CHAPTER 8

The Corporate Structure of International Financial Conglomerates:

Complexity and Its Implications for Safety & Soundness

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ABSTRACT

Conglomeration, consolidation and globalization have produced a number of international financial conglomerates that are crucial to the functioning of global capital markets. Among the 16 international financial conglomerates identified by regulators as large, complex financial institutions (LCFIs), each has several hundred majority-owned subsidiaries and 8 have more than 1,000 subsidiaries. We review a number of reasons why any large, international corporation might want to adopt a substantial degree of corporate complexity: to ease asymmetric information problems among shareholders, creditors and managers; to mitigate conflicts of interest; to insulate the rest of the group from risks in special activities (and vice versa); to minimize taxes; or simply as a legacy of mergers and acquisitions. But LCFIs have the additional burden of regulation that adds to their corporate complexity. On average the 16 LCFIs have nearly 2.5 times as many majority-owned subsidiaries as the 16 largest non-financial firms. We explore some of the legal and regulatory challenges that would be encountered in unwinding an LCFI and argue that the complexity of their corporate structure is a source of systemic risk. They may have become too complex to fail.

Keywords: asymmetric information, bankruptcy, corporate structure, moral hazard, subsidiaries, systemic risk.
1. INTRODUCTION

International financial conglomerates have become an increasingly important feature of the financial landscape. Universal banking countries have long integrated the securities business with traditional commercial banking, but over the last decade the US and Japan, which formerly required strict separation of commercial banking from the securities business, have permitted banks to combine these two activities subject to some limitations. Increasingly combinations of banking and securities business have expanded to include insurance operations as well. Allianz in Germany, ING and Fortis in the Netherlands, Credit Suisse in Switzerland, and Citi in the US have all made important cross-sector acquisitions in recent years to combine banking and insurance activities (although both Credit Suisse and Citi have subsequently divested some of their insurance acquisitions). Indeed, virtually all of the large, international financial institutions are to some extent financial conglomerates combining at least two of the three formerly distinct functions of banks, securities firms or insurance companies.

This consolidation and conglomeration appears to be motivated by hopes for cost savings and revenue enhancements from large, lumpy expenditures on information technology (Group of Ten, 2001). Economies of scope in production\(^1\) may be important whenever a significant fixed cost can be shared across several different products. In addition to investments in information technology, several other kinds of fixed costs may be important-- the costs of distribution channels, managing a client relationship, or establishing and maintaining a sound reputation and brand image. But diseconomies of scope such may also be important (Herring and Santomero

\(^1\) Economies of scope in consumption may also be important. But they could be exploited by using the distribution network of one institution to sell packages of financial services produced by other firms and thus cannot explain the formation of institutions such as LCFIs that produce and distribute several different kinds of financial services (Herring and Santomero, 1990).
1990). In any event it is difficult to find evidence of significant economies of scope in the data. Indeed, Laeven and Levine (2007) find evidence of a diversification discount applied to financial conglomerates.

The trend toward consolidation and conglomerate may also be motivated by the hope of achieving greater market power. By controlling the full range of substitutes for a financial product, a financial conglomerate may be able to raise prices above marginal costs. In order to sustain such market power, the financial conglomerate would also need to be able to limit entry and enforce mandatory joint product sales. Of course, anti-trust policy is intended to prevent such abuses. Moreover, intensified cross-border competition and technological advances that render all major markets for financial products highly contestable make it unlikely that any financial conglomerate could sustain market power should anti-trust policy prove ineffectual.²

More than thirty countries have restructured and unified their regulatory and supervisory systems to deal with financial conglomerates in a more integrated fashion (Herring and Carmassi, 2008). Many of these international financial conglomerates have achieved a scale of operation and centrality in the functioning of the international financial system that render them systemically important. Traditionally, systemic concerns have been the preoccupation of bank regulators, but these concerns do not diminish when a bank becomes part of a group that includes insurance and securities activities as well. Although it is possible that larger, more diversified international financial conglomerates will be less likely to fail, if a failure should occur the spillover effects on the rest of the financial system are bound to be greater. Moreover, the heavy

² See Berger, Demsetz and Strahan (1999) for a review of the literature on consolidation and market power. They note that market power is most likely to be of concern with regard to in-market rather than market extension mergers and that retail customers are more likely to be adversely affected than wholesale customers. Berger (1995) makes a careful distinction between the market power and efficient structure hypotheses taking account of both X-efficiency and scale efficiency. He concludes that neither the market power nor efficient scale hypotheses “are of great importance in explaining bank profits.”
involvement of these firms in trading activities around the clock, around the globe means that the authorities would have very little time to react if one should experience extreme financial distress.

