification, but if failure occurs it is more likely to have a pan-European or even global rather than solely domestic effect. This could occur either through a common shock hitting financial firms or markets in several European countries simultaneously, or through a shock to a firm or market in an individual European country being more likely to spread to firms or markets in other countries. This emphasises the need for cooperation and information sharing amongst national supervisors and central banks to prevent the occurrence of such euro-wide crises. It also requires arrangements to be in place between national central banks, including the European Central Bank, where euro area monetary stability or the payment system are potentially affected, as well as national supervisors and ministries of finance to manage such crises.

The institutional arrangements in Europe to safeguard financial stability are based, on the one hand, on bilateral agreements that make use of the principle of mutual recognition of national regulations, and, on the other hand, on participation in multilateral forums such as the Banking Advisory Committee and the Banking Supervisory Committee (for EU countries) and the Groupe de Contact (EU countries plus Norway, Iceland and Liechtenstein). In the case of cross-border banks, there is already an extensive set of general bilateral Memoranda of Understanding (MOUs) in place between the respective banking supervisors whereby information is exchanged and meetings are held regularly. There are also some MOUs for specific cross-border financial groups, in particular between the French and Belgian supervisors with respect to the supervision of Dexia and among the four banking and insurance supervisors of Belgium and the Netherlands with respect to the supervision of Fortis. On balance, although institutional arrangements in

Europe to maintain financial stability seem adequate at the moment, some improvement may be required in their practical functioning. Such improvements could include:

More bilateral information sharing and cooperation within countries and across Europe between bank supervisors and those of non-banks, and across countries between supervisors and central banks such as in surveillance analysis of financial stability;

A convergence in supervisory practices and, for large financial groups at least, an extension of the concept of the coordinating supervisor(s) – see Box III.1;

Increased effort to deal with the possibility of Europe-wide financial crises. For example, the Banking Supervision Committee, that consists of senior representatives from both central banks and supervisory bodies, provides a setting for the discussion of macro-prudential and financial stability issues, contributing to prudential bank supervision and financial system stability, and providing a multilateral forum for the exchange of information and cooperation between banking supervisors of member states;

Convergence in aspects of national legal frameworks, such as bankruptcy legislation, and market infrastructure to assist the development of secured pan-European money markets and to facilitate the possibility of cross-border private sector solutions in cases of bank failure;

Improvement in information flows and coordination between home and host supervisors and central banks. Within the European Economic Area, supervision is the responsibility of the home supervisor which, together with the home central bank (if separate), would be expected to take the lead in the case of problems at branches of home banks located abroad. In order to perform this task the home supervisor may need greater access to carry out examinations of affiliates in the host country. On the other hand, the potential systemic threat of bank failure, if any, may be most acute in the host country. Therefore, an increase in the number of cross-border banks may increase the gap between the costs and benefits of intervention for *national* supervisors and central banks. This could become a particular problem in small countries if branches of foreign banks – European or otherwise – account for a large share of the domestic banking system. Here the home supervisor and central bank may be willing to accept liquidation without taking full account of the systemic consequences in the host country. In this case, the role of the host supervisor and central bank may need to be more active;

Depending on the extent of future integration of pan-European financial markets and the emergence of pan-European financial institutions, there may be an issue of whether crisis prevention and management practices across European countries would need to converge further;

Because consolidation is increasing the complexity of financial firm structures across both sectors and countries, it may increase the need for timely information to assess solvency and potential systemic risk. This suggests the need to modify approaches to supervision and to increase market discipline. An increase in market discipline would be useful as a complement to supervision in crisis prevention. This is recognised in Pillar 3 of the proposed Basel Accord. Also, an increase in the disclosure of firms' performance and risk profile may enhance market discipline particularly by other financial firms and credit rating agencies. In principle, banks should be well placed to monitor each other since they operate in the same or similar markets and share the same information. But it is debatable whether banks have the right incentives for such monitoring. An increase in disclosure is more likely to increase market discipline if the private sector does not believe that a broad implicit safety net is in place.

Box III.1

The 'Brouwer' Report

A recent report has been published on regulatory and supervisory structures in the European Union and financial stability by a working group of the EU Economic and Financial Committee chaired by the Dutch Deputy Governor Henk Brouwer. The Brouwer Report (2000) made the following recommendations to enhance the practical functioning of current institutional arrangements:

Strengthening cross-sector cooperation at the international level, since the present supervisory arrangements are primarily designed to enhance cross-border cooperation. Within the European Union, an important development is that the EU Commission has facilitated a round table discussion among the chairs of the supervisory committees of the different disciplines. International cross-sector co operation could be further improved by clarifying and extending the concept of the coordinating supervisor(s) for the large financial groups domiciled in Europe;

Making the exchange of information among different supervisory authorities, and between supervisory authorities and central banks, on the major financial institutions and market trends a key feature of the strengthened cooperation between the authorities involved. In this respect, the Basel Committee on Banking Supervision and the Groupe de Contact can be expected to work in close collaboration. Furthermore, it is important that the ministries of finance and supervisory authorities regularly exchange views on the adequacy and necessary adjustments of financial regulation in a national context as well as in the context of the Banking Advisory Committee, the Insurance Committee and the High Level Securities Supervisors Committee;

Strengthening cooperation between supervisors and central banks, with a view to ensuring that if the emergence of financial problems at a major group may have contagion effects in other EU-countries, this is reported to the relevant authorities of the countries concerned;

Working on the convergence of supervisory practices, which can significantly enhance the efficiency of the national supervisory authorities involved in monitoring cross-border financial institutions.

5. Effects of consolidation in Japan

During the bubble period of the 1980s, financial consolidation in Japan was an event almost exclusively confined to the banking industry. Deposit-taking institutions were motivated to have bigger balance sheets with a view to taking advantage of the then-existing regulatory framework. The bursting of the bubble and deregulation in preparation for Japan's Big Bang have led to a sharp increase in consolidation among the different kinds of financial institutions. Table III.10 shows the change in the number of financial institutions during the past decade, which mainly reflects consolidation.

Risk to individual financial institutions

Consolidation during the bubble

Under the former regulatory framework, Japanese financial institutions were segmented geographically and functionally.[117] The Ministry of Finance's branching policy that continued until the early 1990s was aimed at preventing excessive regional competition. Such a segregation policy virtually prevented new entrants into the trust and long-term credit bank

[117] For example, Japanese banks were segregated by geographic region. City banks had branches in major cities while regional banks had branches only in the regions in which they operated. Japanese banks were also segregated by function. Long-term credit banks and trust banks specialised in long-term lending for equipment investment, while commercial banks provided short-term working capital.

fields.[118] In the late 1980s and early 1990s, the booming economy and gradual financial liberalisation promoted mergers among small and medium-sized deposit-taking institutions because mergers were the only way to expand branch networks as well as increase asset size in a short period. [119] A few mergers between relatively small major banks also took place. [120]

While these mergers aimed mainly at revenue scope economies, they often duplicated organisational and decision-making processes due to the conflict of corporate cultures and lack of well focused strategies. During this period, mainly attributable to the then remaining regulations on banking activities, such as deposit interest rate caps, and a very low rate of credit losses, the most important criterion generally used in Japan for judging a bank's performance was the size of its balance sheet, which was also the major source of revenue. The reduced importance of asset size as a revenue source, mainly attributable to the non-performing loan problem, saw an end to such mergers, especially among large banks. As Chart III.10 shows, the relationship between asset size and profitability of the largest 20 Japanese banks has become increasingly negatively correlated since 1994.

Post-bubble consolidation

After the bursting of the bubble, consolidation among small and medium-sized financial institutions continued but a substantial number of them represented failure resolutions. The wave of very large consolidations which began in 1999 marked an end to the non-performing loan problem among major financial institutions[121] (Table III.11) and may be regarded as survival strategy in response to the likely creation of a competitive environment that will be brought about by Japan's Big Bang (deregulation of virtually all existing frameworks that have hitherto prevented free competition) as well as global consolidation trends. It is also propelled by the various safety net frameworks that have been put in place by the government in response to the financial crisis, including that for the injection of capital using public funds.[122] Capital injection by the government, which was accompanied by management improvement plans and the stricter accounting treatment of non-performing loans, not only restored confidence in the solvency of recipient banks but also acted as a catalyst for consolidation in terms of diminishing information asymmetry regarding the financial conditions of merging partners.

Geographic specialisation and diversification

There are some consolidation cases that aim to benefit from specialisation and others from diversification. One major bank envisages becoming a retail bank specialising in the Kansai area (western Japan) by assuming the assets and liabilities of smaller failed regional banks in the same region; it has withdrawn from all overseas operations. Acquiring failed banks will give the

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118 See Koyama (1995).

119 Until the early 1990s, new branches were subject to approval that specified the exact location of a branch so that it would not infringe upon the business territory of others. Moreover, each financial institution was, in principle, allowed to set up only one new full-branch in two years.

120 There were mergers between Taiyo-Kobe Bank and Mitsui Bank (Sakura Bank) in 1990, and Kyowa Bank and Saitama Bank (Asahi Bank) in 1991. The merger of Bank of Tokyo and Mitsubishi Bank (Tokyo-Mitsubishi Bank) in 1996, although taking place after the bursting of the bubble, could also be regarded as belonging to this category.

121 Regional consolidation by Daiwa Bank, the merger of Tokai Bank and Sanwa Bank, that of IBJ, Fuji Bank and DKB (Mizuho Financial Group), that of Sakura Bank and Sumitomo Bank (Sumitomo-Mitsui Bank), as well as that of Tokyo-Mitsubishi Bank and Mitsubishi Trust Bank (Mitsubishi-Tokyo Financial Group) belong to this category.

122 In January 1999, the Financial Reconstruction Commission announced basic policies concerning capital enhancement plans, which state, "financial institutions negligent of consolidation efforts are not eligible for capital injection".

bank more flexibility in conducting rigorous rationalisation such as closing unprofitable branches and dismissing excess personnel. If this vertical consolidation materialises, the bank is likely to acquire a strong and cohesive client and depositor base in the region and attain a critical franchise mass. Until the early 1990s, the Japanese regulatory authorities compartmentalised the regional customer base into small units for the purpose of restricting disorderly competition under the "convoy system". This merger can perhaps thus be seen to take advantage of market power rents stemming from geographical specialisation.

But more importantly, the increase in small (largely insured) local deposits as a result of this merger will provide the bank with a stable source of funds. From a risk management perspective, mergers between major banks that are constantly dominant takers of short-term interbank funds and regional banks that are constantly main providers of short-term interbank funds could reduce total interbank exposure.

As yet there has not been a typical consolidation case that aims at geographical diversification. While some merger plans between major banks have been unveiled (or actually carried out); these banks have a strong franchise in their respective regions, namely Nagoya (the Tokai area), Osaka (Kansai), and Tokyo (Kanto). The net geographical diversification effect of mergers between major banks such as this one is somewhat ambiguous. As Chart III.11 indicates, geographical diversification effects in terms of credit and interest rate risks may be generally limited because the business cycles of these regions have a high positive correlation. In addition, mergers among major banks are not likely to alleviate heavy reliance on interbank borrowing, which could increase potential funding costs.

Indeed, the fact that Asahi opted out of the planned merger with Tokai that was aimed at creating a supraregional retail bank may suggest the difficulty in exploiting geographical diversification effects in Japan, especially by major banks.

Managerial efficiencies

Most very large mergers so far observed in Japan seem to aim more at cost scope economies, especially in terms of information technology (IT) investment. In order for a major bank to enjoy cost efficiency gains, it is increasingly important to make large-scale IT investments to have as high-speed and integrated a computer system as possible, which, judging from the global standard, is too costly for major Japanese banks in comparison to their individual profits. For example, most major US banks spend more than JPY 100 billion annually on IT investment while the six largest city banks in Japan spend only JPY 55 billion on average (Chart III.12). After consolidation, the Mizuho Financial Group is expected to invest more than JPY 150 billion annually on a consolidated basis. Such large-scale IT investment, coupled with consolidated customer bases,[123] will likely produce a critical mass of customers per unit of IT investment and improve cost efficiency of the merged banks.[124] However, there are a series of issues to be tackled. To start with, corporate culture gaps between merging banks cannot be underestimated. The fact that each bank has its own historical background and established relationships with clients, and also that existing shareholders often have vested interests, argue in favour of strong managerial leadership to promote successful mergers. Japan's experience indicates that this is probably more the case for regional banks that have deep roots in the local areas they serve.

Second, in terms of risk management, aggregating similar risk profiles may not in itself reduce the amount of risk in proportion to the increase in size. Management must have clear risk management objectives and make efforts to actively control risks. In addition, if the corporate

[123] Although still far down the scale from major US banks that normally have thousands of branches, the Mizuho Financial Group will have approximately 800 branches at the outset.

[124] See eg Atkinson (1998 and 1999b).

architecture of a financial conglomerate becomes complex, a small risk could develop into a major one because the complexity itself may confuse depositors and other creditors. A minor problem affecting one arm of a financial conglomerate could be interpreted as a problem affecting the whole conglomerate. At any rate, improvements aimed at attaining a sufficient compliance function and auditing skills vis-à-vis operational risks may prove to be an important task to be achieved by risk management in a large and complex structure. [125]

Finally, integration of the computer systems of merging banks is bound to be costly in Japan due to the keiretsu relationships that involve computer companies. For example, in the case of Mizuho, all three banks have different systems provided by different makers (IBJ has Hitachi System, Fuji IBM, DKB Fujitsu). It is said that it will take almost two years to consolidate their computer systems. [126]

Product specialisation and diversification

Parallel with stabilisation of the financial market, cross-sector alliances are beginning to be seen as an attempt to capture complementarities. These are typically alliances between banks and securities companies and between banks and insurance companies. These alliances aim at merging overlapping functions, each specialising in comparatively competitive fields. They also aim at sharing delivery channels. For example, selling fire insurance to mortgage borrowers could bring in additional revenue.

To what extent such consolidation produces additional synergies is yet to be seen. There is a view that Japanese financial institutions have already engaged in the cross-selling of key financial products through the keiretsu network, and therefore additional synergies in this respect are limited.[127] If this is the case, there is a risk that a newly created financial group may only serve to maintain excess capacity in the industry by subsidising less competitive firms in the group.

On the other hand, the risk diversification effects of cross-sector consolidation could prove positive, especially between banks and insurance companies whose risk profiles are generally less correlated. For example, if insurance policies against natural disasters (catastrophe bonds) were mixed in the liabilities of a financial conglomerate, they would contribute to diversifying risks since the probability of natural disasters in major countries normally has little correlation with interest rates and foreign exchange rates.[128] It is also pointed out that maturity structures of assets and liabilities between banks and life insurance companies are broadly complementary. Of course, offsetting risks between banks and insurance companies may not be as easy to achieve in practice as in theory for Japanese financial institutions at this juncture. More realistically, managing complex risk profiles to secure competitive returns may prove to be a challenging task for Japanese financial institutions for some time. At any rate, complex risk profiles are expected to stimulate the development of better risk management techniques and capabilities.

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[125] On the other hand, if managerial integration increases across firms in a group, its corporate architecture may become simpler. A simple structure could promote assimilation of trading strategies and risk management methods across firms in the same group. If scenarios or assumptions underlying these strategies and methods prove biased or wrong, the group as a whole could incur an unsustainable loss.

[126] Many large Japanese banks have built up computer systems with central, large-scale host computers supplied by different manufacturers, making the interfacing and integration of computer systems of merging banks more complex and time consuming. By March 2001, individual financial services offered by the three banks involved in the Mizuho consolidation will be operated by single computer systems, eg retail banking by the DKB system, investment banking by IBJ's system. By April 2002, an entirely new system will replace all current systems.

[127] See eg Atkinson (1999a).

[128] See eg Morimoto (2000).

Platform risk

Some Japanese commercial entities have announced their intention to enter the banking area using their existing platforms such as internet businesses and supermarket chains.[129] Such banks will try to capture customers from their original commercial businesses to take advantage of synergies between the two businesses.

However, some analysts point out that just depending on customers of the original business may not achieve critical franchise mass to make the banking operation sufficiently profitable. Also, since such banks are physically dependent on the platform (premises, customers, communication networks etc.) of the original business, they are directly exposed to performance, accident and reputational risks attaching to the original business – this may be called *platform risk*. For example, in the case of a supermarket bank, if the business of a supermarket chain were taken over, the bank could lose all the premises immediately. This risk is totally foreign to risks inherent in banking. [130]

Cross-border transmission of risks

Another feature of recent financial consolidation is the entry of foreign financial institutions into retail markets (Table III.12). This is especially true of foreign investment banks and insurance companies (for example, the purchase of Yamaichi Securities by Merrill Lynch, the purchase of Nikko Securities by Travelers, and the purchase of Nippon Dantai Life by Axa). They aim to capture the fruits of Japan's Big Bang by using the existing branch networks as a platform to sell their products to Japanese customers as well as take advantage of global risk diversification effects. Some investment banks also regard such networks as a safety valve to control volatile revenue flows in terms of transferring a portion of risks (for example, in a repackaged product) to end-investors in exchange for commission fees. While this type of consolidation could bring in new capital, new financial skills, and different management styles, such international networks might directly channel home-made risks to Japanese financial markets, which would pose a challenge for Japan's financial authorities as host country supervisor.[131] In order to forestall such financial contagion, better supervisory coordination and information sharing with home country supervisors, supported by improved disclosure, is called for.

This said, such direct contagion risk may not be imminent because the purchase of Japanese financial institutions by foreign financial institutions will be a gradual process. In fact, most of the Japanese financial institutions purchased so far by foreign institutions are those which had failed and whose balance sheets were cleaned up by the safety nets. This suggests a generally cautious approach on the part of foreign institutions.

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[129] Ito-Yokado plans to set up a bank specialising in payment services based on its network of nearly 10,000 supermarkets and convenience stores. Moreover, Sony (internet banking) and Japan Railways (payment service) are also planning to enter banking.

[130] In August 2000, Japan's Financial Supervisory Agency released a guideline concerning the licensing of banks established by commercial firms, which also requires banking subsidiaries to take appropriate measures to segregate risks stemming from the original business of their respective parent firm, as well as to prepare contingency plans to cope with the possible materialisation of such risks.

[131] The cases of BCCI and Barings suggest the possibility of risks being transmitted directly from abroad. These cases involved risks transmitted through payment systems. BCCI's Tokyo branch was a member of BOJ-NET (Bank of Japan's large-value net payment system) and Barings' Tokyo Branch was a member of the Japanese government bond book-entry system operated by the Bank of Japan. In turn, Japanese financial institutions could exert adverse effects on foreign markets. One study suggests that Japanese banks' asset contraction after the bursting of the bubble, which included a sharp curtailment of lending in the United States, contributed to a decline in real economic activity in the commercial real estate sector in the United States (Peek and Rosengren (2000)).

Market power rents

Market share will remain an important competitive factor for some time and will increase very large financial institutions' power to become price leaders. However, in the longer term, globalisation may reduce such benefits if outside capital can enter Japan's financial markets freely to supplement reduced supply capacity. Technological improvements such as faster information dissemination and standardised trading and risk management models may, at least for the time being, serve to reduce market power rents of the existing large market participants who used to enjoy profitability derived from superiority in terms of information and technology.

Summary

The recent consolidations among major banks appear to have noticeable cost saving effects in terms of rationalising personnel and branches, integrating customer bases, and improving IT quality. However, mergers with regional banks are called for in order to alleviate heavy reliance on interbank borrowing (which could increase potential funding costs). Overcoming cultural gaps would also be an important cost saving factor. On the revenue side, geographical diversification may not result in effective risk diversification due to the highly positive business cycle correlation among major regions in Japan. Also, establishing an effective risk management system is critical to control risks, thereby stabilising revenue flows.

The net effect of cross-sector consolidation is not clear. The existing keiretsu cooperation might have already exploited complementarities deriving from cross-selling, leaving little additional profit to be obtained from consolidation. There could be some risk reduction effects between banks and insurance companies but only if risk complementarities between the two businesses are effectively managed. Foreign firms purchasing retail securities and insurance franchises in Japan may enjoy some revenue increase deriving from Japan's Big Bang as well as some risk reduction effects deriving from global risk diversification and risk transfer to end investors on a global scale.

Finally, success of commercial firms entering banking seems to hinge on whether a critical customer mass is attracted from the original business. It should also be noted that banks physically depending on the original business may be vulnerable to platform risks attaching to the original business.