Our central premise is that the complexity of the corporate structures that most international financial conglomerates have developed is itself a significant source of systemic risk. In the event of bankruptcy, hundreds of legal entities would need to be resolved. Since most of these firms are managed in an integrated fashion along lines of business with only minimal regard for legal entities, national borders or functional regulatory domains, and with substantial and complex intra-group relationships, simply mapping an institution’s business activities into its legal entities presents a formidable challenge. Moreover, these legal entities would be subject to scores of different national regulatory and bankruptcy procedures, many of which conflict.

The corporate complexity of international financial conglomerates is likely to impede timely regulatory intervention and disposition. This exacerbates the moral hazard implicit in the financial safety net and diminishes market discipline on some of the most systemically important institutions, while at the same time constraining the ability of the supervisory authorities to substitute regulatory discipline for market discipline. In effect, several of these institutions may have become too complex to fail.

We will begin with a consideration of the corporate structure that international financial conglomerates might prefer in the absence of regulatory and tax distortions. Then we will examine some of the (largely unintended) consequences for corporate structure of tax and regulatory policies. We will conclude with an analysis of some of the challenges this corporate complexity poses to an orderly winding down of an international financial conglomerate. But
first we present an overview of the large, complex financial institutions that we use to illustrate several aspects of the problem.

Large complex financial institutions

The regulatory authorities have identified 16 financial conglomerates as large, complex financial institutions (LCFIs) that are of crucial importance to the functioning of the international financial system. LCFIs (Bank of England, 2007b, p. 29) “include the world’s largest banks, securities houses and other financial intermediaries that carry out a diverse and complex range of activities in major financial centers.” These firms are key intermediators of risk through their market-making activities and principal risk-taking, as well as their provision of liquidity to capital markets. The concept was given empirical content in the Bank of England’s Financial Stability Review (2001) and since that time both the Financial Stability Review and the International Monetary Fund’s Global Financial Stability Report have tracked developments among this group of financial institutions. The Bank of England (2007a, p. 7) has expressed concern about the rising systemic importance of LCFIs: “Given their scale and their pivotal position in most markets, distress at an LCFI could have a large, unanticipated, impact on other financial markets participants. This could arise from losses on direct exposures to an LCFI that failed or from the wider market implications of actions taken by an LCFI to manage problems.”

Like the Holy Roman Empire, which was neither holy, nor Roman, nor an empire, the term “large and complex financial institutions” is imprecise. It does not include some of the largest financial institutions, or some of the institutions that pursue the most diverse lines of

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3 The term, LCFI, was introduced by a task force of the Financial Stability Forum, the G10 Ministers and Governors and the Basel Committee formed in 2000 to review the issues likely to arise in winding down an LCFI (Hüpkes, 2005). The Group of Ten report (2001) on consolidation also considered a number of problems that might arise as consequence of the growth of large and complex financial organizations.
business. Criteria for inclusion in the group require that an institution achieve a position as one of the ten largest participants in two or more of the following activities: book runners of international bond issues, book runners of international equity issues, book runners of global syndicated loans, notional interest-rate derivatives outstanding, foreign exchange revenue, or world-wide assets under custody (Hawkesby, Marsch and Stevens (2003)). LCFIs are completely dominant in some of these activities. For example, just two LCFIs act as custodians for around three quarters of all assets in value terms (Bank of England, 2007a, p. 30) and three LCFIs are the dominant intermediaries in the market for credit derivatives (Bank of England, 2007a, p. 35).