Systemic risk

Creation of firms that may be "too big to fail", liquidate, or discipline effectively

Consolidation has created a number of systemically important financial institutions. For example, the Mizuho Financial Group alone has total assets of USD 1,500 billion (30% of nominal GDP). If such a financial institution were to experience a severe financial problem – insolvency, illiquidity, or operational failure – it could lead to a disorderly resolution process that could have a serious impact on both domestic and international financial markets. It could also cut off the funding sources of borrowers, thus exerting substantial adverse effects on the overall economy. The loss of the franchise value of such an institution would also result in larger resolution costs. Given the potential damage to the financial system and economy, it might be difficult, if not impossible, to allow such a financial institution to fail and at the same time maintain financial stability.

Japan has faced this trade-off in actuality. To address the situation, Japan's financial authorities allowed internationally active (and thus systemically important), failed financial institutions such as LTCB to continue operations and thus to maintain their financial intermediary function because it was considered less expensive than liquidating them and dealing with the financial disruption that would otherwise have ensued. At the same time, in order to minimise moral hazard and resolution costs, the financial authorities removed management and penalised shareholders in the form of a capital reduction. This implied, at least from the perspective of

management and shareholders, that the bank had failed, although it continued to provide all existing services. This basic concept in dealing with failed financial institutions was formally legalised in October 1998 (Financial Stability Early Strengthening Law and Financial Reconstruction Law), and is discussed later.

Key characteristics of shocks that may become systemic

Direct interdependencies between firms and markets through interfirm on- and off-balance sheet exposures

Many analysts agree that consolidation could give the resulting larger financial institutions greater ability to absorb shocks. However, at the same time, a reduction in the number of market participants could significantly increase the concentration of risks and mutual dependence in coping with financial risks. For example, an increase in credit exposure among very large financial institutions could theoretically increase direct interdependencies. Interestingly though, as a matter of practice, interbank loan exposure is more an issue of indirect interdependencies in Japan, as is pointed out in the following section.

On the other hand, the derivatives positions of Japan's major financial institutions are, and are likely to be, principally among major financial institutions, both domestically and globally. Since the derivatives exposures of individual major financial institutions are already colossal, direct interdependencies between merged financial groups will inevitably be systemically significant (Chart III.13).

In the case of LTCB, it was feared that a disorderly collapse might trigger a closeout clause for its global derivative positions worth USD 450 billion in notional principal,[132] a substantial amount of which was cross-border. If this had transpired, it was viewed as conceivable that the resulting open positions on the part of its counterparties would disrupt international financial markets because those counterparties would try to replace liquidated positions in a concerted manner. In an effort to prevent this, the Bank of Japan clarified, in a statement issued by the Governor[133] upon the temporary nationalisation of LTCB on 23 October 1998, that "all liabilities of the bank, including derivative transactions, will be smoothly met and the Bank will provide necessary liquidity to LTCB." As a result, few institutions closed their position vis-à-vis LTCB.

This incident suggests that a disorderly closure of a very large financial institution might disrupt global financial markets, as shocks would be transmitted across national borders via the direct interdependence of firms at such a speed and magnitude (typically reflected in derivatives transactions) that the authorities would have very limited time to respond. Moreover, although arrangements like closeout netting would contribute to reducing credit risks, actual execution may result in higher volatility and thus greater market risk, despite the fact that risk management efforts at individual institutions are completely rational.

Indirect interdependencies through correlated exposures to non-financial sectors and financial markets

A typical example of indirect interdependencies through correlated exposure was observed during the bubble economy of the late 1980s in Japan. During the period, banks in general expanded loans to real estate-related industries. Thus, the fall in land prices during the 1990s gradually reduced Japanese banks' lending capacity and, in turn, exerted a considerable negative impact on land prices (Chart III.14). This caused a spiral deterioration in asset quality across the

[132] This figure compares to JPY 6 trillion in the Drexel case and Y4 trillion in the Yamaichi case.

[133] Masaru Hayami, Governor of the Bank of Japan, "Statement by the Governor", 23 October 1998.

banking industry over the decade. Disposal of non-performing loans by one bank also indirectly affected other banks' asset quality in terms of the bankruptcy of common borrowers.

Very large financial mergers in Japan will probably further intensify indirect interdependencies via correlated exposures to non-banks and financial markets. For example, on the asset side, the four very large financial groups now being established are likely to account for approximately 50% of the total loans of banks in Japan. In some cases, it may result in the concentration of credit risk on a certain borrower or industry (Table III.13). On the liability side, these groups will likely account for approximately 70% of total short-term borrowings while they account for only 3% of total short-term loans (Chart III.15) – traditionally in Japan, the short-term money market (call money, certificates of deposit, large-lot deposits) has been an important funding source for major banks, and one which accounts for almost 20%, on average, of their liabilities. This means that the failure of one of the major four groups as a borrower in short-term money markets could lead to the failure of common lenders in such money markets, typically regional banks and trust funds, which also provide other very large groups with short-term loans. In fact, during the crisis of autumn 1997, the liquidity of short-term money markets nearly dried up reflecting mounting uncertainty over the financial conditions of some major Japanese banks.

Therefore, it is conceivable that consolidated very large financial institutions will inevitably be motivated to reduce loans to non-banks and minimise funding in the short-term money market by compressing balance sheet size, for example, through loan liquidation and securitisation.[134] Some borrowers may be asked to reduce overall borrowing limits and seek alternative funding sources in the corporate bond market. In addition, these financial institutions are likely to liquidate a significant portion of their cross-shareholdings (Table III.14) because shareholdings will become too large for a consolidated financial institution in terms of market risk (measured, for example, in terms of VaR, they correspond to approximately 20%[135] of capital). Thus, by stimulating securitisation, corporate bond issuance and the liquidation of cross-shareholdings, very large financial mergers in Japan may trigger the development and substantial growth of capital markets which have so far played a complementary role in terms of corporate financing in Japan (Table III.15).

The liquidation of cross-shareholdings that inevitably involves the sale of bank shares by other keiretsu firms may also prompt banks to improve return on equity in order to attract a new slate of investors who will agree to enter into long-standing relationships. Such new relationships will be based on banks' profitability rather than stability in supplying industrial funds. [136] Banks may have to improve lending profitability by, for example, the improved pricing of loans to generate higher return on equity.[137]

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[134] The major four financial groups are reported to be planning to establish a loan liquidation market in order to reduce concentration of risks as a result of consolidation (Nikkei Newspaper, 31 May 2000).

[135] VaR here means maximum risk exposure calculated using stock data at the end of the financial year 1996 under the conditions that the holding period is six months and confidence interval is 99%.

[136] Cross-shareholding has been a useful arrangement in which corporate borrowers who are also shareholders of a bank focus more on the stable supply of funds from the bank at a relatively cheap cost and less on return on equity. Bank lending, therefore, has not necessarily reflected the credit risk of individual borrowers; the rationale of banks is to maintain stable and long-term relationships with borrowers based on cross-shareholdings. While such an arrangement served to channel industrial funds into the corporate sector and thus economic growth, it may well explain banks' relatively low profitability on lending as well as low return on equity investment in banks.

[137] The growth of capital markets in Japan (as well as the increased attractiveness of bank stocks, which account for approximately 10% of the total market value of the Tokyo Stock Exchange) is also expected to stimulate pension and fund management activity. This, in turn, will probably relieve part of the increased risk concentration in the banking sector by way of diversifying the channels through which risks are transmitted as well as providing the banking sector with risk capital from end investors.

There may be both costs and benefits from the development of capital markets in Japan. Banking systems have a tendency to temporarily absorb the adverse consequences of macroeconomic and financial shocks (such as business and credit booms and busts) by revaluing assets internally (via provisioning, for example) and usually, more slowly, by using abundant capital. By contrast, capital markets tend to react more quickly to similar shocks as market participants manage and shed risks by trading and repricing assets. Thus, as a financial system evolves from one dominated by banks to one with deep and liquid capital markets, price and financial flow volatility are likely to increase. While this can be costly, a potential benefit is that financial risks become less concentrated in financial institutions and more widely distributed among investors who are willing, and potentially able, to shoulder and manage such risks. This could serve to prevent potential problems at a single financial institution or group from developing and severely affecting the financial markets and the real economy.

Deposit runs versus deleveraging

The progress of securitisation as a result of financial consolidation appears, in turn, to be promoting financial consolidation, which is likely to change the nature of systemic risk in the sense that it blurs the demarcation between banking and other financial businesses. For example, in order to benefit from the development of the capital markets, major financial institutions are trying to develop sophisticated trading and risk management technology to manage volatile market risks. Consolidation will allow sizeable revenue flows to constantly finance the massive IT investment that sophisticated technology requires. Also, some wholesale financial institutions are motivated to acquire a retail base in order to increase fee business vis-à-vis end investors as a stable source of revenue as well as to retain core deposits as a stable source of funding.

In traditional thinking, banks are the only entities that are uniquely systemic in nature because of their balance sheet structure (ie short-term funding and long-term lending) and their role in payment systems. However, consolidation among various types of financial institutions, with the help of deregulation, is gradually blurring the demarcation of businesses, especially between banking and securities. Indeed, the balance sheet structure of securities firms has gradually become more similar to that of banks. For example, securities firms have recently increased their holding of less liquid assets such as securitised loans, high yielding bonds and other instruments with derivative features. On the liability side, the recent growth of the repo market has enabled securities firms to easily obtain liquid funds and leverage their balance sheets.[138] All of this has created systemic problems similar to those that exist in the banking industry.

Meanwhile, bank assets have become more liquid parallel to the development of securitisation and credit derivatives, thereby relieving, at least to some extent, the traditional role of banks in transforming short-term, liquid funds into long-term, illiquid funds. The risk reduction needs of very large banks as well as the fusion of banking and securities businesses as a result of consolidation will promote such changes and thus reduce the uniqueness of banks.

Moreover, such fusion between the banking and securities businesses will also make market-making an increasingly important means of financial intermediation because more financial instruments will be either priced or evaluated in the markets. As a result, credit risks will become increasingly market-tied and volatile. In contrast to loan-loss provisioning, the correction of credit risks in the market could immediately usurp market players' risk capital, as was the case during the Asian crisis in 1997. The loss of market-makers' risk capital would see liquidity evaporate in the capital markets and intensify the funding difficulties of highly leveraged institutions because they need to put up additional margin calls, unlike banks whose

[138] In fact, in Japan, major securities firms have traditionally been allowed access to the short-term interbank money markets. In retrospect, it may be no coincidence that the financial crisis in autumn 1997 was triggered by the default of interbank obligations by Sanyo Securities.

funding is protected by deposit insurance.[139] Moreover, deleveraging tends to have serious adverse effects on the real economy because it can create negative equity as a result of plunges in asset values. Indeed, this was one of the reasons the Bank of Japan had to extend liquidity support to facilitate the orderly unwinding of Yamaichi Securities.[140]

On the other hand, development of real-time gross settlement, which is expected to become operational in early 2001, and the introduction of speedy resolution methods to the deposit insurance system scheduled to become effective in April 2001, will make the payment system more resistant to a chain reaction or financial risk contagion. In other words, in the future, systemic risks may stem more from deleveraging in the market than deposit runs or the chain reaction stemming from a payment failure.

Potential policy implications

Design and operation of financial safety nets

Japan has three consumer protection funds: deposit insurance, the investor protection fund, and the policyholder protection fund, each respectively covering the banking, securities and insurance industries. In principle, the deposit insurance system and investor protection system protect depositors and investors in securities up to JPY 10 million, while the policyholder protection system guarantees 90% of insurance companies' reserves. However, these partial protection systems were incapable of coping with the post-bubble crisis, and thus temporary special measures were introduced to protect all liabilities of deposit-taking institutions until the end of March 2002, as well as to protect securities investors and insurance policyholders beyond the limits until the end of March 2001.

Learning from these experiences, in 2000, legislation enabled the deposit insurance system to commence the resolution of failed depository institutions as early as possible and to expedite business transfer procedures. This framework is aimed at minimising depositor losses and preserving the liquidity of deposits by maintaining financial functions to the greatest possible extent so that the possibility of systemic risk is minimised. It was also stipulated that, in the event of systemic risk, the Deposit Insurance Corporation might be authorised to protect all liabilities of a troubled financial institution as well as to inject capital into undercapitalised banks (systemic risk exceptions[141]).

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[139] Moreover, if consolidation promotes the dominance of particular trading and risk management practices and models, it will tend to increase positive feedback effects and induce herding behaviour, for instance, in terms of synchronising dynamic hedging among a number of market participants. As financial institutions have become larger, more global and increasingly capable of dominating relatively small financial markets, global portfolio diversification on a large scale will increase, and, in fact, already appears to be increasing, the risk of positive correlation on a global scale in times of stress. For example, the fact that the depreciation of the Russian rouble in August 1998 led to a depreciation of the dollar, as well as the fact that bond and stock prices in Russia led to a plunge in stock prices in Latin America and partially in the United States, indicate that international markets have become strongly correlated due to the progress of global portfolio diversification.

[140] The 1997 financial crisis was first triggered by the default of Sanyo Securities, a medium-sized securities firm, in the interbank market. As the crisis developed, the Bank of Japan decided to provide liquidity support for the orderly winding down of Yamaichi Securities (one of the big four securities houses in Japan which announced the voluntary closing of business) with a view to containing systemic risks. Yamaichi was a financial conglomerate that held securities subsidiaries in nine major financial centers and two banking subsidiaries in Japan and the United Kingdom.

[141] If the Prime Minister acknowledges the existence of systemic risk after consulting the Conference for Financial Crisis, the Deposit Insurance Corporation may be authorised to protect all depositors and other creditors of a troubled financial institution by facilitating capital injection, financial assistance beyond the payoff cost limit, or temporary nationalisation.

Japan's new safety net framework may cope with systemic risk better than before. However, there are issues that require further consideration with regard to the failure of a very large bank. First, a substantial amount of public funds would probably be needed to cover the loss incurred by the failed bank. Obtaining approval from the Diet to appropriate funds might require a long time during which the franchise value of the failed bank would deteriorate significantly, resulting in further losses. Second, it might not be easy to find a rescuer financial institution in a timely manner, particularly when the troubled bank's prospects for restoring viability are uncertain. Third, when a financial group is a complex conglomerate comprising a bank and other financial institutions, the collapse of a non-bank firm within the group might threaten the viability of the bank because the counterparties of the financial group may trigger cross-defaults against the bank, particularly when the firewalls among the firms are unclear. Fourth, the Bank of Japan might have to extend bridging loans to allow the failed bank to continue operations in order to avoid market disruption until funds to cover the loss become available. Fifth, the expectation of bailout would generate moral hazard on the part of very large banks.

These limitations underscore the importance of early correction rather than an early resolution in coping with the problems of systemically important financial institutions. This is the rationale behind the new deposit insurance system being authorised to inject capital into undercapitalised banks. However, such public subsidisation should only be allowed in truly exceptional cases because it could generate moral hazard and distort competition.

In this respect, the market mechanism remains a crucial tool in assessing the financial soundness of financial institutions. In order to facilitate market discipline, continuous efforts to improve public disclosure are indispensable. Also, accounting rules should be more coordinated to make financial conditions with respect to different activities more transparent and comparable. In addition, an independent and strong compliance function as well as more developed auditing systems are called for. For example, a risk-based performance evaluation and intrafirm competition between compliance offices related to different activities would probably enhance the effectiveness of risk controls, although more centralised risk control models might be suitable for more traditional banking activities. Needless to say, there is no "one size fits all" type of risk control system. Each financial conglomerate should develop an original system in accordance with its own risk profile. It should also be noted that while increased reliance on market discipline helps to detect problems earlier, it is like a double-edged sword in the sense that it leaves only very limited time for the financial authorities to respond once a problem surfaces and quickly develops in an unfavourable way. The markets might also react excessively to such a shock and generate irrational panic from time to time.

Early supervisory intervention could, therefore, be an especially important means to check the health of systemically important financial institutions. Effective supervisory intervention at a fairly early stage could correct problems even before solvency is questioned. If such early intervention were successful, moral hazard could also be effectively checked because management should face penalties well before the use of public funds is hinted. Such (somewhat draconian) intervention may be justified with respect to systemically important financial institutions because they are too important to be left to market mechanisms alone and, therefore, systemically important financial institutions inevitably remain the largest potential beneficiaries of safety nets.

Adequacy of data flows

A major challenge for the supervisory authorities is how to know when to intervene. Needless to say, one of the methods of correcting problems at individual financial institutions is the enforcement of prompt corrective action (PCA), which was introduced in Japan in 1996. PCA currently relies primarily on risk-asset capital ratios but, useful as they may be, risks can be measured using different methods. Table III.16 shows the level of leveraging measured in various ways, which implies that risk amounts of a financial institution can vary greatly in accordance with measurement methods. These indicators may also prove to be useful in supplementing current PCA.

More generally, in order to discover problems at an early stage, supervisors should look into structural and macroeconomic factors, such as infrastructural impediments, that can distort market mechanisms, the creation of irrational expectations that can lead to financial bubbles, in addition to factors peculiar to individual financial institutions. For example, our experience tells us that bank behaviour has clearly changed in accordance with the progress of risk accumulation. Chart III.16 shows the relationship between lending spreads and the lending attitude of Japanese banks. During the bubble period Japanese banks aggressively expanded lending with little regard to profitability, but this suddenly ended when the financial bubble burst. Apparently, Japanese banks started to pay attention to lending spreads and became cautious about asset expansion after stock prices plunged in February 1990.

However, it should be noted that the accumulation of risks could be detected in various aspects of bank behaviour, and there is no such thing as an omnicompetent early warning indicator that can signal a warning for all problems. Thus, simple though it may be, it is important for the financial authorities to look carefully at various macro and micro indicators (various interest rates and asset prices, changes in transaction patterns, change in market players etc) that can affect bank behaviour parallel with developments in economic and monetary conditions. In this regard, an in-depth study of the past banking crisis may well offer useful insights into developing indicators that capture behavioural changes with respect to financial institutions.[142]

Role of LOLR assistance

Given the desirability of early intervention, lender of last resort (LOLR) assistance could prove to be the most effective means to cope with systemic risks, at least under the Japanese safety-net framework. The Bank of Japan has extended LOLR assistance in two different ways. Ex ante LOLR assistance aims at correcting irrational market pessimism by showing the central bank's belief that the institution concerned is solvent and viable. Ex post LOLR assistance is extended to help meet all the liabilities of an institution to reduce panic, regardless of solvency.

Ex ante LOLR assistance relies on announcement effects. It could be extended either directly to an individual financial institution or via the market. In an idealistic environment in which the central bank enjoys unshakeable confidence from the market, simply announcing its commitment to provide liquidity could correct market pessimism due, for example, to information asymmetry. Such commitment from the central bank could prove to be the cheapest and the most effective means to deter a self-fulfilling occurrence of systemic risk, since successful ex ante LOLR assistance could restore the corporate value of the financial institution in question or conditions of the affected market. It should also be noted that in order to succeed in such ex ante LOLR assistance, the central bank must be seen by the market to be making an independent decision concerning the solvency of the financial institution in question, unaffected by political considerations. However, in the Japanese setting, an independent judgement implies that the Bank of Japan must be prepared to assume losses should they materialise. Moreover, there could be an instance in which the Bank might still deem it necessary to extend LOLR assistance to maintain financial system stability, even knowing that it could result in a loss with a certain probability.

Also, as one form of ex ante LOLR assistance, the central bank could temporarily supplement the role of market-makers in terms of providing liquidity to the market as a market-maker of last resort. For example, the central bank can engage in direct transactions with market participants when liquidity in the market dries up due to financial crises that incapacitate private market-makers. This role would be particularly effective if the market were overshooting because of panic. For example, during the crisis of the autumn of 1997 when the "Japan premium" increased significantly, the Bank of Japan played a role in intermediating liquidity from foreign

[142] See Bank of Japan (2000).

banks to Japanese banks in the short-term money market in order to calm financial turmoil.[143] As the panic subsided, market pessimism over Japanese banks' solvency disappeared (Chart III.17).[144]

An obvious question is how to determine the scope of LOLR in the face of a systemic threat. This is particularly the case in an environment where the emergence of financial conglomerates is blurring the distinction between banks and other non-bank financial institutions. In this regard, ex ante LOLR assistance could also prove to be the more effective and a legally more justifiable means for the central bank to cope with problems of non-bank financial institutions because it aims at correcting market sentiment instead of bailing out non-deposit creditors. Thus, such extension of LOLR could be compatible with the objectives of the central bank that has responsibility for financial system stability. Furthermore, liquidity can be provided not only to troubled financial institutions individually but also to financial markets as a whole through market operations.