Figure 1 displays the 16 institutions that are currently classified as LCFIs by the Bank of England (Bank of England 2007, p. 29) and the IMF. At yearend 2006, all of these institutions (except Lehman Brothers) ranked among the world’s 25 largest banking groups in terms of total assets. Although these institutions differ with regard to the diversity of their activities (see column 6, the Herfindahl-Hirschman Index for revenues for individual lines of business) and the extent of their international engagement (see column 4, the percentage of foreign subsidiaries, and column 5, the percentage of net foreign income), they are all major participants in international capital markets. LCFIs have had a greater than 70% market share as lead arrangers and book runners of issues of residential mortgage-backed securities, leveraged syndicated loans, corporate debt and asset-backed securities during the first three quarters of 2007 (Bank of England, 2007b, p. 38). LCFIs have experienced remarkable growth since the turn of the century, with total assets more than doubling in size from 2000 through 2006. In 2006, trading assets constituted more than one-third of the total (Bank of England, 2007a, p. 9).

[Insert Figure 1 here]
LCFIs have also developed a remarkable degree of corporate complexity. In what follows we focus on the number of majority-owned subsidiaries as an indicator of corporate complexity. Of course, this is a somewhat arbitrary measure. The Federal Reserve Board, for example, takes a more expansive view of control in bank holding companies, establishing a 25% ownership level as the threshold. Moreover, it is a regrettably superficial measure of corporate complexity. Unfortunately, the Bankscope data do not permit us to identify shell corporations or other inconsequential subsidiaries. Although it would be useful to supplement this simple quantitative measure with an indication of each entity’s importance in the overall financial group, cross-guarantees and role in the overall business structure, such information is not publicly available for many subsidiaries. Nonetheless, the number of majority-owned subsidiaries is an indication of the magnitude of the legal challenge that would confront the authorities in taking an LCFI through bankruptcy. All of the LCFIs have several hundred subsidiaries. Eight have more than 1000 subsidiaries and one (Citi) has nearly 2,500 subsidiaries.

In the absence of tax and regulatory constraints, how much corporate complexity would LCFIs choose to adopt? The formation of subsidiaries can be costly. In addition to the start-up costs of obtaining a charter and creating a governance structure, there are ongoing costs for accounting, financial reporting and tax filings. Nonetheless, LCFIs have adopted a considerable amount of corporate complexity even within some countries where they are under no regulatory obligation to do so. Germany, for example, has followed a universal banking model that permits banking and securities activities to be conducted within a single legal entity. Only investment funds, building societies and insurance companies require the establishment of a separate legal entity. Nonetheless, Deutsche Bank, the leading German bank, has over 300 fully-owned
domestic subsidiaries (Bankscope, October 2007). What are the perceived, compensating benefits that justify the formation of corporate subsidiaries?

In the frictionless world of Modigliani and Miller (M&M) (1958), a firm’s choice of capital structure and, by extension, its corporate structure, cannot affect its value. But financial institutions lack any rationale in such a world. As Berger et al (1995, p. 394) note, most “[R]esearch on financial institutions has begun with a set of assumed imperfections,” which includes asymmetric information and transactions costs, costs of financial distress, taxes and regulation. Each of these imperfections may influence a financial institution’s choice of corporate structure.

Asymmetric information and transactions costs

Asymmetric information problems appear to afflict financial institutions more seriously than many other kinds of firms. Morgan (2002) presents evidence that financial institutions are inherently more opaque than other firms based on disagreements among bond rating agencies. Because many financial institutions specialize in lending to opaque borrowers and their trading positions can be easily and almost instantaneously changed, they are hard to monitor. He finds that insurance companies may be even more opaque than banks since their primary assets are privately placed, long-term loans and the indemnity risks they underwrite may be even more uncertain to outsiders than bank liabilities.