Ex post LOLR assistance is often used as a bridge for deposit insurance funds (or the provision of funds by the government to cover losses) when the deposit insurance system is not sufficiently funded or empowered to design rescue plans for failed financial institutions.[145] Ex post LOLR assistance may not always be a practical choice to handle a very large financial conglomerate because it is often not realistic for the central bank to provide all the funds needed to meet the drain of liabilities without risking some side effects on monetary policy. Even if the government guarantees repayment, central bank funds might have to be dedicated to the failure resolution for an undesirably long period until the funds are finally repaid, which could undermine the flexibility of conducting monetary policy. Nevertheless, the central bank could be pressed to provide ex post LOLR assistance if the authorities failed to contain the risk at an early stage.

[143] The Bank of Japan provided relatively long-term yen funds to Japanese banks that had funding difficulties while it absorbed yen funds from foreign banks that wished to invest risk-free yen assets in bills drawn by the Bank of Japan. By acting as an intermediary between Japanese banks and foreign banks, it supplemented the market function and contributed to alleviating the uneven distribution of funds caused by information asymmetries with respect to the financial conditions of Japanese banks.

[144] See eg Hanajiri (1999).

[145] At an early stage of the financial crisis in Japan, lack of a sufficient safety net led the Bank of Japan to provide funds to cover losses in the forms of capital injection and profit support.

Table III.1

Correlation analysis of bank ROE among US regions

Annual data, 1979-1998

Region (mean ROE)	New England	Mideast	Great Lakes	Plains	Southeast	Southwest	Rocky Mt	Far West
New England (0.106949)	1							
Mideast (0.106738)	0.65875	1						
Great Lakes (0.120448)	0.02411	0.50080	1					
Plains (0.131574)	0.10756	0.44102	0.66704	1				
Southeast (0.126031)	0.84124	0.66657	0.25513	0.38250	1			
Southwest (0.090953)	0.23662	0.60174	0.25345	0.69174	0.36296	1		
Rocky Mt (0.121841)	0.26030	0.48990	0.43650	0.90354	0.46883	0.87720	1	
Far West (0.107647)	-0.28249	0.28071	0.69177	0.56564	0.07846	0.32124	0.39953	1

Sources: U.S. bank Call Reports, U.S. Bureau of Economic Analysis (BEA), Berger and DeYoung (2000).

Return on equity (ROE) = the aggregate net income for the banks in the region, divided by the aggregate book value of equity for the banks in the region.

Regions: New England (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont); Mideast (Delaware, District of Columbia, Maryland, New Jersey, New York, Pennsylvania); Great Lakes (Illinois, Indiana, Michigan, Ohio, Wisconsin); Plains (Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota); Southeast (Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, West Virginia); Southwest (Arizona, New Mexico, Oklahoma, Texas); Rocky Mountain (Colorado, Idaho, Montana, Utah, Wyoming); Far West (Alaska, California, Hawaii, Nevada, Oregon, Washington).

Table III.2

Total interdependencies

Correlation between firm average stock returns cross-correlations and consolidation intensity

		Gross[1]	**De-meaned**[2]
LCBOs*	coefficient	**0.25**	**0.06**
	t-stat	18.77	4.38
Active trading	coefficient	**0.36**	**0.11**
	t-stat	11.64	3.6
Second tier	coefficient	**0.25**	**0.10**
	t-stat	7.89	3.15
Trust and custody	coefficient	**-0.07**	**-0.33**
	t-stat	-2.10	-10.66
CUSP	coefficient	**0.31**	-0.02
	t-stat	10.38	-0.75
Traditional intermediaries	coefficient	**0.30**	**0.06**
	t-stat	12.13	2.39

[1] Correlation between firm average stock returns cross-correlation and consolidation intensity. [2] Correlation between firm average deviations of stock returns cross-correlation from the pooled mean and consolidation intensity.

* Correlations are computed using 474 firm-year observations.
Coefficients that are significantly different from zero at a 5% significance level are reported in bold.

Table III.3

Direct interdependencies

Correlation between firm measures of direct interdependencies consolidation intensity

		Panel A		**Panel B**		**Panel C**	
		Short-term interbank lending/capital		**Medium-to-long-term loans to banks/capital**		**Gross positive market value/capital**	
		gross[1]	**de-meaned**[2]	**gross**[1]	**de-meaned**[2]	**gross**[1]	**de-meaned**[2]
LCBOs*	coefficient	**0.14**	0.08	-0.09	0.02	**0.26**	**0.24**
	t-stat	2.18	1.24	-1.40	0.34	2.80	2.51
Active trading	coefficient	0.04	-0.29	**-0.45**	-0.21	-0.22	**-0.47**
	t-stat	0.28	-1.95	-3.22	-1.41	-0.97	-2.25
Second tier	coefficient	**0.39**	0.26	-0.18	0.02	0.25	0.27
	t-stat	2.65	1.7	-1.15	0.14	1.01	1.1
Trust and custody	coefficient	**0.77**	**0.74**	-0.19	-0.02	**0.60**	**0.59**
	t-stat	7.84	7.09	-1.29	-0.13	3.17	3.13
CUSP	coefficient	**0.31**	**0.32**	0.17	0.12	**0.51**	0.40
	t-stat	2.08	2.16	1.1	0.76	2.48	1.79
Traditional intermediaries	coefficient	**-0.45**	**-0.24**	-0.05	0.15	0.20	0.06
	t-stat	-4.00	1.98	1.37	1.22	1.07	0.31

[1] Correlation between firm average measure of direct interdependencies and consolidation intensity. [2] Correlation between firm average deviations of measure of direct interdependencies from the pooled mean and consolidation intensity.

* Correlations are computed using 474 firm-year observations.
Coefficients that are significantly different from zero at a 5% significance level are reported in bold.

Chart III.1

Consolidation intensity

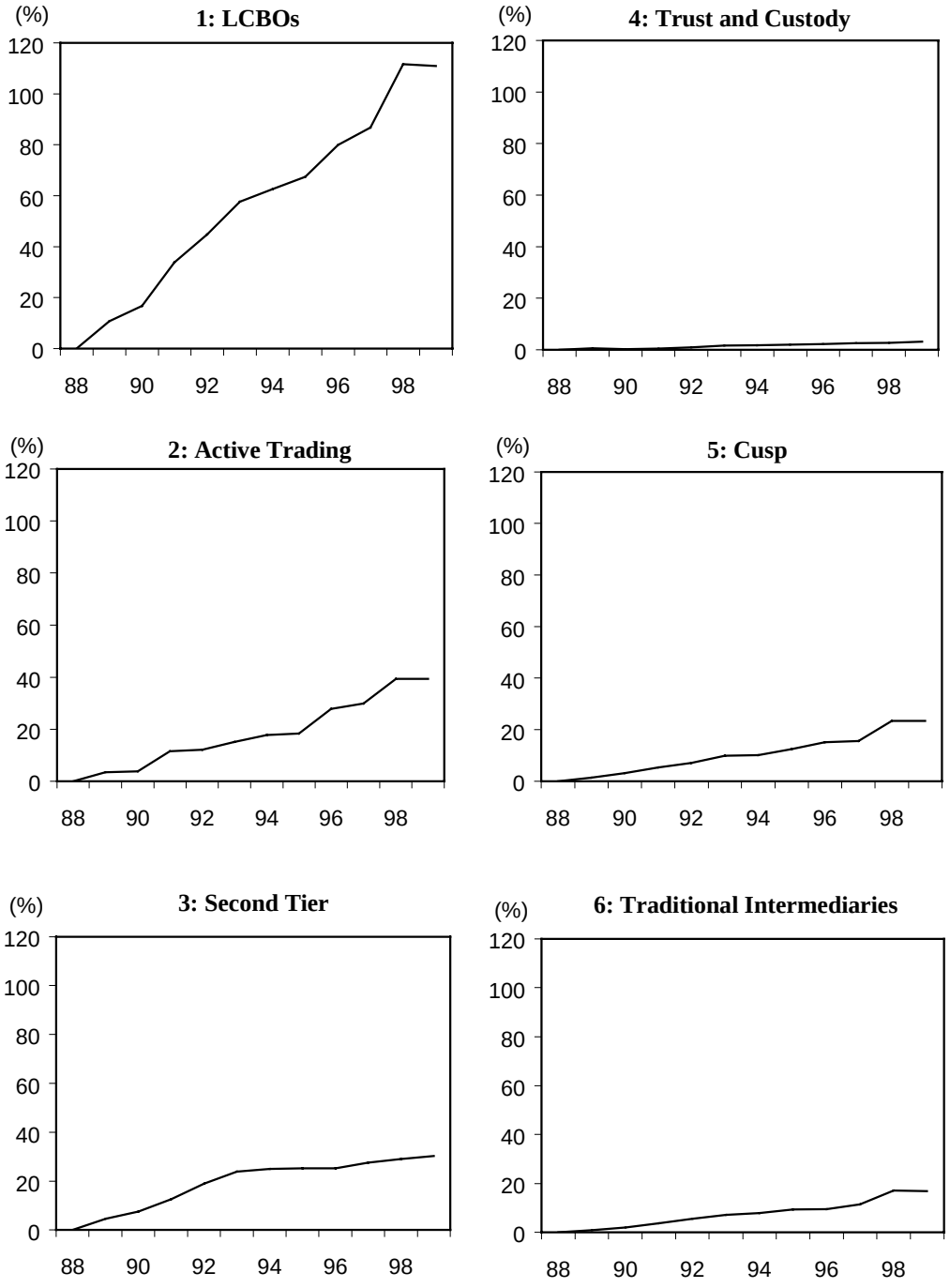


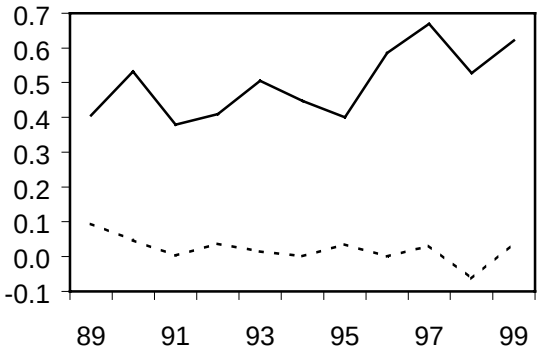
Chart III.2

Average stock returns cross-correlations

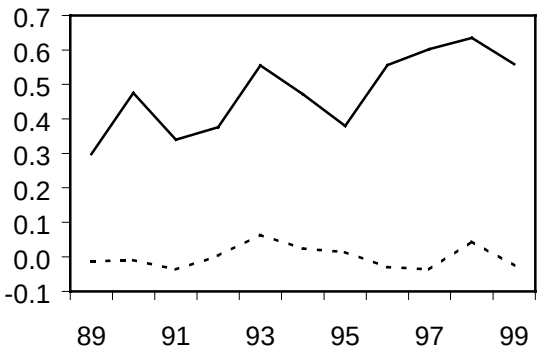
1: LCBOs Average

4: Trust and Custody

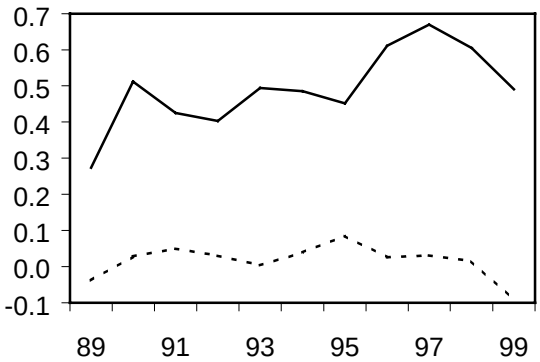
2: Active Trading



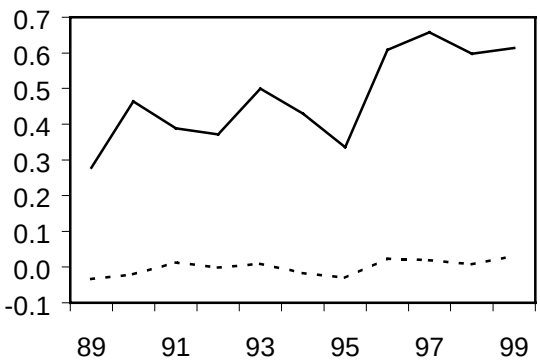
5: Cusp



3: Second Tier



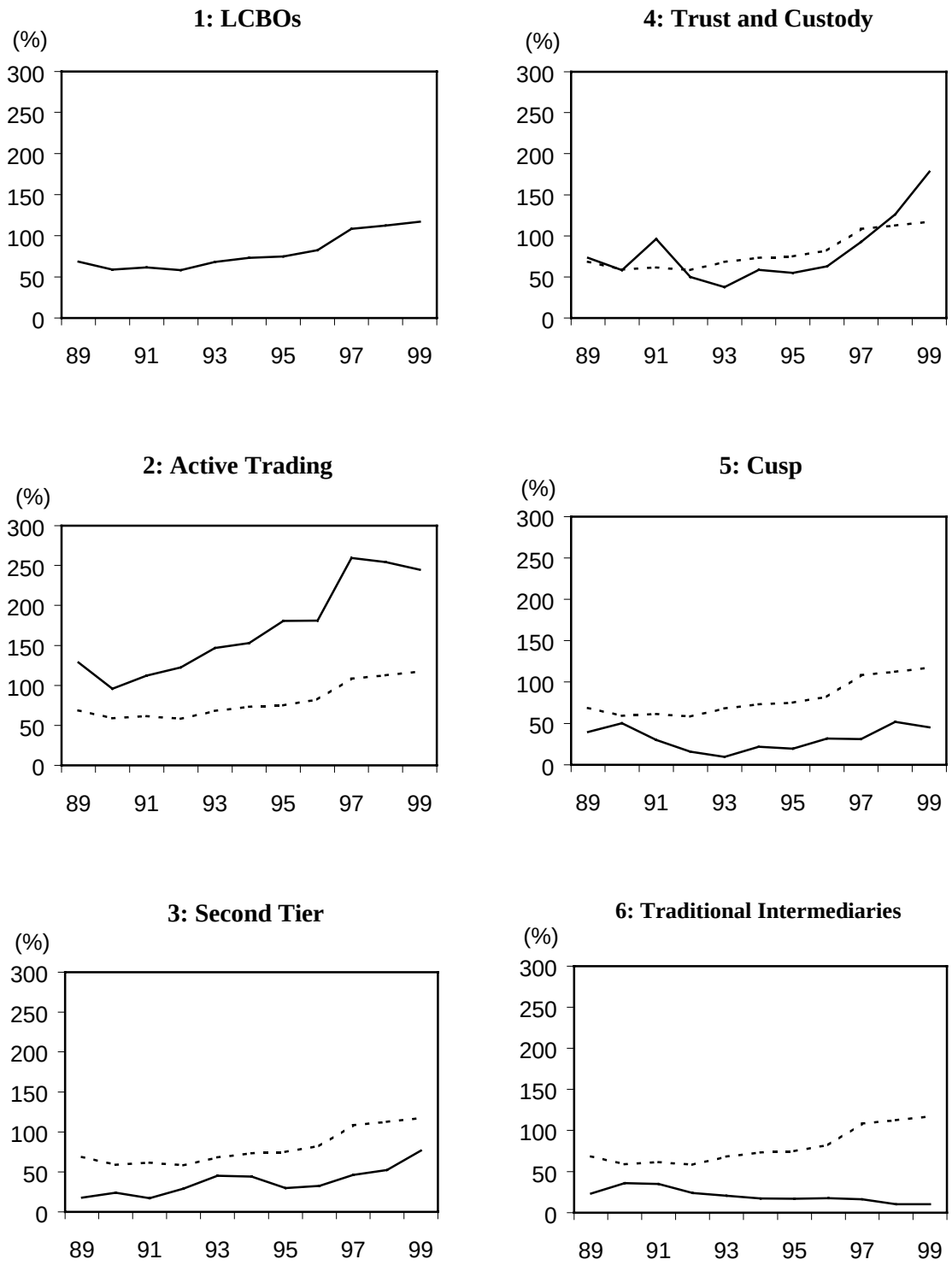
6: Traditional Intermediaries



Note: The dotted line depicts the time series of deviations of a group's correlations from the LCBO average.

Chart III.3

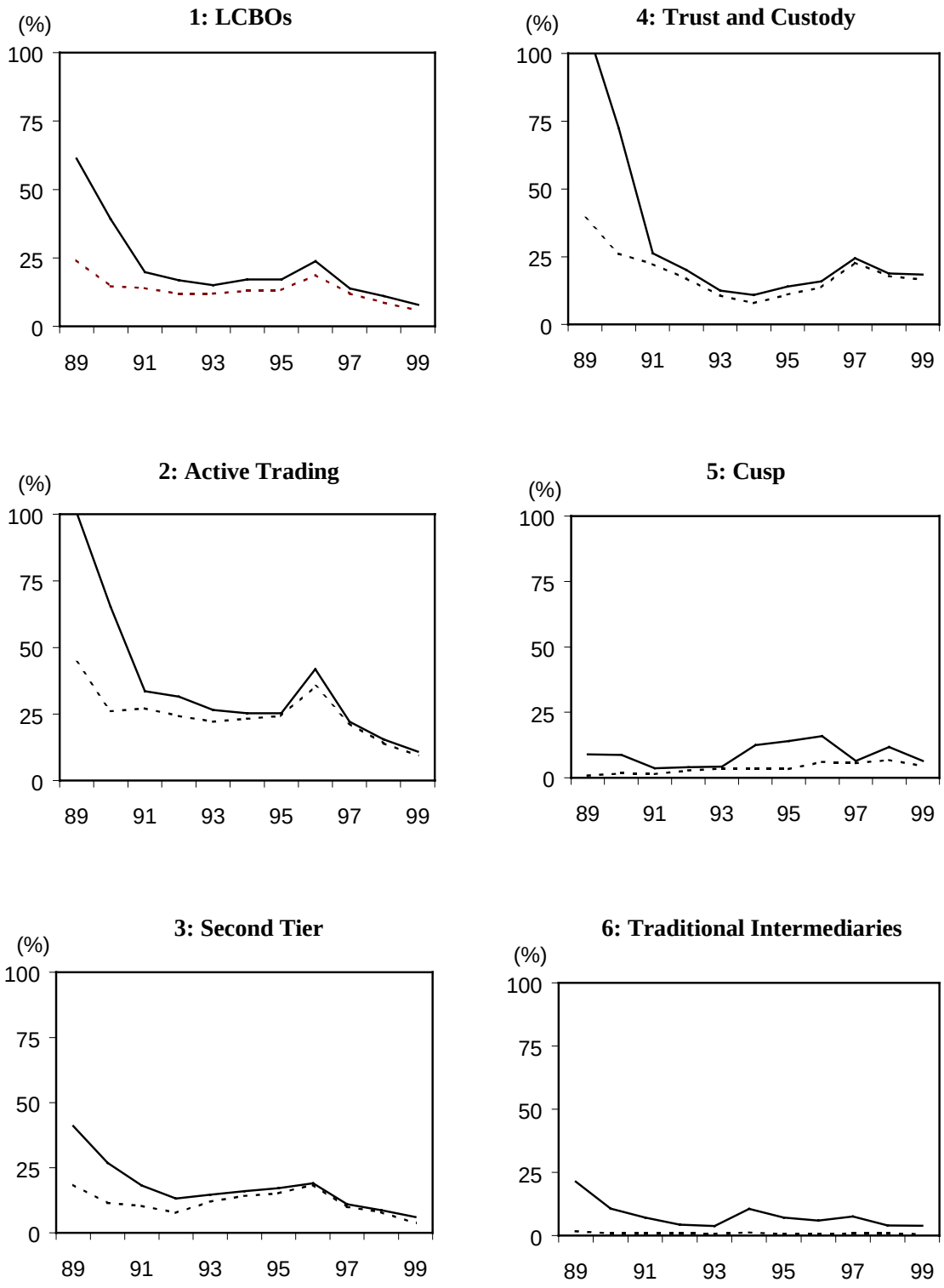
Short-term interbank lending – capital ratios



Note: The total LCBO short-term interbank lending-capital ratio (graph 1) is shown as a dotted line in the other graphs.