Asymmetric information problems arise when one party to a transaction or relationship has information that the other does not, and it is too costly to write, monitor and enforce a contract that would compensate adequately for the imbalance in information. When the objectives of the parties conflict, firms incur agency costs because of concerns about adverse
selection – the fear the better-informed party will take advantage of the less-informed party by misrepresenting the quality of the product or service – or moral hazard – the fear that once the transaction takes place, one party will covertly shift risk to the other’s disadvantage. Financial firms have devised many different ways of mitigating these costs, including, sometimes, the creation of separate subsidiaries. Asymmetric information exacerbates conflicts of interest, which may arise between shareholders and creditors, between shareholders and managers, and between the firm and its customers. We will consider each in turn.

Asymmetric information: shareholders vs. creditors

The fundamental conflict of interest between shareholders and creditors springs from differences in their pay-off functions. After debt-servicing costs have been paid, shareholders reap all the upside returns. They participate in the downside losses, however, only to the extent of their equity stake. In contrast, the upside return of creditors is limited to the promised return, while they may lose all that they have lent. Creditors will, thus, generally prefer safer investments than shareholders. With asymmetric information, creditors will be concerned that shareholders may engage in risk shifting after the terms of a loan have been set by substituting riskier assets for the safer assets. To safeguard against this possibility creditors may charge a higher premium and attempt to constrain the firm in a number of ways, perhaps even refusing to lend. Kahn and Winton (2004) have shown that the choice of a corporate structure can ease this problem. By forming a risky subsidiary, the firm provides a commitment that limits its incentive to engage in risk-shifting. Placing safer assets in a separate subsidiary increases the safe subsidiary’s net returns in bad states of the world and reduces its incentives to engage in risk shifting. It may also improve terms on which the safe subsidiary can obtain external financing. Although the firm may still have an incentive to engage in risk shifting in the riskier subsidiary,
Kahn and Winton (2004) argue that this limits the amount of risk-shifting that can take place within the conglomerate. (For an opposing view, see Merton and Perold (1993).)

In support of their theory, Kahn and Winton (2004) note the tendency of commercial banks to form separate subsidiaries for their finance companies, for insurance companies to form separate subsidiaries for riskier policy lines, and for investment banks to form separate subsidiaries for their riskier private equity investments. Their theory also provides a rationale for good bank/bad bank restructurings such as the regulatory restructuring of the Continental Illinois National Bank and Mellon Bank’s creation of Grant Street Bank in 1988. In fact, Kahn and Winton (2004, p. 2532) emphasize that several of the commonly advanced rationales for “bad” bank structures are not convincing unless the implications for incentives to engage in asset shifting are taken into account.

Asymmetric information: shareholders vs. managers and internal agency problems

International financial conglomerates generally have broadly dispersed shareholders with no one dominant owner. This separation of ownership from managerial control means that shareholders face an asymmetric information problem vis-à-vis the managers of a firm. This is a classic principal-agent problem in which managers may be tempted to pursue their own objectives, such as empire building or the enjoyment of lavish corporate perquisites, rather than serving the interests of shareholders. This may lead to several different kinds of resource misallocations that diminish share values. Managers may be excessively risk-averse and seek to protect their entrenched positions by underinvesting in risky, positive net present value projects (Smith and Stulz, 1985). Or managers may take advantage of free cash flows to overinvest in
value-destroying, negative net present value projects (Jensen, 1986). More broadly, managers may shirk.

Senior managers face similar issues with regard to managers lower down the corporate hierarchy. These internal agency costs include managerial entrenchment, misallocations of resources and rent-seeking behavior (Fulghieri and Hodrick, 2005). Although a number of corporate governance mechanisms deal with these problems, the choice of organizational form can also be used as an instrument to control the behavior of multiple agents and better align the incentives of owners and managers.