Chart III.4

Medium- to long-term loans to banks – capital ratios

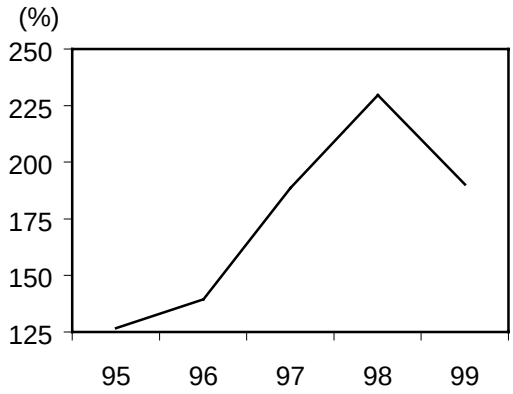


Solid line - medium- to long-term loans to all banks; dotted line - medium- to long-term loans to foreign banks.

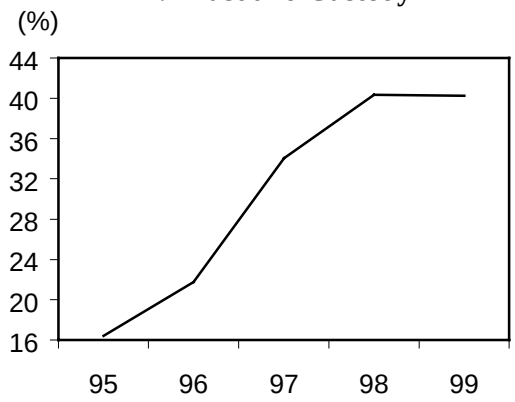
Chart III.5

Gross positive market value – capital ratios

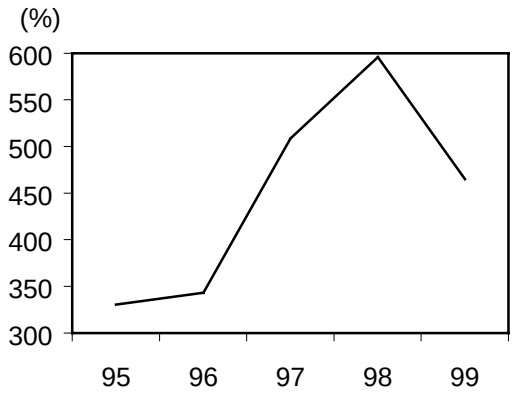
1: LCBOs



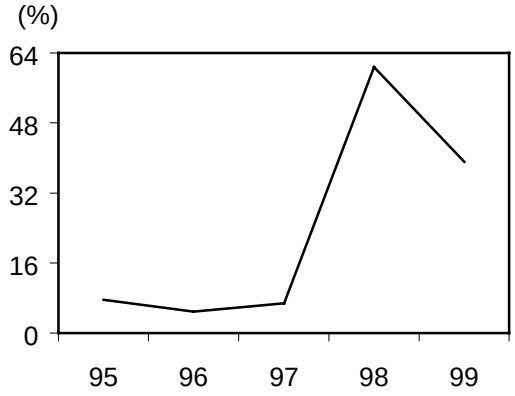
4: Trust and Custody



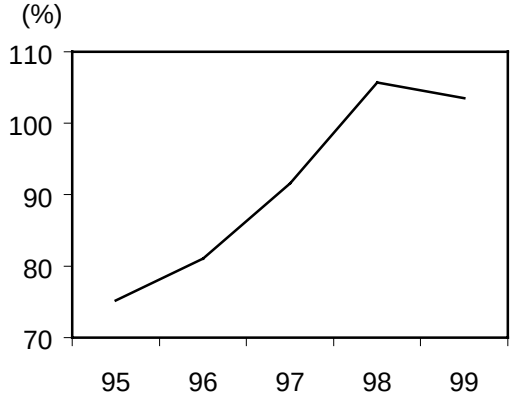
2: Active Trading



5: Cusp



3: Second Tier



6: Traditional Intermediaries

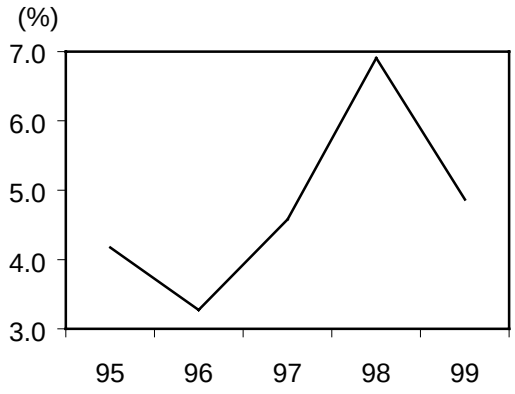


Table III.4

Values of target institutions in domestic European financial services M&A activity from 1985 to 1997

Acquiring institution	Target institutions		
	Banks	**Securities**	**Insurance**
Commercial banks	89 (36.0%)	9 (3.6%)	20 (8.1%)
Securities firms	23 (9.3%)	19 (7.7%)	24 (9.7%)
Insurance companies	11 (4.4%)	6 (2.4%)	46 (18.6%)

Sources: Berger et al (2000). Original sources DeLong, Smith and Walter (1998), Berger, Demsetz, and Strahan (1999) and Securities Data Company. The main number shown in each entry is the sum of the equity values (in billions of USD) of the target institutions. The number in parentheses is the percentage of the total (these sum to 100 for each 3x3 matrix).

Table III.5

Values of target institutions in cross-border European financial services M&A activity from 1985 to 1997

Acquiring institution	Target institutions					
	Intra-Europe international M&As			**Europe - non Europe international M&As**		
	Banks	**Securities**	**Insurance**	**Banks**	**Securities**	**Insurance**
Commercial banks	15.0 (17.9%)	8.7 (10.4%)	0.4 (0.5%)	14.5 (14.5%)	4.3 (4.3%)	0.3 (0.3%)
Securities firms	4.3 (5.1%)	5.8 (6.9%)	1.1 (1.3%)	15.6 (15.6%)	15.9 (15.9%)	12.9 (12.9%)
Insurance companies	11.2 (13.4%)	0.3 (0.4%)	37.0 (44.2%)	1.0 (1.0%)	3.1 (3.1%)	32.7 (32.6%)

Sources: Berger et al (2000). Original sources DeLong, Smith and Walter (1998), Berger, Demsetz, and Strahan (1999) and Securities Data Company. The main number shown in each entry is the sum of the equity values (in billions of USD) of the target institutions. The number in parentheses is the percentage of the total (these sum to 100 for each 3x3 matrix).

Table III.6

Internationalisation of European Banking Systems, 1997

	Market share of branches and subsidiaries (% of total domestic assets)				Average size of individual foreign branches and subsidiaries as % of total domestic assets				
	in other countries	from abroad	o/w branches	o/w subsidiaries	from all countries	from EEA		from non-EEA	
						branches	subsidiaries	branches	subsidiaries
AT	n.a	3.4	0.8	2.6	0.09	0.12	0.08	0.05	0.09
BE	n.a	36.3	15.9	20.4	0.51	0.36	1.20	0.46	0.08
DE	27.9	4.2	1.6	2.6	0.03	0.02	0.05	0.02	0.03
ES	14.9	11.7	6.4	5.3	0.15	0.15	0.16	0.08	0.32
FI	13.1	7.1	7.1	0	0.79	0.79	0.00	0.00	0.00
FR	29.2	9.8	5.2	4.6	0.03	0.05	n.a	0.06	n.a
IR	34.6	53.6	18.9	34.7	1.09	0.98	1.32	0.40	0.99
IT	15.2	6.8	5	1.8	0.11	0.10	0.43	0.08	0.03
NL	n.a	7.7	2.8	4.9	0.16	0.21	0.38	0.05	0.10
SE	n.a	1.7	1.4	0.3	0.09	0.09	0.00	0.03	0.20
UK	n.a	52.1	45.5	6.6	0.13	0.21	0.06	0.15	0.05

Source: ECB (1999) "Possible Effects of EMU on the EU Banking Systems in the Medium to Long Term". Pages 5.1 and 5.2.

Table III.7

Interbank loans – domestic/euro-wide, USD billions

(% of total in brackets)

	December 1995		December 1998		December 1999	
	Domestic	Euro-area	Domestic	Euro-area	Domestic	Euro-area
France	895 (78)	260 (22)	925 (79)	246 (21)	n.a n.a	n.a n.a
Germany	1,408 (91)	133 (9)	1,757 (90)	196 (10)	1,500 (89)	188 (11)
Italy	158 (77)	48 (23)	159 (69)	72 (31)	n.a n.a	n.a n.a
United Kingdom	459* (58)	332 (42)	520 (50)	512 (50)	510 (48)	544 (52)

* Excludes repos and bills. All data are on an unconsolidated basis, as reported in the sources.

Sources: Relazione Annuale 1998 (Italy), Deutsche Bundesbank Monthly Report February 2000 (Germany), Bulletin de la Banque de France, Supplément “Statistiques”, 3^{E} Trimestre 1999 (France), Bank of England Monetary and Financial Statistics, February 2000 (UK).

Table III.8

Cross-border interbank lending of banks operating in European countries

Country	End-September 1996								End-September 1999							
	Europe[1]				Non-Europe				Europe				Non-Europe			
	USD bn	% of GDP	% of capital[2]	% of total assets[4]	USD bn	% of GDP	% of capital[2]	% of total assets[4]	USD bn	% of GDP[3]	% of capital[2]	% of total assets[4]	USD bn	% of GDP	% of capital[2]	% of total assets[4]
Austria	36.4	16.5	n.a.	8.4	19.5	8.8	n.a.	4.5	34.3	15.3	n.a.	7.9	19.0	8.5	n.a.	4.4
Belgium	90.7	34.9	279.3	12.8	76.8	29.5	236.4	10.8	135.6	51.7	348.4	19.1	20.1	7.7	51.7	2.8
Denmark	25.5	14.2	n.a.	13.5	13.2	7.4	n.a.	7.0	33.4	18.3	n.a.	17.7	11.9	6.5	n.a.	6.3
Finland	11.6	9.2	n.a.	9.4	4.0	3.2	n.a.	3.3	13.3	10.0	n.a.	10.7	1.2	0.9	n.a.	1.0
France	234.3	15.4	209.1	6.9	190.7	12.6	170.1	5.7	264.8	17.4	225.0	7.9	133.5	8.8	113.4	4.0
Germany	205.0	8.9	142.9	4.2	127.2	5.5	88.7	2.6	304.8	13.6	173.6	6.3	105.2	4.7	59.9	2.2
Ireland	20.5	80.4	n.a	18.9	5.2	20.2	n.a.	4.7	44.4	129.4	n.a.	40.9	12.8	37.2	n.a.	11.8
Italy	101.0	8.3	131.3	6.3	34.5	2.8	44.9	2.2	94.6	7.7	114.8	5.9	17.7	1.4	21.5	1.1
Luxembourg	187.8	1,100.1	3,654.2	31.8	41.9	245.4	815.0	7.1	204.3	1,119.4	3,541.4	34.6	23.0	126.2	399.4	3.9
Netherlands	112.2	29.5	2,132.0	10.4	58.2	15.3	1,107.2	5.4	130.2	32.8	212.6	12.1	39.4	9.9	64.3	3.7
Norway	1.8	1.1	n.a.	1.3	1.3	0.8	n.a.	1.0	3.5	2.4	n.a.	2.6	1.5	1.0	n.a.	1.1
Spain	73.0	13.0	n.a.	8.2	26.0	4.6	n.a.	2.9	53.1	9.2	n.a.	6.0	13.8	2.4	n.a.	1.5
Sweden	29.7	12.1	147.3	11.8	10.7	4.4	53.0	4.2	28.8	12.9	155.1	11.4	6.3	2.8	33.7	2.5
Switzerland	341.3	125.6	514.2	28.4	57.4	21.1	86.4	4.8	488.1	175.2	879.5	40.7	115.5	41.5	208.2	9.6
UK	388.4	30.3	347.3	20.6	430.7	33.6	385.2	22.9	594.7	42.7	377.0	31.6	460.6	33.1	292.0	24.5
Total Europe	**1,859.2**				**1,097.3**				**2,427.9**				**981.5**			
MEMO																
Japan	*102.3*	*2.4*	*27.9*	*1.9*	*558.4*	*13.0*	*152.3*	*10.4*	*102.1*	*2.4*	*28.7*	*1.9*	*356.0*	*8.3*	*100.0*	*6.2*
United States	*157.6*	*2.1*	*83.7*	*2.9*	*332.7*	*4.3*	*176.6*	*6.2*	*307.1*	*3.6*	*118.0*	*5.7*	*359.0*	*4.2*	*137.9*	*6.7*

[1] The countries included in the Europe category are: Austria, Belgium, Denmark, Finland, Germany, Ireland, Italy, Netherlands, Norway, Spain, Sweden, Switzerland and the UK. [2] Capital is defined as the net capital base of internationally active banks. The figures used in 1999 are the 1998 figures due to lack of more recent data. [3] The GDP figures used for 1999 are the 1998 figures due to lack of more recent data. [4] Total bank assets are for 1997.

Sources: Capital: Basle Committee on Banking Supervision: The Financial Strength and Performance of Internationally Active Banks (1999). GDP: IMF IFS. Interbank lending: BIS International Loans and Deposits: Geographical Location and Country Analysis Tables DL/1-3 (end-September 1996/1999). Total Assets: OECD Bank Profitability Report.

Table III.9

Indicators of relative share of traditional and non-traditional banking activity in (aggregate) European countries reporting to BIS

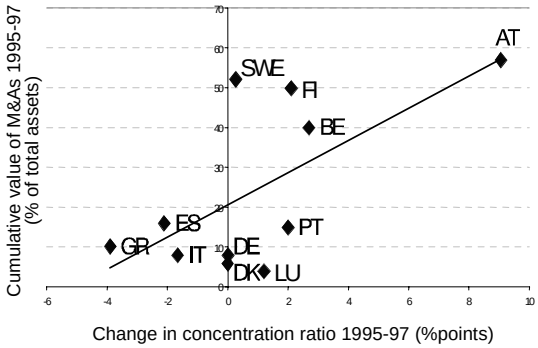
		1990	1997
Assets (% of total)	Loans	51	44
	Securities	13	22
	Other	36	34
Income (% of total)	Interest	70	58
	Non-interest	30	42

Source: OECD Bank Profitability 1999.

Chart III.6

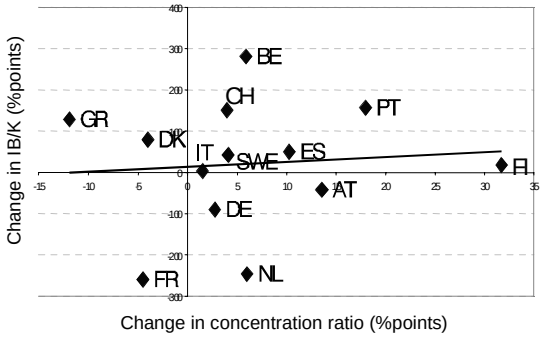
Interbank lending and consolidation

a. Correlation between M&A activity and change in concentration ratio (C5) 1995-97



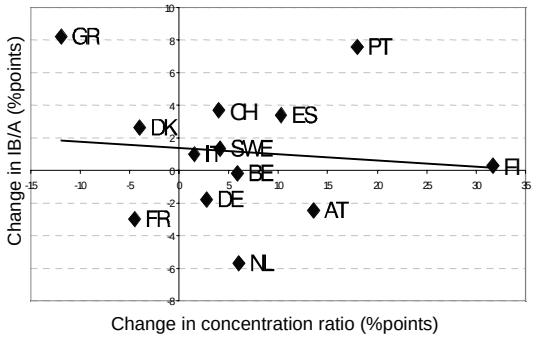
Line equation: y=20+4.05x (T-stat 2.6)

b. European banking systems: Change in concentration (C5) and change in interbank lending/capital (1990-97)



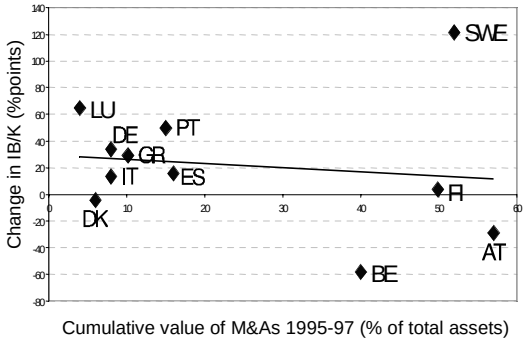
Line equation: y=13.6+1.2x (T-stat 0.28)

c. European banking systems: Change in concentration (C5) and change in interbank lending/total assets (1990-97)



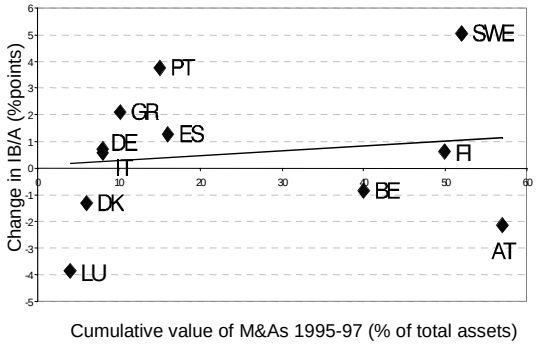
Line equation: y=1.4-0.04x (T-stat -0.35)

d. European banking systems: Value of M&As and change in interbank lending/capital (1995-97)



Line equation: y=29-0.3x (T-stat -0.42)

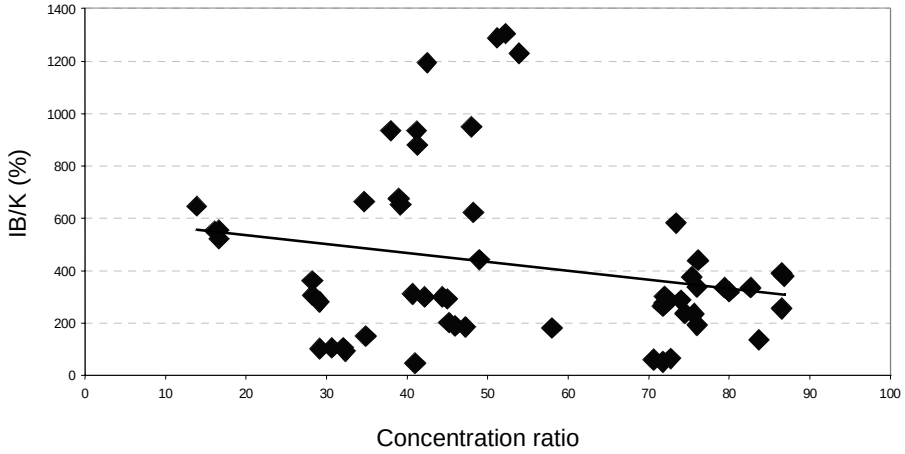
e. European banking systems: Value of M&As and change in interbank lending/total assets (1995-97)



Line equation: y=0.1+0.02x (T-stat 0.45)

Chart III.6 (continued)

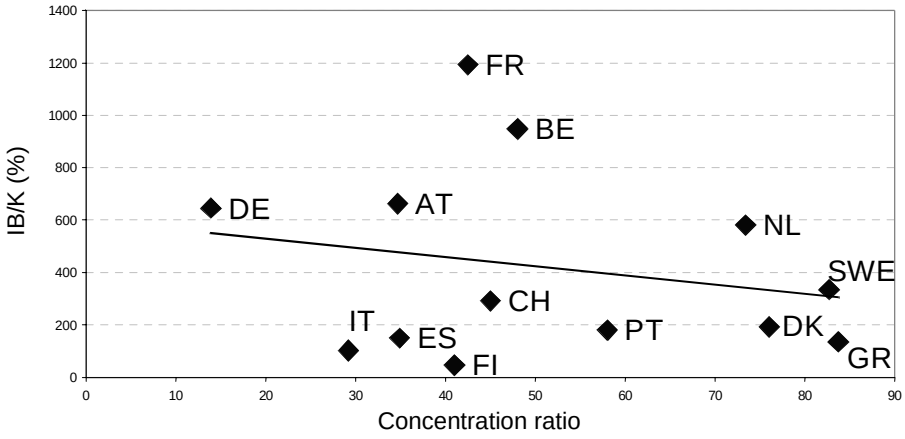
f. European banking systems: C5 concentration ratios and the level of interbank lending/capital (all years)



Years: 1990, 1995, 1996 and 1997 (sample period constrained by availability of C5 concentration data)