If a particular line of business has compensation practices or a culture that is very different from other lines of business in the conglomerate, segregation of that line of business into a separate entity may facilitate oversight and control. For example, it has often proved difficult to manage traders or deal-oriented investment bankers within the same compensation structure as relationship-oriented commercial bankers. Corporate separateness provides greater flexibility to better align incentives with the interests of shareholders and tailor employment contracts to prevailing market standards without destroying the culture necessary to make the business segment successful. As Aron (1991, p. 506) observes, the normal practice of tying the compensation of the manager of a business unit to the overall stock value of the group may not provide efficient incentives: “When a division is part of a multiproduct corporation, the stock value of the firm is a noisy signal of the market’s evaluation of any one divisional manager’s productivity. Loosely speaking, the more noise there is in the signal, the costlier it is to properly motivate the manager.”
Despite massive investments in management information systems, integrated financial conglomerates may find it difficult to track and evaluate the performance of individual lines of business. Informal, internal capital markets sometimes contribute to the blurring of performance and result in unintended cross subsidies (Rajan et al., 2000).\(^4\) A degree of corporate separateness may be introduced to sharpen strategic focus and improve monitoring. For example, some groups have established separate units to handle client transaction processing with the intention of clarifying the performance of other risk-taking units and giving senior managers better control over costs, pricing, product design and delivery of transactions services.\(^5\) This organizational innovation also facilitates benchmarking the transaction processing business against publicly-traded, stand-alone businesses that provide similar services.

Occasionally a firm may take the additional step of partially spinning-off a subsidiary so that it has a separate listing and can be publicly traded. As Habib et al (1997) observe, this enlists the help of capital markets in generating information that should improve the quality of investment decisions. It may also reduce the uncertainty of uninformed investors regarding the value of the subsidiary. Both effects should increase the value of the firm.

Firms may achieve some of the incentive benefits by simply forming a separate entity even though the spinoff never actually occurs. Aron (1991, p. 505) notes that “The possibility of a future spinoff induces the divisional manager to act as if he were being monitored and

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\(^4\) Holod and Peek (2006), however, provide evidence that internal capital markets in multi-bank holding companies enhance the efficiency of capital allocation. In particular, internal secondary loan markets avoid the asymmetric information problems faced by participants in the external secondary loan market and thus mitigate financial constraints faced by individual subsidiaries.

\(^5\) For a description of the formation of PROFITCO at Bankers Trust, which was the first bank to restructure its processing services in this way, see Guil (2008).
evaluated by the capital market, even though the capital market’s evaluation is observed only if a spinoff actually occurs.”

Information asymmetry: customer concerns about conflicts of interest

Conflicts of interest are ubiquitous even in specialized financial institutions, but as Walter (2003, p. 21) notes, “[A] matrix approach to mapping conflicts of interest demonstrates that the broader the range of clients and products, the more numerous are the potential conflicts of interest and the more difficult is the task of keeping them under control – and avoiding even larger franchise losses.” Customers fear that a firm may use its informational advantage to their detriment. Firms invest substantial resources to reassure clients and potential customers that they will not be disadvantaged vis-à-vis the firm or other clients. Such efforts include the erection of “Chinese walls” restricting the flow of information across lines of business, the adoption of codes of conduct reinforced with compliance audits, and disclosures of potential conflicts (for a detailed study on conflicts of interest in the financial industry see Walter (2004)).

Sometimes firms take the additional step of segregating activities in separate subsidiaries. For example, investment advisory services may be provided by a separate entity from underwriter and broker/dealer. Or, management consulting services may be offered through a separate entity in a separate location from the parent to reassure customers that confidential information would not be used in lending decisions or to aid other firms in which the parent might have an ownership position. Equally, corporate separateness may provide greater flexibility for operating units that would otherwise be constrained by conflict-of-interest concerns or burdensome reporting requirements. For example, Cox and Curry (2007, p. C12) reported that Goldman Sachs moved some of its proprietary trading desks from its investment
bank into a separate, asset management unit. They speculate that one of the advantages may be that “[T]he stock-arbitrage desk may find it has more freedom to invest in companies involved in mergers or acquisitions that were once off limits because of the investment bank's activities as the world's top M&A adviser.”

Krozner and Rajan (1997) found evidence of this behavior in the way in which US banks organized their investment banking operations before the 1933 Glass-Steagall Act forced a separation between commercial and investment banking. During this period some banks organized their investment banking operations as an internal department within the bank, while others formed separately incorporated affiliates with separate boards of directors. They found that the market attached a higher risk premium to issues underwritten by internal departments. Krozner and Rajan (1997, p. 475) conclude that this is consistent with “investors discounting for the greater likelihood of conflicts of interest when lending and underwriting are within the same structure” and conclude that a separate affiliate structure is “an effective commitment mechanism” to reassure customers that the underwriter will not abuse its information advantage.

Costs of financial distress: protecting the group from a risky subsidiary

Financial distress occurs when a financial institution is expected to have difficulty in honoring its commitments. Costs of financial distress include not only costs of bankruptcy, but also the loss in value that may occur as a result of the perception that bankruptcy may be imminent even though it may ultimately be avoided. Talented employees may leave, suppliers may demand payment on delivery, revenues from credit-risk sensitive products may decline and conflicts of interest between shareholders and creditors may degrade the quality of operating, investment and financial decisions. As Berger et al. (1995, p. 396) note, “Financial distress
should be distinguished from economic distress. The cost of financial distress may be measured as the additional loss from economic distress for a leverage bank versus an identical bank that is unleveraged. When asset quality deteriorates, both banks will experience economic distress, but the leveraged bank experiences a greater loss of value…."

When costs of financial distress are substantial, firms may prefer to segregate risky activities in separately incorporated subsidiaries even though information is shared equally between corporate insiders and capital markets. A holding company structure, in which subsidiaries are separately funded, can limit the damage to the rest of the group from financial distress in one of its affiliates. Corporate separateess provides the option of partial liquidation when losses in one of the subsidiaries would otherwise jeopardize the solvency of the rest of the group.

Bianco and Nicodano (2002) show that both shareholders of the financial group and the rest of society are better off when external debt is raised through separately incorporated subsidiaries rather than through the holding company and then down-streamed to the subsidiaries. In either case, gains from co-insurance could be realized: the holding company may choose to rescue a faltering subsidiary with profits from the rest of the group. But if funding is primarily from the holding company, a group-threatening loss that hits a subsidiary will certainly inflict the costs of financial distress on the rest of the group. In contrast, if subsidiaries are separately funded in external capital markets, the loss could be stopped at the subsidiary directly affected, reducing the costs of financial distress to the rest of the group. Of course, the providers of debt will charge a higher risk premium when they lend to the subsidiary. But as long as the premium does not include a substantial, adverse-selection premium, both shareholders and society should be better off. (Of course this depends crucially on the authors’ assumption of full
information. If lenders are concerned that they are less-well informed about risk, then the Kahn and Winton model discussed above is more relevant.)

It is sometimes asserted that a financial group could not afford to walk away from a faltering subsidiary because it would undermine confidence in the rest of the group. For example, Baxter and Sommer (2005, p. 187) argue that “it is unlikely that limited liability is a strong argument for complex affiliate structures…. [I]f limited liability aids an entity within the group, it is only at the expense of other entities in the group.” And Walter Wriston (1981), former Chairman of the predecessor of Citi, testified before Congress that “[I]t is inconceivable that any major bank would walk away from any subsidiary of its holding company.” While it is true that a loss of reputation may be more costly to financial firms than to other, less-leveraged firms, limited liability has option value. In some instances banks have walked away from insolvent subsidiaries without notable detrimental impact on the rest of their business. For example, ING cut loose a failing insurance subsidiary in London without substantial repercussions (Herring and Schuermann 2005) and Bank of Nova Scotia and Crédit Agricole abandoned insolvent subsidiaries in Argentina (Dermin 2006).

Moreover, banks sometimes appear to isolate riskier activities in separate subsidiaries. Dermine (2006) and Cerutti et al (2005), for example, have observed that banks tend to prefer to organize as subsidiaries (rather than branches) in riskier countries. Herring and Santomero (1990) reported that some banks chose to join clearing and settlement schemes that had open-ended loss-sharing agreements with separately capitalized subsidiaries in order to limit potential losses. The panic that swept through Asian securities markets after the collapse of Barings stemmed, in part, from the fear that a number of institutions would abandon their subsidiaries if losses should exceed their capital investments in memberships in some of the exchanges.
(Herring 2003). But in other cases, for example in dealing with troubled Structured Investment Vehicles, financial institutions have provided additional funds to protect their reputations even though they were under no legal obligation to do so.