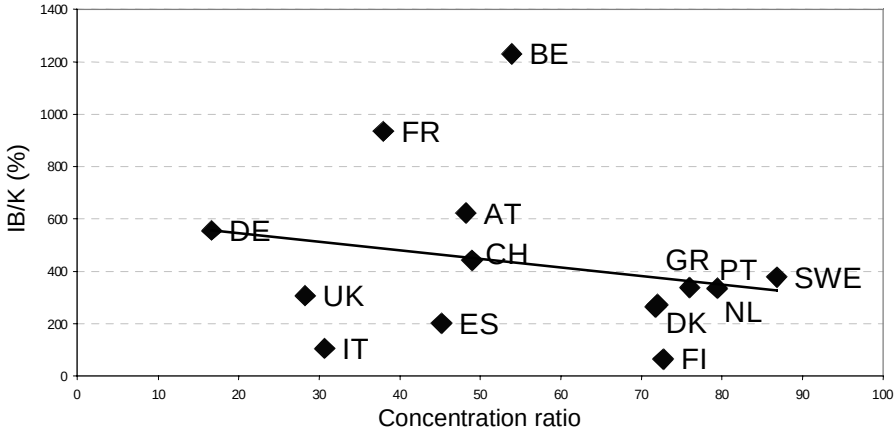
Line equation: y=602-3.4x (T-stat -1.66)

g. European banking systems: C5 concentration ratios and the level of interbank lending/capital (1990)



Line equation: y=602-3.6x (T-stat -0.79)

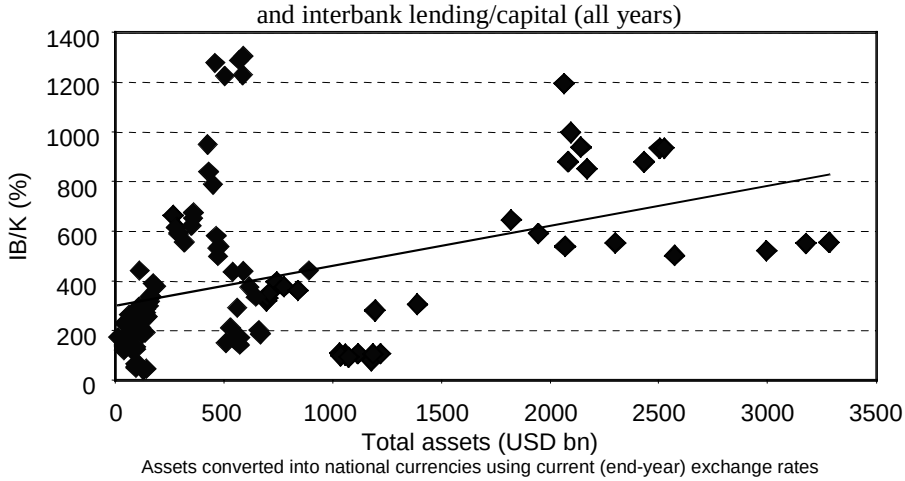
h. European banking systems: C5 concentration ratios and the level of interbank lending/capital (1997)



Line equation: y=610-3.3x (T-stat -0.79)

Chart III.6 (continued)

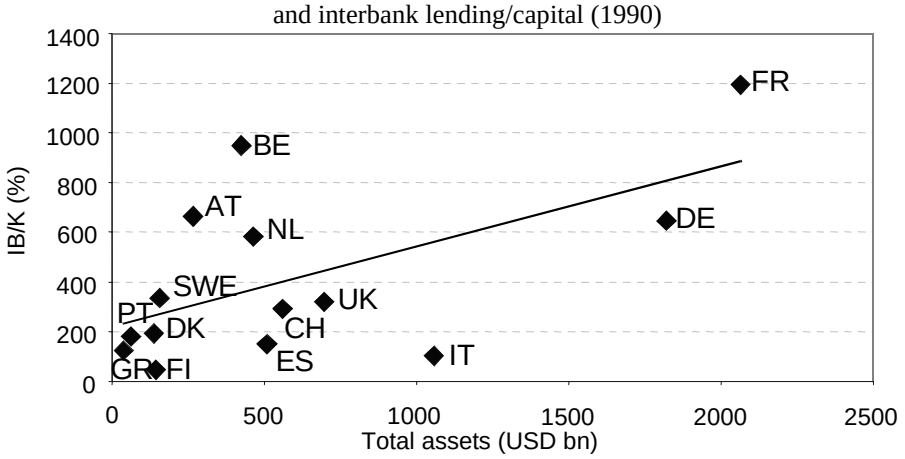
i. European banking systems: Level of total banking systems assets and interbank lending/capital (all years)



Assets converted into national currencies using current (end-year) exchange rates

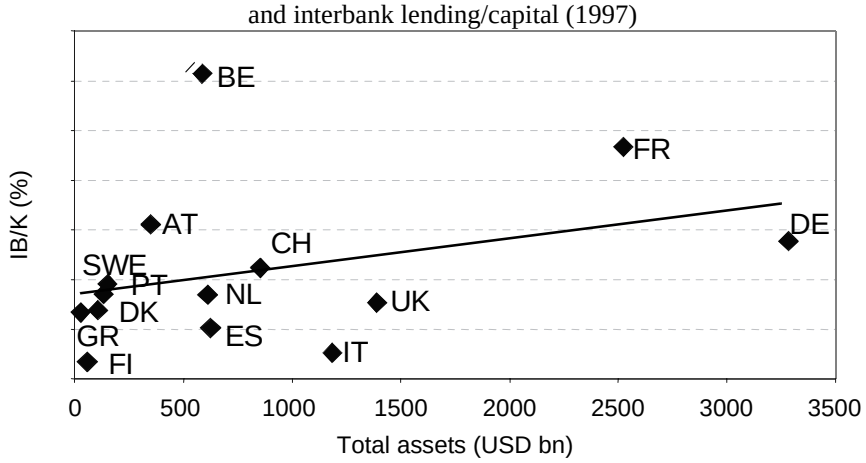
Line equation: y=298+0.16x (T-stat 4.52)

j. European banking systems: Level of total banking systems assets and interbank lending/capital (1990)



Line equation: y=227+0.3x (T-stat 2.48)

k. European banking systems: Level of total banking systems assets and interbank lending/capital (1997)

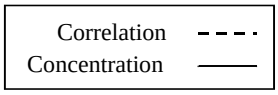


Line equation: y=335+0.11x (T-stat 1.24)

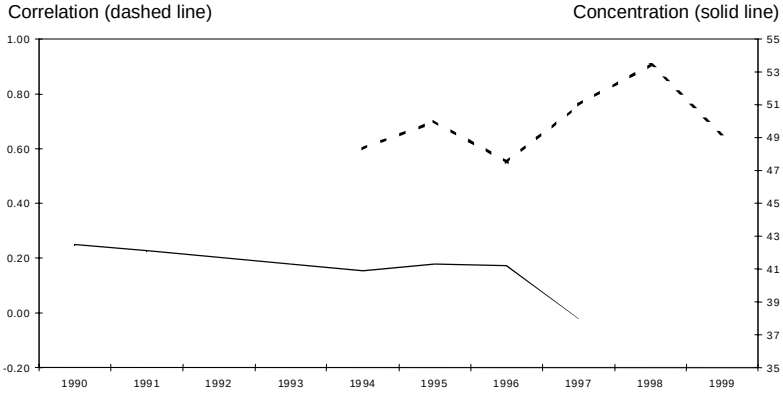
Sources: IB/K, total assets - OECD Bank Profitability Report; Switzerland concentration ratio - BIS Quarterly Review: International Banking and Financial Market Developments (August 1999); all other concentration ratios, value of M&As - ECB Working Group on Developments in Banking.

Chart III.7

Correlation of bank stock returns and consolidation

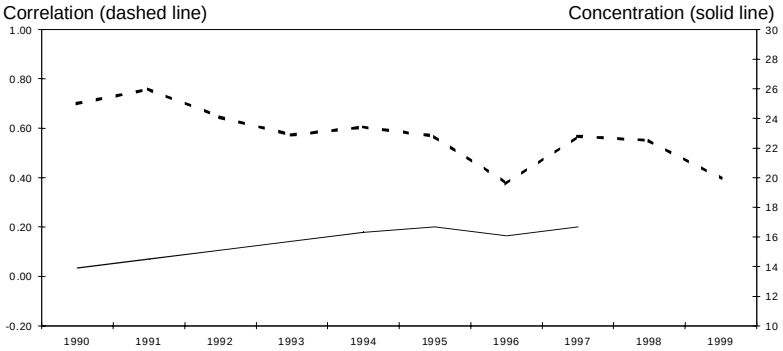


a. Correlation of stock returns and concentration: France



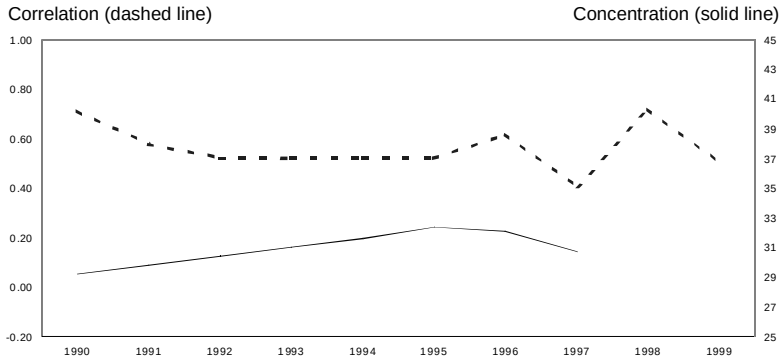
Banks: Banque Nationale de Paris, Societé Générale.

b. Correlation of stock returns and concentration: Germany



Banks: Bankgesellschaft Berlin, Bayerische Hypo- und Vereinsbank, Commerzbank, Deutsche Bank, Dresdner Bank.

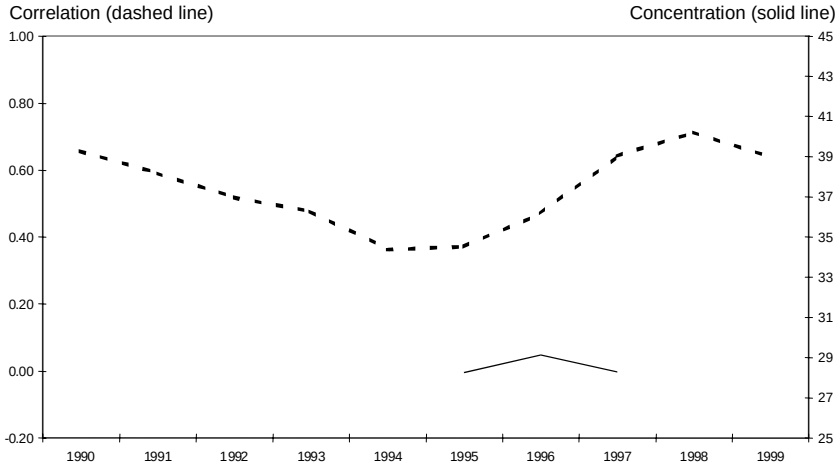
c. Correlation of stock returns and concentration: Italy



Banks: Banca Commerciale Italiana, Banca di Roma, Banca Intesa, Unicredito Italiana.

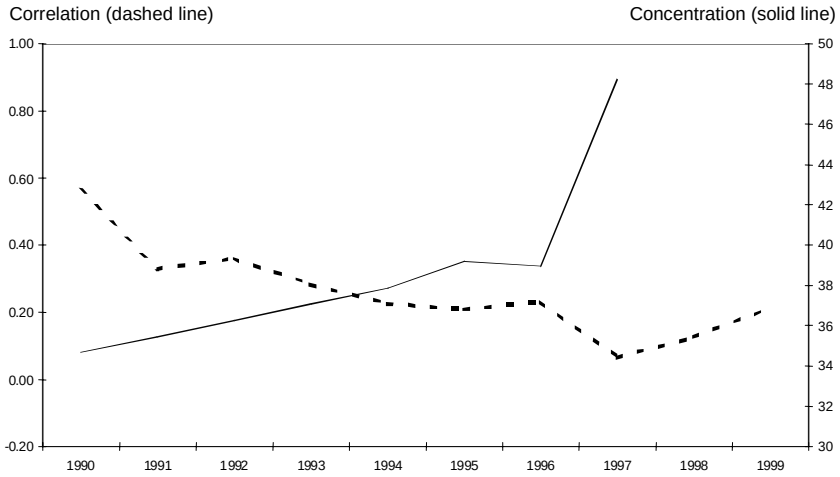
Chart III.7 (continued)

d. Correlation of stock returns and concentration: United Kingdom



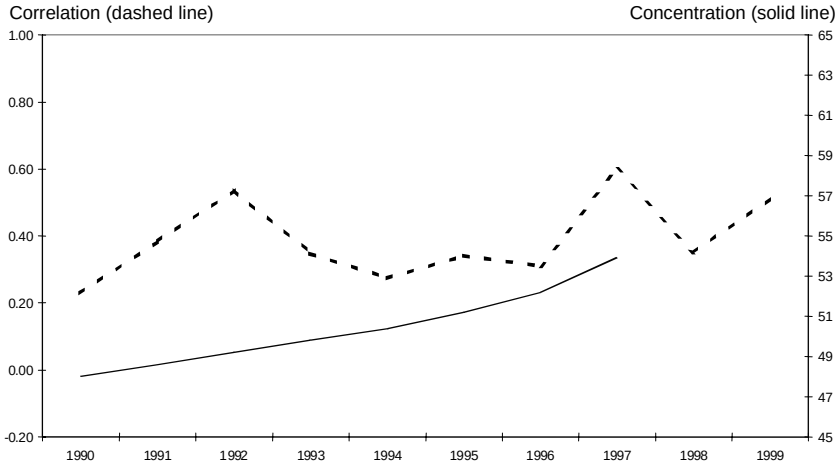
Banks: Abbey National, Bank of Scotland, Barclays, Royal Bank of Scotland.

e. Correlation of stock returns and concentration: Austria



Banks: Bank für Kärnten und Steiermark, BTV, Oberbank.

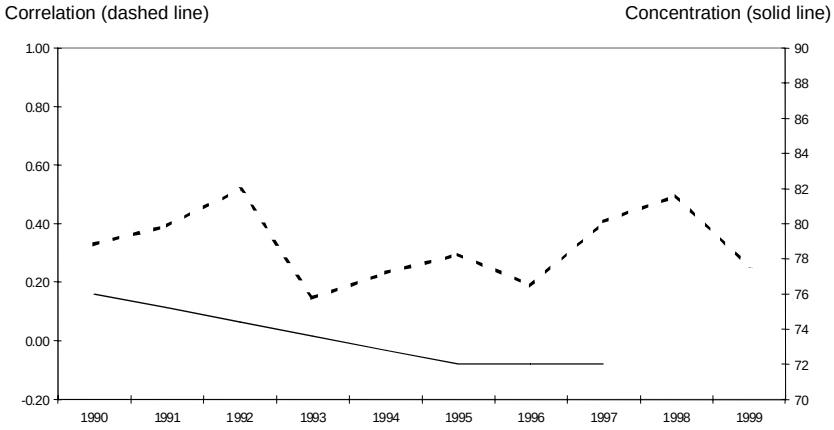
f. Correlation of stock returns and concentration: Belgium



Banks: Almanij, Fortis B.

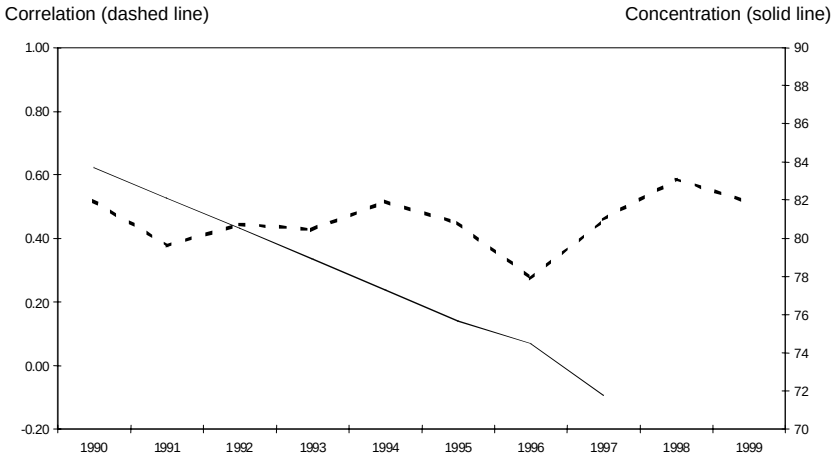
Chart III.7 (continued)

g. Correlation of stock returns and concentration: Denmark



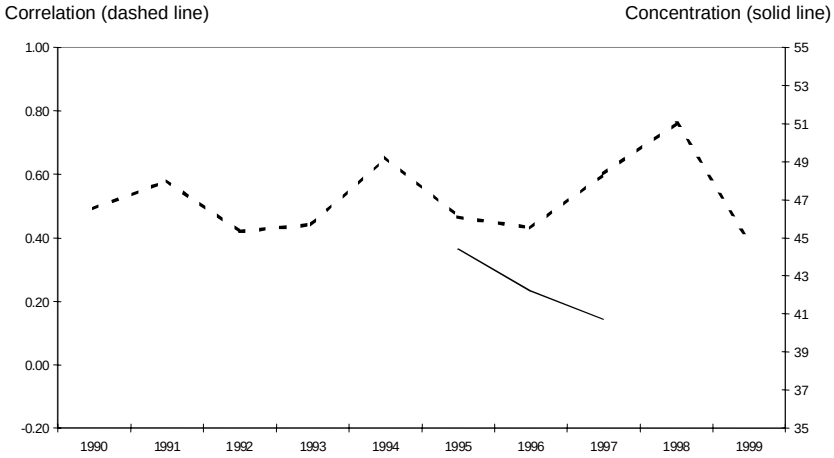
Banks: Den Danske Bank, Jyske Bank, Sydbank.

h. Correlation of stock returns and concentration: Greece



Banks: Alpha Credit Bank, Commercial Bank of Greece, EFG Eurobank, Ergobank, Macedonia Thrace Bank, National Bank of Greece, Piraeus Bank.

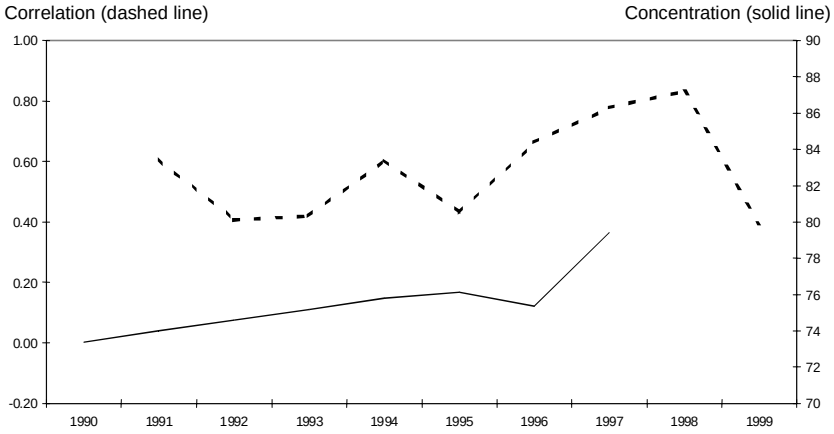
i. Correlation of stock returns and concentration: Ireland



Banks: Allied Irish Banks, Anglo-Irish Bank, Bank of Ireland.

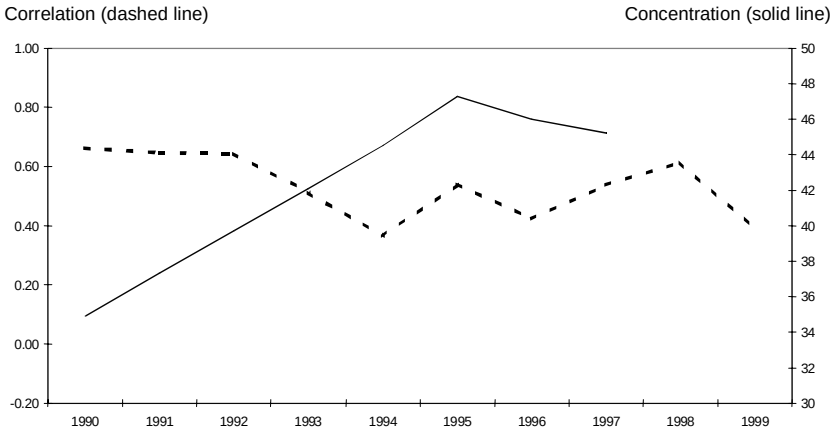
Chart III.7 (continued)

j. Correlation of stock returns and concentration: Netherlands



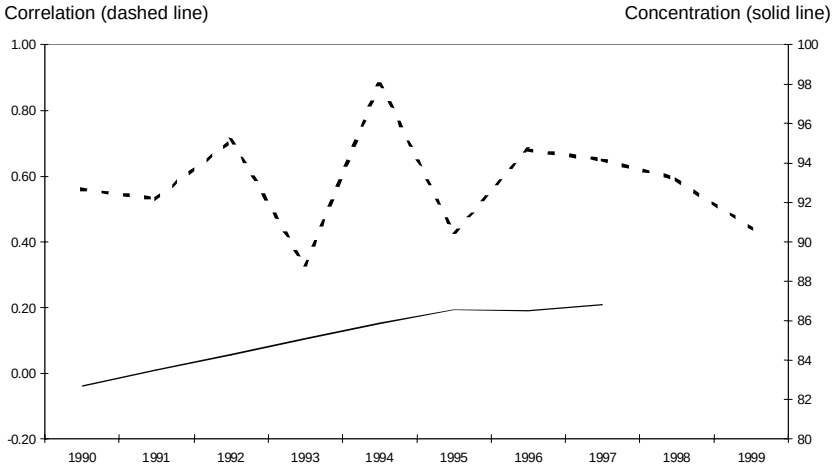
Banks: Fortis NL, ABN Amro.

k. Correlation of stock returns and concentration: Spain



Banks: Banca Bilbao Viscaya Argentaria, Banco Español de Credito (BANESTO), Banco Popular Español, Banco Santander Central Hispano.

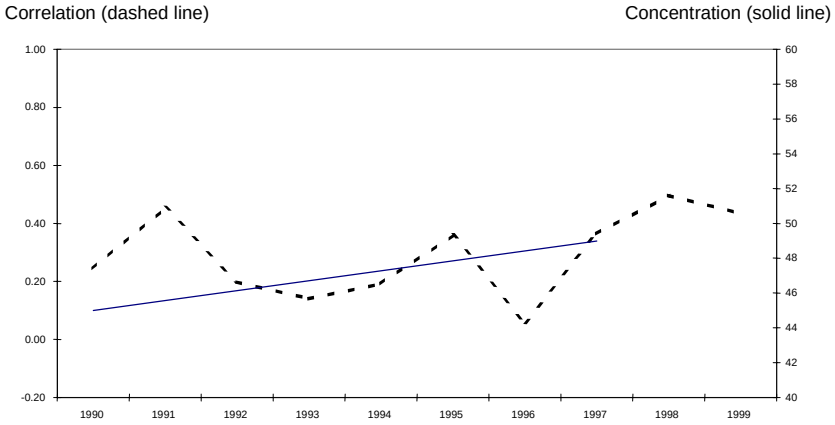
l. Correlation of stock returns and concentration: Sweden



Banks: Skandinaviska Enskilada Banken, Svenska Handelsbanken.

Chart III.7 (continued)

m. Correlation of stock returns and concentration: Switzerland

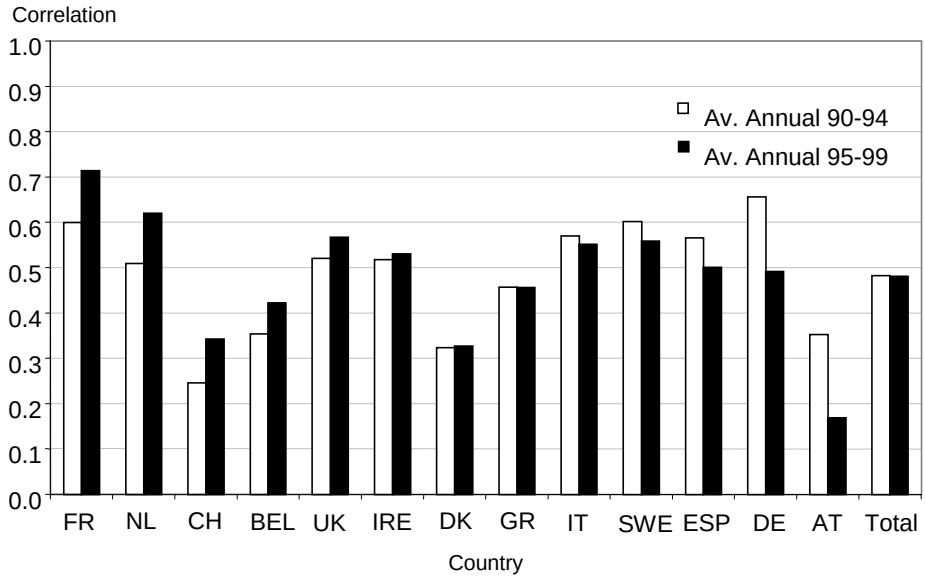


Banks: Banque Cantonale Vaudoise, Credit Suisse, UBS. Concentration data only available for 1990, 1997.

Note: Throughout Chart III.7 stock returns are measured as the weekly growth in share prices (taken from Datastream). Correlations are the annual average of the correlation of weekly stock returns for the banks in the sample.

Chart III.8

Correlation of average annual bank stock returns by country 1990-94 and 1995-99



France: data only available from 1994; Netherlands: data only available from 1991.

Chart III.9 (a)

Average annual national and European-wide correlation of bank stock returns

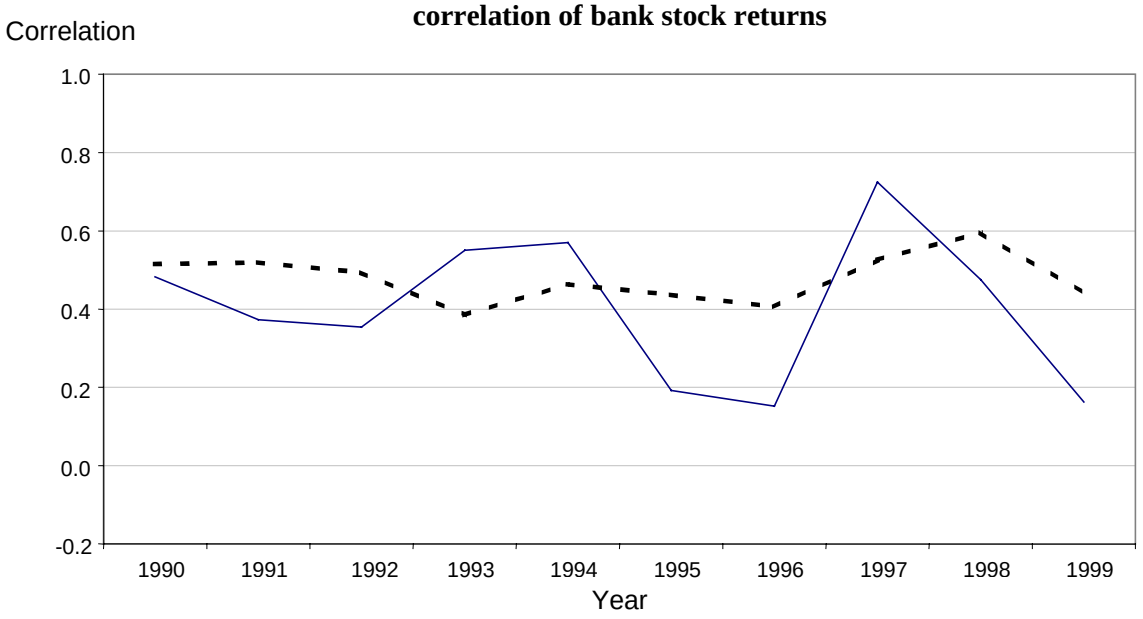


Chart III.9 (b)

Difference in average annual national and European-wide correlation of bank stock returns

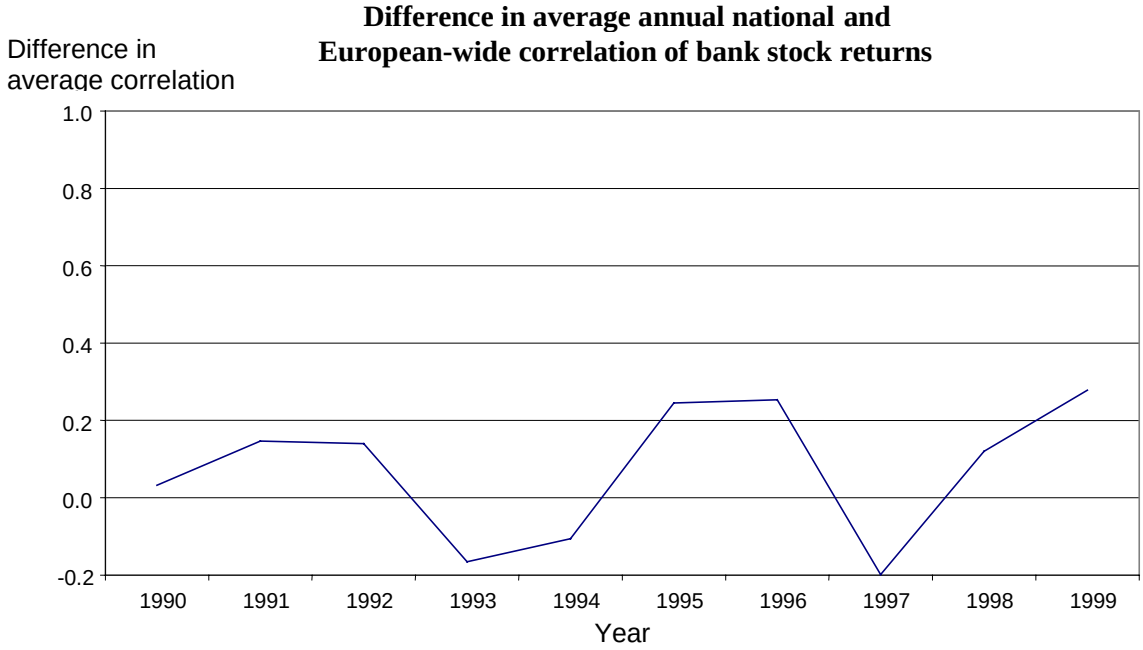


Table III.10

Number of financial institutions in Japan

End of fiscal year

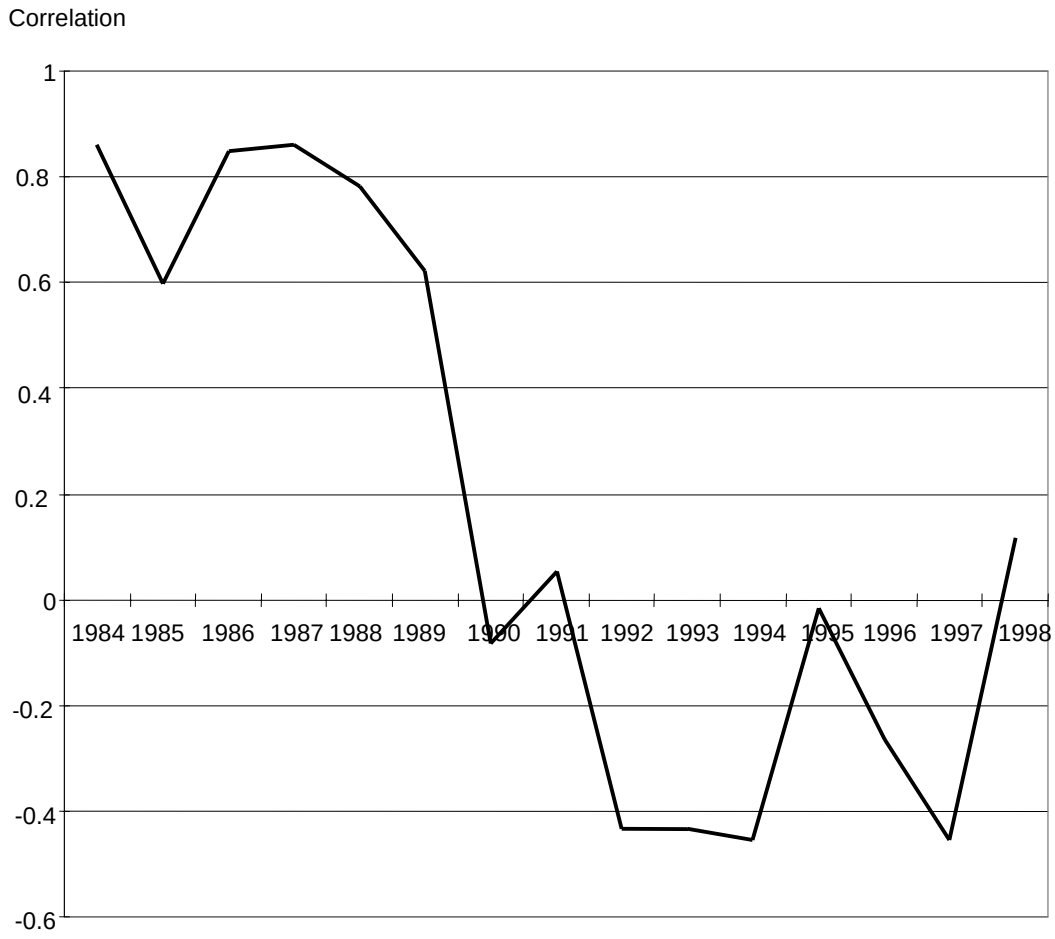
	1990	1995	1999	Change since 1990
City banks	12	11	9	-3
Long-term credit banks	3	3	3	0
Trust banks	7	7	7	0
Regional banks	64	64	64	0
Regional banks	68	65	60	-8
All banks	154	150	143	-11
Shinkin banks	451	416	392	-59
Credit cooperatives	407	368	298	-109
Agriculture and forestry cooperatives	3,634	2,461	1,606	-2,028
Insurance companies	50	55	80	30
Securities companies	272	285	288	16

Source: Financial and Economic Statistics Monthly, Bank of Japan (BOJ).

Notes: As of May 2000, seven banks (two long-term credit banks and five regional banks) have failed and they have transferred and will transfer their business to other institutions. Trust banks: only independent Japanese trust banks. Agriculture and forestry cooperatives: Norinchukin Bank, the Credit Federation of Agricultural Cooperatives and agricultural cooperatives. Insurance companies: life insurance companies and non-life insurance companies.

Chart III.10

Correlation between asset size and profitability of major Japanese banks



Source: Annual reports.
Notes: 1. Correlation: correlation between asset size and ROE
2. ROE = profit / capital account
3. Major Japanese banks: top 20 banks in terms of asset size

Table III.11

Recent Financial Consolidation

(1) Initiatives within the same segments

	Institutions involved	Type of consolidation	Effective date	Features
Banks	Sumitomo Sakura	Merger	Apr 2001	Merger between banks belonging to different former *zaibatsu*.
	DKB Fuji IBJ	Holding company	Oct 2000	Resulting banking organisation rivals world's top-tier banks in asset size.
	Sanwa Tokai	Holding company	Apr 2001	Asahi bank left from the consolidation.
		Merger	Apr 2002	
Trust banks	Chuo Trust Mitsui Trust	Merger	Apr 2000	Fundamental business reconstruction.
	Sumitomo Trust Daiwa	Common subsidiary	Oct 2000	Establishment of a subsidiary specialising in pension fund management.
Non-life insurance companies	Mitsui Sumitomo	Holding company	Apr 2002	Top market share.
Securities companies	Universal Taiheiyo Towa Daiichi	Merger	Apr 2000	Sanwa Tokai group. (Tsubasa Securities)

(2) Initiatives across segments

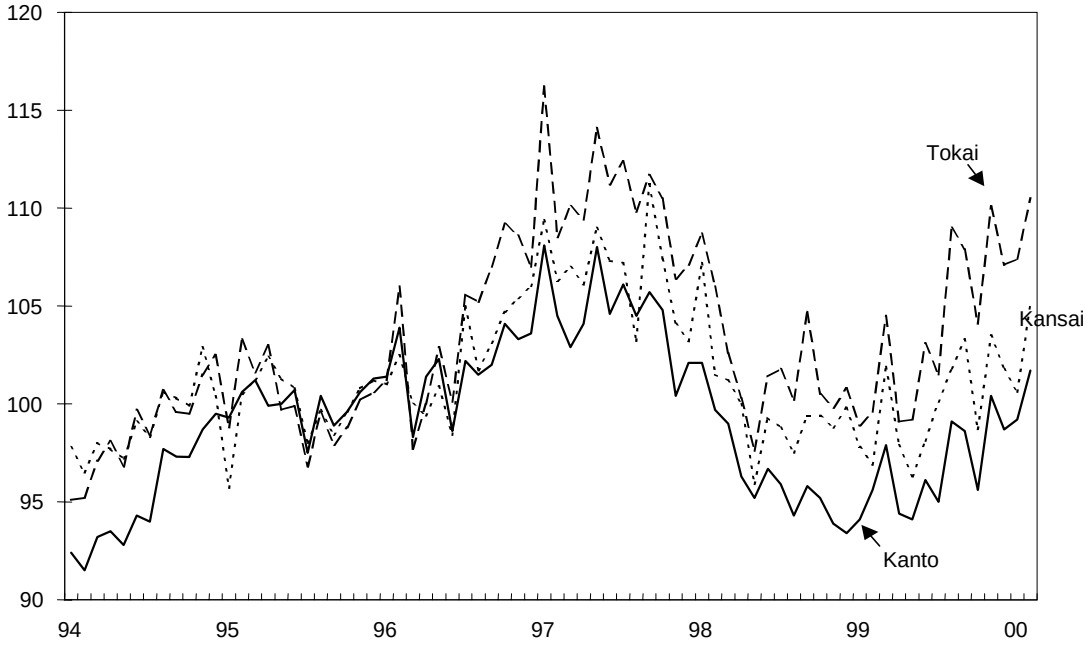
Institutions involved	Type of consolidation	Effective date	Features
Tokyo Mitsubishi (banking) Mitsubishi Trust (trust)	Holding company	Apr 2001	Consolidation of the Mitsubishi group.
IBJ banking Nomura securities Daiichilife insurance	Business alliance	May 1998	IBJ and Nomura established a joint venture for derivatives and fund management. IBJ and Daiichi cooperate in product development and sales and entered into a cross-shareholding arrangement.
Sumitomo banking Daiwa securities	Subsidiary	Apr 1999	Establishment of a joint venture for wholesale securities, derivatives, and fund management.

Source: Bank of Japan

Chart III.11 (a)

Business cycles of major regions in Japan

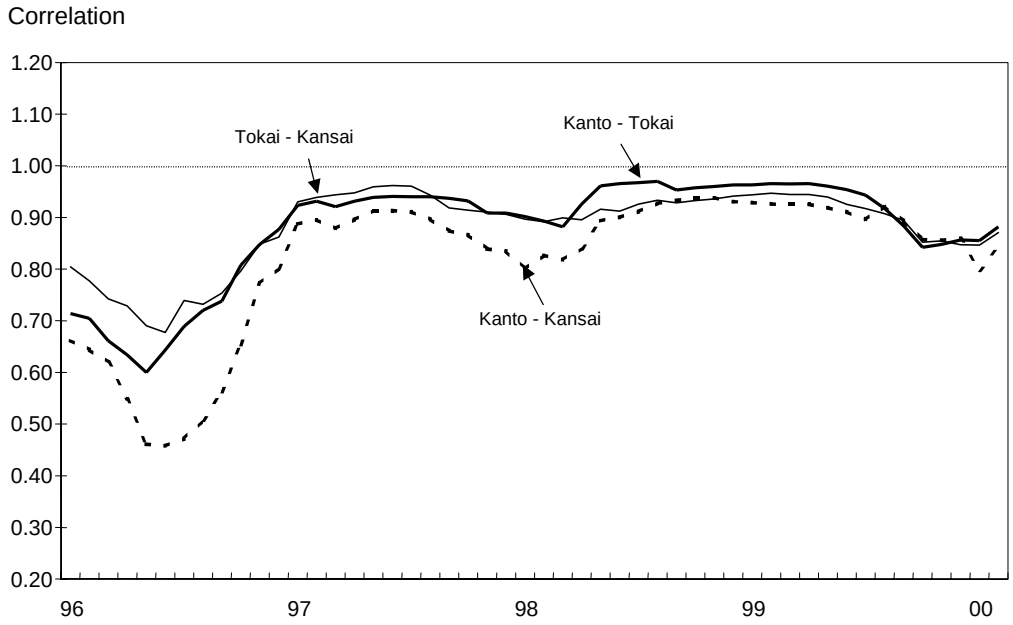
(Industrial production index, 1995=100)



Source: Ministry of International Trade and Industry (MITI).