In some jurisdictions, moreover, the limited liability option is constrained by regulation. The Federal Reserve Board has long held that the failure of a parent bank holding company to act as a source of strength to a troubled banking subsidiary would be considered “an unsafe and unsound banking practice” (Ashcraft (2004)). The source of strength doctrine is intended to enhance the position of the bank within a holding company. It implies that during periods of financial stress, the regulatory authorities should be permitted to use the resources of the holding company and its subsidiaries to support the bank. In essence, the source-of-strength doctrine would give the regulatory authorities an option on the assets of the rest of the holding company to prevent the default of the bank. Nonetheless, the Fed’s attempt to enforce this doctrine in the Mcorp case was thwarted by the courts and the Federal Deposit Insurance Corporation settled two cases where the parent of a failed bank sued the receivership to recover funds and assets that were down-streamed by the holding company to a faltering bank subsidiary. But subsequently Congress enacted two laws that enhanced the ability of the regulatory authorities to force bank holding companies to act as a source of strength in some circumstance. First, the Financial Institutions Reform, Recovery and Enforcement Act of 1989 (FIRREA) contained a cross-guarantee provision that permitted the FDIC to charge off any expected losses from a failing banking subsidiary to the capital of non-failing affiliate banks. Second, under the prompt corrective action section of the Federal Deposit Insurance Corporation Improvement Act of 1991, the Federal Reserve Board was given authority to force a parent bank holding company to guarantee the performance of a troubled affiliate as part of a capital restoration plan.
Ashcraft (2004) has presented evidence that the ability of the FDIC to claim the capital in a non-failing banking subsidiary increased the incentives of bank holding companies to bailout a subsidiary before it fails and diminished the attractiveness of walking away from a distressed subsidiary. He concludes (Ashcraft, 2004, p. 19) that, “In contrast to the historical experience before FIRREA, bank holding companies now appear to be a source of strength to their subsidiaries. Distressed affiliate banks are more likely to receive injections of capital than stand-alone banks, and recover from distress more quickly.”

In addition, financial groups sometimes voluntarily choose to forego the potential advantages of limited liability by explicitly guaranteeing the external debt of some subsidiaries, presumably to achieve more favorable borrowing terms. For example, Citigroup (2007, p. 156) provides explicit guarantees for external debt of four of its wholly-owned subsidiaries: Citigroup Global Markets Holdings Inc., Citigroup Funding Inc., CitiFinancial Credit Company (CCC), and Associates First Capital Corporation.

Costs of financial distress: protecting a subsidiary from the rest of the group

The growth of securitization has led to a proliferation of special purpose vehicles (SPVs),6 which are designed to be financially insulated from the rest of the group. An SPV is a legal entity set up by a corporate sponsor for a specific, limited purpose. It buys pools of assets, usually originated by the sponsor, and issues debt to be repaid by cash flows from that pool of assets. It is tightly bound by a set of contractual obligations that ensure the activities of the entity are essentially predetermined at the inception of the vehicle. SPVs tend to be thinly capitalized,

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6 The term “special purpose entity” (SPE) is used more or less interchangeably. For an analysis of SPVs see also Strahan (chapter 5 in this volume). For an overview of Structured Investment Vehicles (SIVs) see Allen and Saunders (chapter 4 in this volume).
lack independent management or employees and have all administrative functions performed by a trustee who receives and distributes cash according to detailed contracts. Most SPVs involved in securitization are organized as trusts, although they may also be organized as limited-liability companies, limited partnerships or corporations. For some kinds of transactions substantial tax benefits can be achieved if an SPV is domiciled offshore – usually in Bermuda, the Cayman Islands or the British Virgin Islands (Gorton and Souleles, 2006).

LCFIs (Bank of England, 2007b, p. 50) “have been at the heart of the growth of the structured credit markets” and have dominant shares in arranging residential mortgage-backed and other asset-backed securitizations that rely heavily on SPVs. It is evident from Figure 2 that trusts may represent a very substantial number of subsidiaries for each of the LCFIs. Some of these trusts are SPVs, but most securitization vehicles are unlikely to be included in our count of majority-owned subsidiaries because sponsors generally seek to avoid the appearance of voting control.