Chart III.11 (b)

Correlation of business cycles in major regions

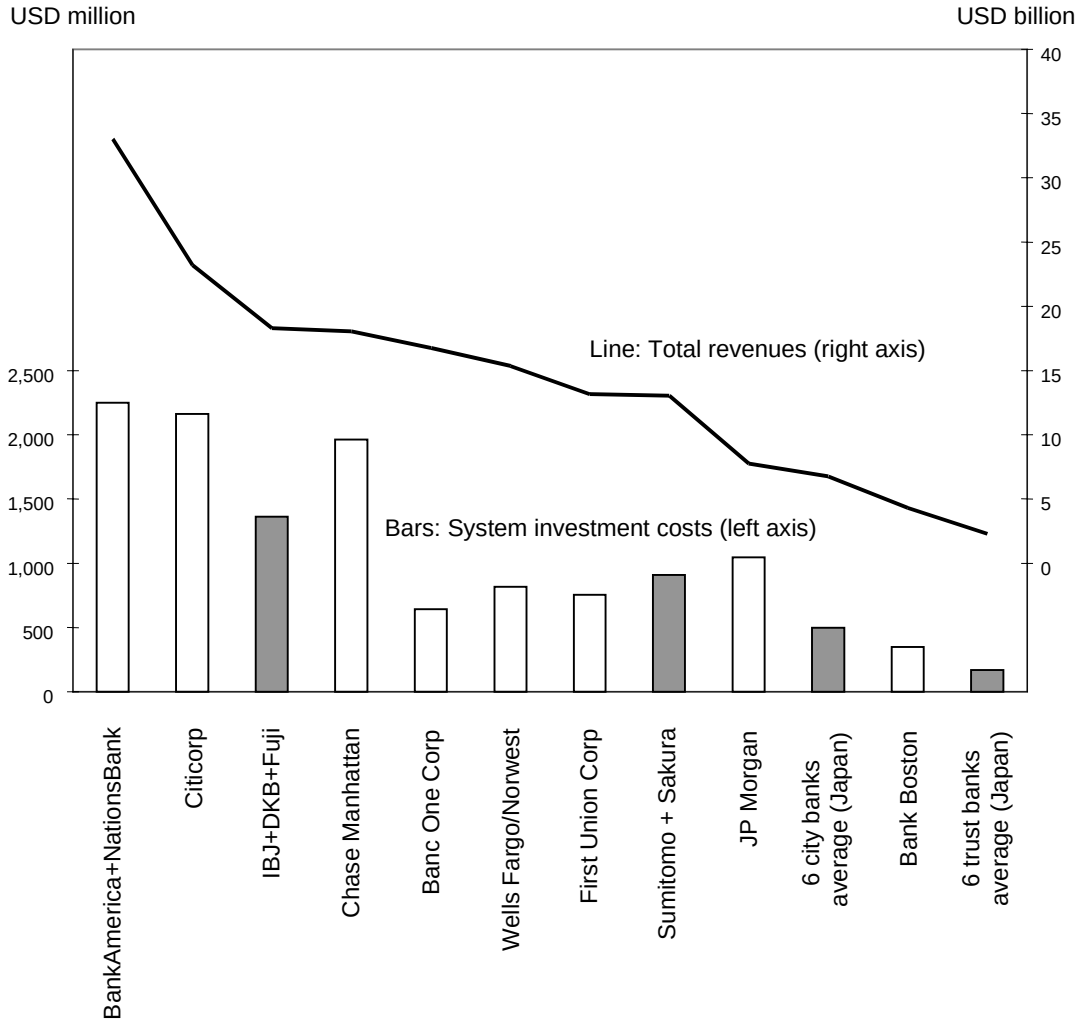


Source: MITI. Correlation of the industrial production index among three major regions using data for previous 24-month periods.

Chart III.12

System investment costs compared to revenues

(Fiscal 1997)



Source: Atkinson, David (1999b), *Japanese Bank Systems Expenditure*.

Table III.12

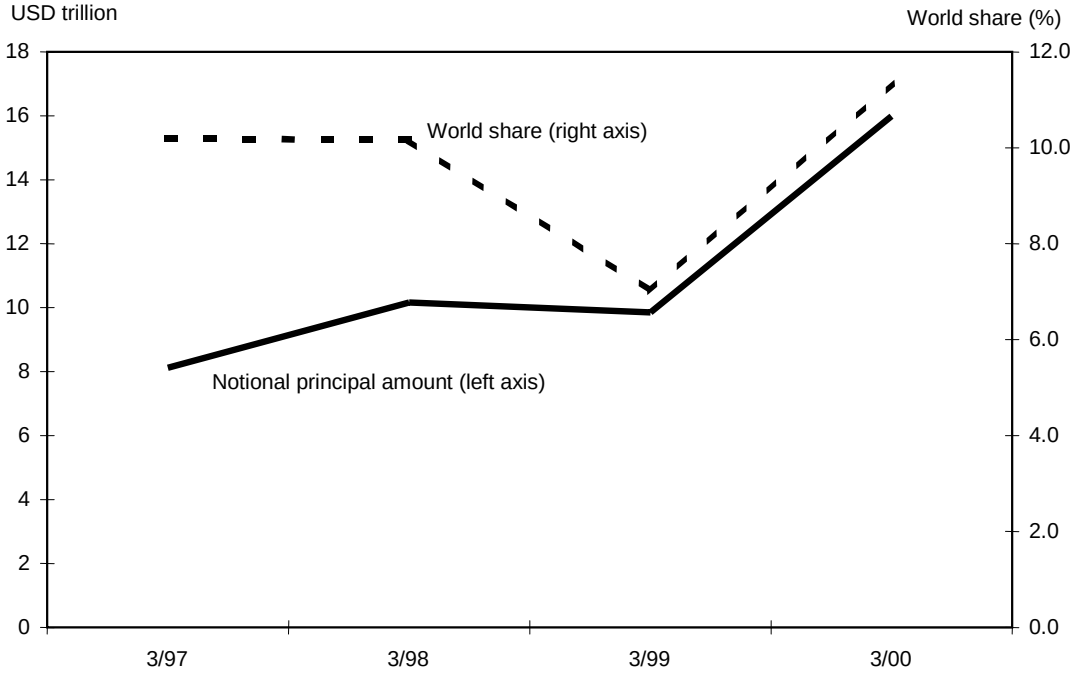
Business launches in Japan by foreign financial institutions

Business sector	Effective date	Foreign company to launch business	Principal business of the foreign company	Japanese company involved	Content
Banking	Apr 2000	Ripplewood (US)	Private equity	Long-Term Credit Bank of Japan	Purchased Long-Term Credit Bank of Japan which is under special public administration.
Securities	Jul 1998	Merrill Lynch (US)	Securities	Yamaichi Securities	Assumed the business of failed Yamaichi.
	Jan 1999	Travelers (US)	Insurance, securities	Nikko Securities	Established a joint venture for trusts, and entered into a cross-shareholding arrangement.
Insurance	Mar 1998	GE Capital (US)	Non-bank finance	Toho Mutual Life Insurance	Established GE Edison Life Insurance, a joint venture, and assumed the staff as well as business franchise of failed Toho. Toho's contracts will later be assumed in bulk.
	Dec 1999	Artémis (France)	Retail	Aoba Life Insurance	Purchased failed Aoba from the Life Insurance Association of Japan.
	Apr 2000	Axa (France)	Life insurance	Nippon Dantai Life Insurance	Took over Nippon Dantai as a subsidiary of a newly established insurance holding company.
	Mar 1999	Manulife (Canada)	Life insurance	Dai Hyaku Mutual Life Insurance	Assumed the business of Dai Hyaku through a newly established joint venture.
	Nov 1999	Aetna (US)	Life insurance	Heiwa Life Insurance	Purchased 33% of Heiwa's equity.
Non-bank finance	Mar 1999 Mar 2000	GE Capital (US)	Non-bank finance	Nippon Lease, Life	Assumed the business of Nippon Lease, a leasing affiliate of LTCB, and will assume the business of Life, a consumer finance company.
	Nov 1998	GE Capital (US)	Non-bank finance	Lake	Took over Lake, an independent consumer finance company.

Source: Bank of Japan

Chart III.13

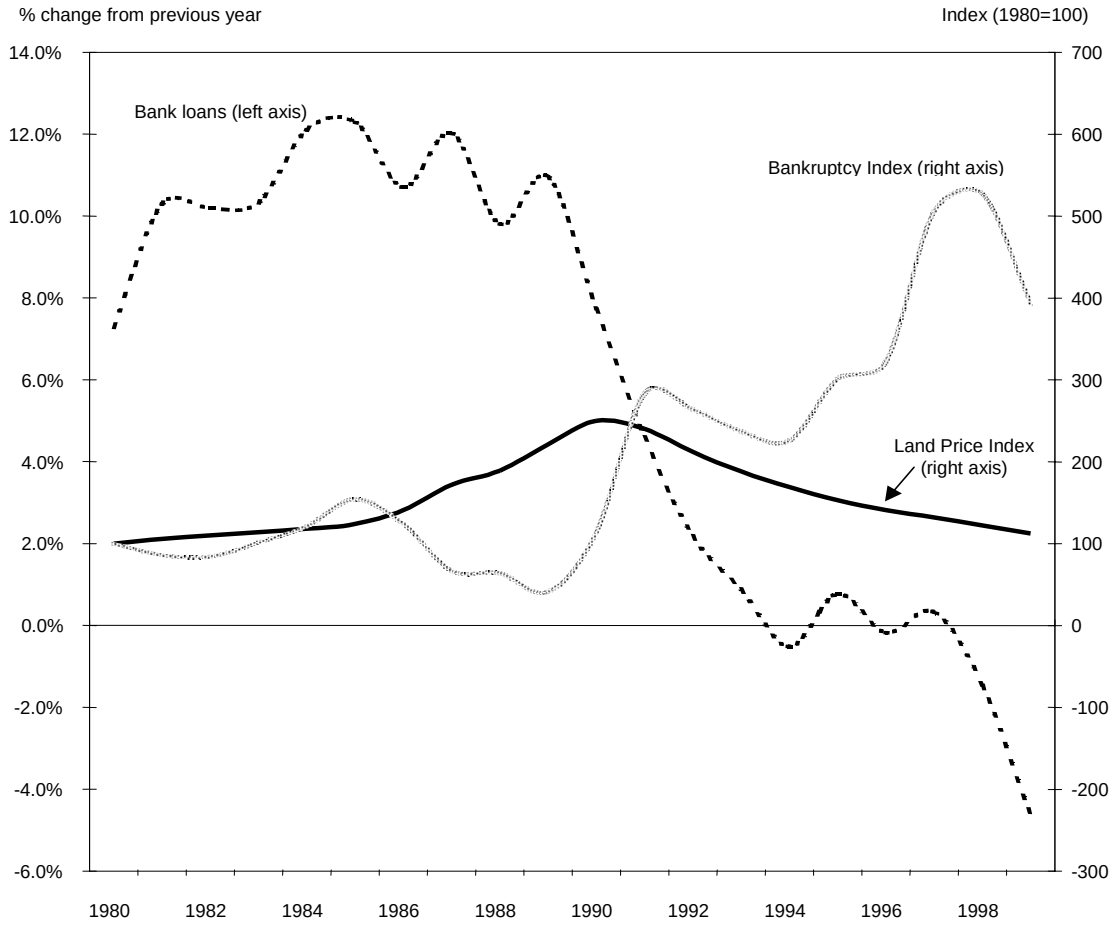
Derivatives transactions: top four banks in Japan



Source: Annual reports (Japanese banks; Bank for International Settlements). Figures for 3/00 are reckoned by aggregating ten banks to be consolidated into four groups (Mizuho group, Sumitomo/Sakura, Sanwa/Tokai and Tokyo-Mitsubishi/Mitsubishi Trust). For 3/00, data of the ten banks concerned as of 3/99 are aggregated.

Chart III.14

Bank loans, land prices and bankruptcies



Sources: BOJ, National Land Agency, Tokyo Shoko Research.
Bank loans: All Japanese banks (loans in trust accounts included).
Land Price Index: price index for all commercial land (1980=100).
Bankruptcy Index: index of total debts of firms declared bankrupt (1980=100).

Table III.13

Concentration of loans (March 1999)

(USD billion, market share in %[1])

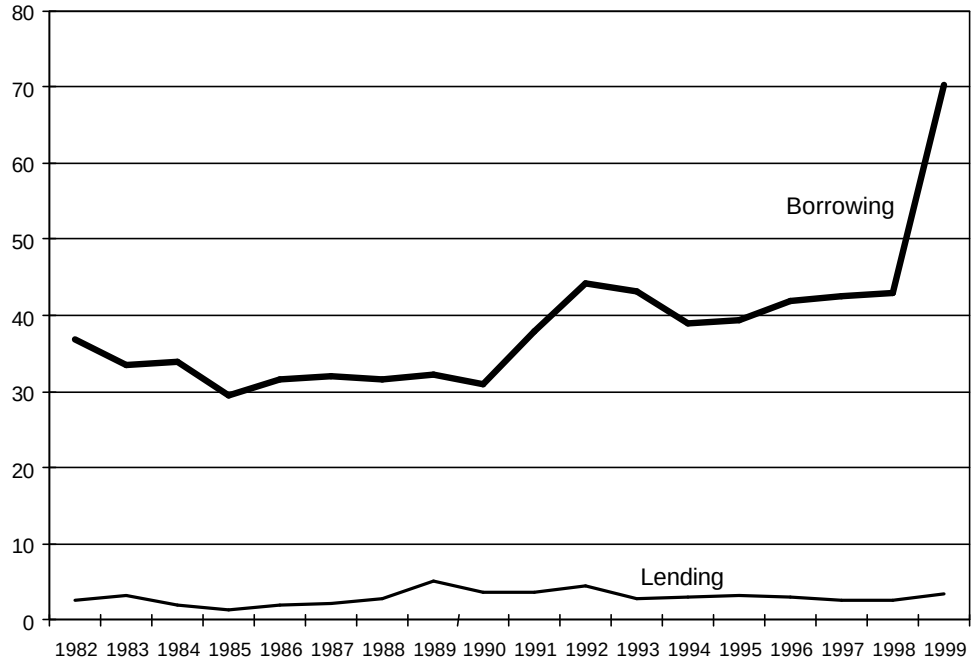
	Loans	**Loans to three industries[2]**	
	(A)	**(B)**	**(B/A)**
Mizuho	780.0	179.6	23%
	(17%)	(15%)	
Sumitomo-Sakura	600.1	148.9	25%
	(13%)	(12%)	
Sanwa-Tokai	459.5	108.0	23%
	(10%)	(9%)	
Mitsubishi-Tokyo	431.1	103.1	24%
	(9%)	(9%)	
Total of the four groups	2,270.6	539.5	24%
	(48%)	(45%)	

Source: Annual reports.

Notes: [1] Market share: vis-à-vis total of all banks. [2] Three industries: construction, real estate, finance & insurance.

Chart III.15

Shares of the top four banks in the call, NCD, large-lot deposit markets



Source: Figures for fiscal 1999 are reckoned by aggregating banks to be consolidated into four groups (Mizuho group, Sumitomo/Sakura, Sanwa/Tokai, Tokyo-Mitsubishi/Mitsubishi Trust). For fiscal 1999, data of the nine banks concerned for fiscal 1998 are aggregated. Large-lot deposit is aggregated from fiscal 1994.

Table III.14

Breakdown of Stockholdings by Investor Category

(% of total)

	FY1990	FY1998
Financial institutions	45	39
Non-financial enterprises	25	24
Individuals	23	25
Foreigners	4	10
Others	3	2

Source: The National Conference of Stock Exchanges.

Notes: The table shows the ratios of stockholdings held by different investors to all Japanese listed stocks. Financial institutions: banks, life insurance companies, non-life insurance companies.

Banks' Stockholdings (March 1999)

(JPY trillion)

	Capital	Stockholdings	
	(A)	(B)	(B/A)
Mizuho	6.4	9.9	156%
Sumitomo-Sakura	4.1	6.7	163%
Sanwa-Tokai	3.7	6.3	169%
Mitsubishi-Tokyo	3.6	7.0	192%
Total of the four groups	**17.8**	**29.8**	**168%**

Source: Annual reports.

Table III.15

Financial Liabilities and Assets of the Corporate and Household Sectors (December 1998)

(USD billion)

	Japan (a)		US (b)		(b/a)
Financial Liabilities	**14,345**	**100%**	**28,127**	**100%**	**2.0**
Borrowings	7,809	54%	9,382	33%	1.2
Stocks	2,264	16%	11,945	42%	5.3
Bonds	745	5%	1,927	7%	2.6
Others	3,527	25%	4,873	17%	1.4
Financial Assets	**17,955**	**100%**	**43,727**	**100%**	**2.4**
Cash & deposits	9,636	54%	6,018	14%	0.6
Insurance and pension funds	3,318	18%	11,236	26%	3.4
Investment trusts	345	2%	4,145	9%	12.0
Securities	1,636	9%	9,700	22%	5.9
Other	3,018	17%	12,627	29%	4.2

Source: Comparative Economic and Financial Statistics Japan and Other Major Countries, BOJ.

Notes: Total of non-financial enterprises and the household sector. Borrowings: from banks and other financial institutions.

Table III.16

Risks Measured by Various Leverage Ratios

	GOBSL (Times)	GEL (Times)	VL (%)	Capital ratio (%)
Dai-Ichi-Kangyo	13.5	62.7	0.90	11.5
IBJ	14.1	100.0	0.99	11.3
Fuji	12.5	111.0	0.53	11.2
Sumitomo	12.8	80.9	0.53	11.0
Tokyo-Mitsubishi	14.8	89.9	0.48	10.5
Bankers Trust	21.8	368.3	0.79	14.1
BankAmerica	9.8	72.4	0.20	11.6
Chase	11.0	247.3	0.22	11.6

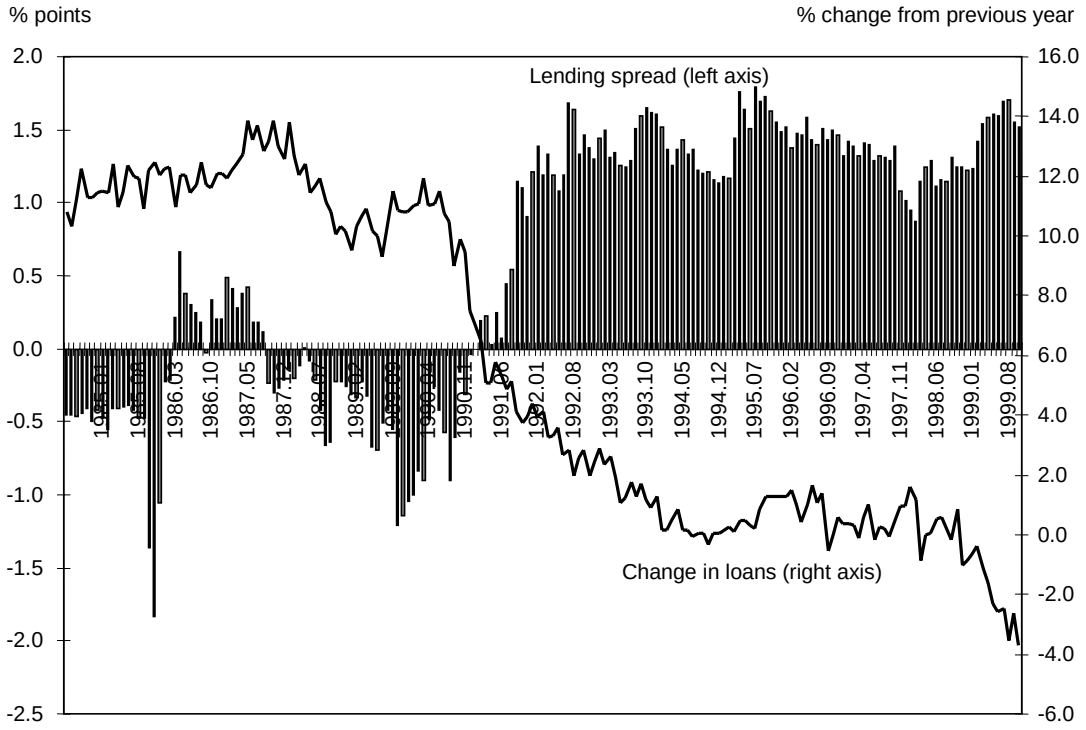
Source: Annual reports.

Notes: Japanese banks: Mar 1999; US banks: Dec 1997. Capital ratio: BIS based. VaR of Tokyo-Mitsubishi, Fuji: average of FY1998. VaR of BankAmerica: average of CY1997.

GOBSL: Gross on-balance sheet leverage = Assets/Capital. GEL: Gross economic leverage = (Risk assets + Risk liabilities + Notional principal amounts of derivative transactions)/Capital. Risk assets = Assets – Cash, risk liabilities = Liabilities – Deposits. VL: VaR leverage = VaR/Capital

Chart III.16

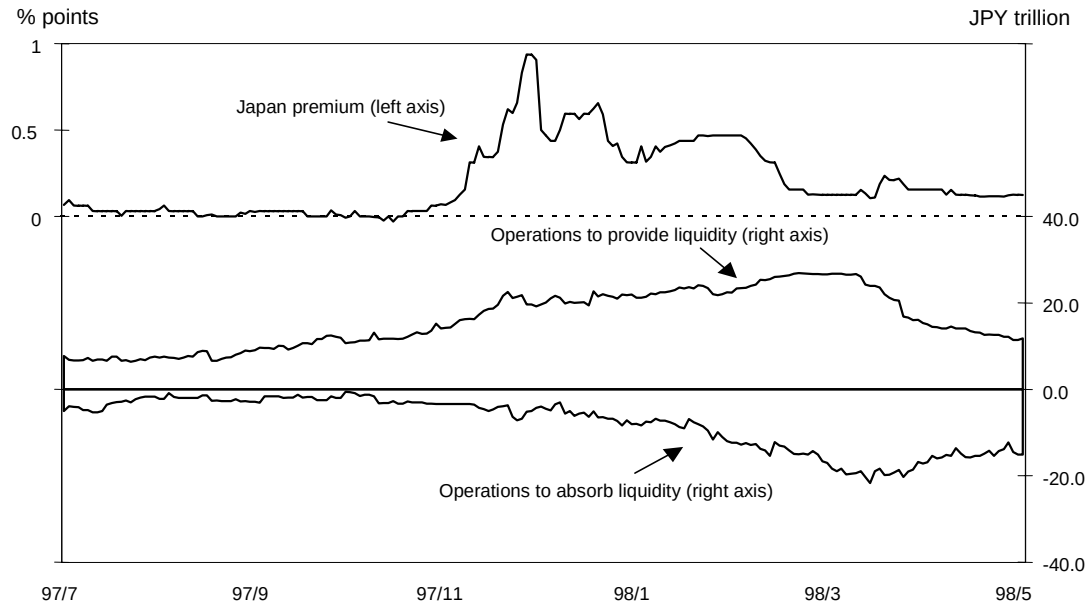
Behaviour of Japanese banks before and after the crisis



Source: *Financial and Economics Statistics Monthly*, Bank of Japan.
Lending spread = average interest rate on new loans (domestic yen, banking accounts) – CD (3-month) quotations.

Chart III.17 (a)

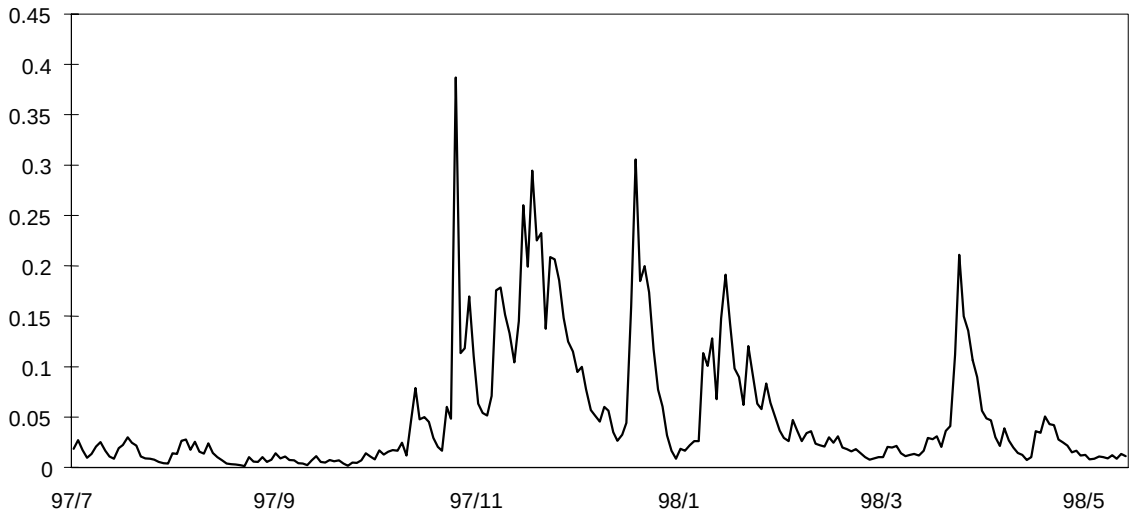
Japan premium and two-way operations



Sources: BBA, Zenginkyo, Bank of Tokyo Mitsubishi, Bank of Japan.
Japan premium = (3-month dollar JOM) – (3-month dollar LIBOR)

Chart III.17 (b)

Expected default probability of major Japanese banks



Source: Bank of Japan
Notes: Estimation of expected default probability is based on the equity price volatility of six major Japanese banks. The volatility assumption relies on EGARCH (1,1) model. For details, see Ieda (1999). There is a seasonal tendency for stock prices to become volatile around the end of the fiscal year, which partly explains the increase in expected default probability around the end of March.

Annex III.1
The effects of consolidation on managing systemic risk in Canada: the 1998 Bank Merger Decision

In 1998, four of Canada's largest banks comprising approximately 70% of bank assets in Canada announced their intention to merge. In January 1998, the Royal Bank of Canada and the Bank of Montreal made their announcement. This was followed in April of 1998 by the announcement that the Canadian Imperial Bank of Commerce (CIBC) and TD Bank had reached an agreement to merge. The Competition Bureau, the Office of the Superintendent of Financial Institutions (OSFI) and the Department of Finance examined the merger proposals in depth. On 14 December 1998, the Minister of Finance announced the government's decision not to allow the two proposed mergers to proceed.

In announcing his decision, the Finance Minister noted that the mergers were not in the best interests of Canadians and would not be allowed because they would lead to:

- an unacceptable concentration of economic power in the hands of fewer, very large banks;
- a significant reduction of competition; and
- reduced policy flexibility for the government to address potential future prudential concerns.

Assessment of impacts on the financial system

In 1998, consolidation in the already very concentrated banking industry in Canada clearly raised important questions about the potential impact on the overall Canadian financial system. In the context of the review of the merger proposals, the Superintendent of Financial Institutions was asked to advise the Minister on whether there were prudential reasons why the two bank merger proposals should not be considered. Specifically, the Superintendent was asked:

1. If the merger proposals were to be allowed, would there be circumstances or issues which would be likely to have a material, adverse impact on the financial viability of either merged bank going forward, or would there be other material concerns as to the safety and soundness of either merged bank?
2. If the merger proposals were to be allowed and one of the merged banks were to experience serious financial problems, would the resolution of those problems be more difficult than would be the case if any one of the predecessor banks experienced such problems?

To develop a view on the prudential aspects of the two merger proposals, OSFI began with an analysis of the current financial condition and risk profile of each of the merging banks, based on existing supervisory information. OSFI then considered relevant literature on mergers, consulted with other regulators on their merger experience, and worked with the banks to review and analyse the merger proposals, financial forecasts and relevant reports, and to discuss merger strategies and integration plans. The views of several banks and federal government agencies were also sought on issues to be considered in the resolution of any serious financial problems encountered by the merged banks.

There were certain limitations on OSFI's review that included the following:

- Canadian experience with large mergers, particularly in the financial sector, was limited. Therefore, much of the merger literature reviewed by OSFI related to American transactions, and most dealt with acquisitions as distinct from "mergers of equals";

- There were constraints on the merging banks' sharing of confidential and proprietary information with their potential merger partners and as a result, detailed integration plans had not been completed when OSFI's assessment was underway.

Institution-specific analysis

The Superintendent concluded that it was not possible to make generalised statements as to whether larger banks are financially stronger than smaller banks or whether mergers of financial institutions increase or decrease their financial strength. He concluded that the record was mixed and that there were examples of both increased and decreased financial strength.

He did note, however, that mergers of large institutions are difficult to accomplish and create major challenges in developing a coherent strategy for the new organisation, and in integrating people, processes, technologies and risk management frameworks. The quality of the strategy and the integration process can significantly affect the success of the merger. Because of the importance of the integration process, the merged institution is at greatest risk in the period shortly following the merger, during which most of the integration activity takes place.

Despite these evident risks associated with mergers, OSFI did not identify circumstances or issues that would be likely to have a material, adverse impact on the financial viability of either merged bank, nor did OSFI identify other material concerns as to the safety and soundness of the merged banks. Therefore, OSFI was not able to identify any prudential reasons why the two merger proposals should not be considered. However, the Superintendent did point out that the increased size and complexity of the merged banks would create supervisory challenges and could require new approaches.

In considering the issue of resolving serious financial problems encountered by either of the merged banks, the Superintendent noted that prior experience had to be taken into account. While Canadian financial institutions had experienced problems in the past, in some cases leading to failure, there had been few failures of large financial institutions and, for many years, no failures of major Canadian banks.

The four merging banks had argued that their merger proposals, if allowed, would enhance financial strength and reduce the risk of significant financial problems, thus diminishing the possibility that any resolution issues would arise. The banks and OSFI also discussed strategies, building on the two merger proposals, which would have reduced the risk profiles of the merged banks. However, OSFI was not able to conclude, on the basis of existing evidence, that the merged banks arising out of the two merger proposals would necessarily be financially stronger than their predecessors. They could be stronger, but much would depend on success achieved in integrating the merging banks and in executing strategies directed at reducing their risk profiles.

System concerns

The Superintendent noted that currently, if a major Canadian bank were to experience serious financial problems, there would be a range of options available to the bank, its shareholders and creditors as well as OSFI, the Canada Deposit Insurance Corporation and, if necessary, the Bank of Canada, for resolving these problems. These options could include one or more of:

- recapitalisation;
- sale of individual businesses;
- various forms of restructuring;
- liquidation and piecemeal or en bloc sales of individual assets and business lines; and
- an outright sale of the bank to another financial institution.

The Superintendent concluded that if the mergers were approved and one of the merged banks experienced serious problems, these options would probably remain, but, given the relative size

of the institution in relation to potential buyers and investors, some would be more difficult and more time-consuming to implement, and a "least cost" resolution could be more difficult to achieve. Furthermore, to make full use of certain options, changes to ownership, competition and other policies might be required.

The decision

In releasing the government's decision in 1998, the Minister of Finance noted that the Superintendent had not ruled out either merger for prudential reasons, but did raise some important and legitimate issues about their potential impact on the overall financial system, which the government had to consider.

The Minister noted that when a financial institution gets into trouble, it is vitally important that there be as many options as possible available to work out the difficulties and that historically, in Canada, when a financial institution faced difficulties, one possibility was always to sell its operations to other, stronger Canadian competitors. After the proposed mergers, if one of the new merged banks were to experience difficulties, a sale to another domestic firm could seriously reduce the level of competition within the Canadian sector. If this were not acceptable, the government could be faced with a situation where the only other option would be a sale to a foreign institution. But, given the size of the banks that would result from the proposed mergers, such a sale of assets to a foreign institution would result in a substantial reduction in Canadian ownership and control.

Ultimately, the government decided that the sheer size of the institutions that would result from the mergers would constrain unacceptably the alternatives available to regulators and to the government in the face of a large financial institution in difficulty.

Conclusion

In June 1999, the government of Canada released a new policy framework for the financial services industry, which included measures to increase competition in the industry in Canada and to encourage new entrants. In that document, the government also acknowledged that mergers among financial institutions were a legitimate business strategy and a new, transparent merger review process was established to cover mergers involving large Canadian banks with over CAD 5 billion in equity. As part of that process, the Superintendent of Financial Institutions will be asked to advise the Minister of Finance regarding any prudential concerns raised by proposed mergers.

The Canadian banking sector remains one of the most concentrated financial sectors in the world. The failure resolution issue will, therefore, continue to form a part of the government's concerns in relation to any future consolidation in the financial sector. The extent of the problem posed by any particular merger proposals will depend on the size and number of parties involved as well as on the overall structure of the industry and the presence and position of other industry participants that are not involved in the merger.

Annex III.2
Potential effects of strategic alliances on financial risk

Strategic alliances can be defined as interfirm relationships that involve the creation of tangible or intangible assets over which each firm has some control. Strategic alliances lie somewhere between arm's-length contractual relationships with no direct sharing of decision-making, returns and risk, and mergers and acquisitions with complete sharing of decision-making, risk and reward. A key characteristic that distinguishes strategic alliances from mergers and acquisitions is their lower costs of formation and dissolution. Strategic alliances include (i) joint ventures, where firms share costs, rewards and benefits of a focused investment through the formation of a new corporate entity, (ii) operating agreements among firms backed by exchange of minority equity stakes, and (iii) joint marketing and distribution agreements.

The potential effects of a strategic alliance on firms' individual risks are in general ambiguous. First, the sharing of risks of a particular business carried out through an alliance, together with the limited equity stake each firm might commit, could induce alliances to be formed with the aim of investing in highly risky projects. Second, the focus of an alliance on particular business lines might increase the concentration of lending to or borrowing from particular firms or sectors. Third, if an alliance is formed by firms of different financial strength and the strongest firm initiates its dissolution, such action might be viewed by the market as a signal of increased weakness of the other firms, exposing them to reputation risk. In all these cases, the risk profile of one or several members of an alliance could increase, ceteris paribus.

Alliances potentially leading to a reduction of individual firm risk might be those that allow firms to share costly infrastructures, thereby decreasing their costs and increasing their returns. Joint marketing and distribution agreements might also lead to reduced risk through increases in returns due to sharing and profiting from individual firms' common customer bases. Furthermore, alliances may be a low cost device to gauge the profitability and risks involved in a full merger, thereby decreasing the likelihood that a firm undertakes an unprofitable merger or acquisition. Also, the lower cost of dissolving an alliance facilitates opting out of it in the case of perceived or actual lack of profitability of the joint activity. Thus, individual firms' risk might be reduced by the alliance's low-cost option of divesting a low-return investment. Given the great variety of forms alliances can take, a reliable assessment of their effects on an individual firm's risk would require a case by case evaluation.

Strategic alliances could increase the potential for systemic risk through increases in firms' direct and indirect interdependencies. For example, alliances backed by cross-shareholdings may result in an increase in firms' direct interdependencies, which might augment the impact and transmission effects of a shock. Indirect interdependencies may also increase through alliances' correlated exposures to economic sectors or financial markets. The sharing of common customer bases through alliances might make firms more vulnerable to shocks originating in the sectors where these customers operate. Likewise, the impact and transmission effects of a shock might increase under alliances that induce firms to provide funds to the same debtors, thereby increasing the concentration of the exposures of each firm in an alliance. Finally, reputation effects might lead to potential increases in systemic risk, since difficulties at a firm participating in an alliance might be perceived as spilling over to the other firms in the alliance, decreasing market confidence in the financial health of the entire set of allied firms. At this point, however, the practical significance of the possibilities is unknown, and thus strategic alliances represent an interesting area of future research.

Annex III.3
Consolidation and the liquidity of financial markets

For a number of years, observers have noted a trend towards a reduction in the number of market-making institutions in off-exchange traded securities markets (including foreign exchange). Table III.A3.1 suggests that this trend is not uniform. It shows concentration ratios and Herfindahl indices for interest rate and currency derivatives activity for a group of 100 large internationally active banks. The market share of the top five institutions in currency derivatives activity increased only modestly from 23% to 25% between 1998 and 1999, against a moderate decline in the overall market size. In contrast, the equivalent measure for interest rate products jumped from 25% to 32% over the same period, which is also characterised by a marked increase in the activity of that market. The other measures of market share and the Herfindahl indices show similar patterns.

Table III.A3.1

Concentration in the global derivatives markets

	Currency derivatives		**Interest rate derivatives**	
	1998	**1999**	**1998**	**1999**
Total (USD bn)	33,112	31,034	79,724	105,984
Top 5 (%)	22.9	25.4	25.0	31.9
Top 10 (%)	37.8	40.5	39.1	48.0
Top 20 (%)	59.1	61.9	59.3	67.7
HI	0.0234	0.0255	0.0256	0.0334

Source: Swaps Monitor (various issues).

It is not clear a priori whether increased concentration has a positive or negative effect on financial market liquidity.[146] On the one hand, an increase in concentration does not necessarily lead to a reduction in market liquidity, as long as the aggregate capital base devoted to market-making is sufficiently large in relation to total trading activity, and if the number of significant players remains large and barriers to entry low. Indeed, it can be argued that larger institutions with more capital (in absolute terms) and a greater number of customers can provide more efficient order-matching and capitalise on economies of scale and greater flexibility in allocating capital to the market-making function. On the other hand, a smaller number of participating institutions may restrict the ability of each to execute large orders anonymously, possibly reducing overall liquidity, and resulting in an increased cost of execution and higher costs to the end user. Moreover, a reduction in the number of market participants and an increase in their market shares may result in higher aggregate intra-dealer exposures, and thus the potential for market disruption may also increase in the event of the failure of a single institution.

The discussion in Chapter IV indicates that central banks have not identified significant effects of consolidation on either the liquidity or the volatility of financial markets in normal times. However, during periods of stress, such as the failure of one of the main market participants or

[146] See Madhavan (2000).

in the aftermath of a currency crisis, the risk of a serious disruption to the functioning of the market may be higher now than it has been in the past.[147] The financial market disruptions during the autumn of 1998 in both developed and emerging market economies have been partially described as the result of major players withdrawing from their market-making functions. A shrinkage in the capital base of these institutions and the impact of uncertainty regarding effective credit exposures have been offered as explanations for this withdrawal.[148] Note, however, that neither of these explanations is necessarily directly related to or caused by consolidation.

The financial liquidity of emerging market economies might be affected by the consolidation of G10 financial institutions although, again, the direction of the impact is unclear. On the one hand, consolidation may reduce the number of G10 institutions already operating in these markets. On the other hand, an increase in the number of large institutions in the G10 countries following consolidation might raise the number of firms that perceive international expansion as a feasible option due to their enlarged size, and induce some to enter these markets. Although the entry of G10 financial institutions in emerging market economies has steadily increased in the past decade, it is unclear to what extent consolidation per se is a driving force of this process.[149] Whatever the motivation for entry, an increase in the number of institutions that have important market-making functions in these markets is, ceteris paribus, likely to foster liquidity. This is because an increased presence of foreign dealers almost surely represents a net increase in risk capital devoted to this activity and also enhances the diversity of market participants.

A substantial presence of foreign banks operating in some small and medium-sized emerging markets may make such markets more vulnerable to shocks arising elsewhere, potentially exposing these markets to contagious liquidity shocks. A recent study, however, finds a negative relationship between foreign bank presence and the probability that a banking system will incur a crisis.[150] This result suggests that even in distressed periods the liquidity of emerging markets might not be adversely affected by the presence of foreign banks.

On balance, neither existing theory nor evidence supports a strong connection between current levels of consolidation among G10 banks and reductions in market liquidity. However, the issue is clearly important, particularly during periods of generalised financial stress, and a review that expands the list of relevant factors beyond consolidation might prove fruitful.

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147 Bank for International Settlements (1992) provides an early presentation of this view. Similar concerns have been raised in official circles recently with special focus on the foreign exchange market. For a discussion see Chapter V of the Bank for International Settlements Annual Report (June 2000).

148 See International Monetary Fund Capital Markets Report (December 1998), the Bank for International Settlements Annual Report Chapters V and VII (June 1999) and the Committee on the Global Financial System Report (1999).

149 See Chapter VI of the International Monetary Fund Capital Markets Report (September 2000).

150 Levine (1999).

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