[Insert Figure 2 here]

SPVs are constructed to be bankruptcy remote. The objective is to reassure investors in the SPV that their rights to the promised cash flows will not be compromised by financial distress or insolvency in the sponsor or its affiliates. Similarly, the SPV itself is structured so that it cannot be taken through bankruptcy. Typically any shortfall of cash that would otherwise cause an event of default will trigger, instead, an early amortization of the pool of assets. The benefit of this structure is that it should avoid the deadweight costs of financial distress and so the debt issued by the SPV should not be subject to a bankruptcy premium. By separating the
control rights over assets from the financing of these assets, the SPV reduces the costs of financial distress and thus the cost of debt financing (Gorton and Souleles, 2006).

Although the desire to avoid the deadweight costs of financial distress may be the primary motive for securitizing assets, Tufano (2006) notes that other factors may also be important. For example SPVs may be formed to achieve more favorable accounting treatment for the sponsor, to increase tax efficiency, to avoid regulatory capital requirements, to tap new pools of capital through changing the risk characteristics of a pool of assets or to reduce the deadweight costs of information asymmetry by separating the funding of a more transparent pool of assets from the rest of the sponsor’s balance sheet.

Protection of the bankruptcy remote status of SPVs requires that the sponsor refrain from making any commitment to support the SPV. The concern is that a legal commitment might undo the bankruptcy remote structure. If a sponsor should enter bankruptcy proceeding, the judge might recharacterize the sale of assets to the SPV as a secured financing, which would bring the assets back onto the sponsor’s balance sheet. Attempts to minimize this possibility account for a considerable amount of the complexity of securitization vehicles. For example, sponsors often employ a two-tiered SPV structure to provide an extra layer of insulation between the claims of the investors and the sponsor (Gorton and Souleles, 2006, p. 558).

The requirements for a true sale are set out in Financial Accounting Standard No. 140. The sponsor must surrender control of the assets sold to the SPV and the SPV must be a qualifying SPV (QSPV). QSPVs must be demonstrably distinct from their sponsors, as evidenced by the fact that the sponsor cannot unilaterally dissolve the SPV and at least 10% of the fair value of its beneficial interests must be held by unrelated 3rd parties (Gorton and
Souleles, 2006, p. 556). QSPVs need not be consolidated in their sponsor’s financial statements. Some Variable Interest Entities (SPVs that do not meet the requirements for QSPVs) must be consolidated. Other VIEs, in which the sponsor is unlikely to absorb a majority of the expected losses or receive the majority of the expected residual returns, need not be consolidated (Soroosh and Ciesielski, 2004). Thus, at best, our measure of corporate complexity is likely to capture consolidated VIEs. For many of the LCFIs, this is a relatively small fraction of the total securitization activity. For example, JPMorgan Chase & Co. reports that in 2006 its revenue from QSPEs was almost 15 times greater than the combined revenues of its consolidated and significant unconsolidated VIEs (JPMorgan Chase & Co., 2007, p. 59).

If SPVs are, in fact, bankruptcy remote, would they complicate the unwinding of an LCFI? Perhaps not, but Gorton and Souleles (2006) present evidence that sponsors have supported their SPVs and, based on the pricing of debt issued by SPVs and the credit rating of the sponsoring institution, conclude that investors rely on this implicit support. Gorton and Souleles (2006) argue that this implicit commitment is essential to deal with moral hazard and adverse selection problems implicit in the asymmetric information between the originator of the assets and investors in the SPV. Nonetheless, the efforts by several LCFIs to support their Structured Investment Vehicles and Asset Backed Commercial Paper Conduits during the turmoil in financial markets in the latter half of 2007 appear to have surprised shareholders and some regulators. In any event, this disconnect between explicit and implicit contracts complicates any analysis of how the existence of SPVs might affect the resolution of an LCFI experiencing extreme financial distress. Moreover, many of the innovative securitization structures have not been tested in a bankruptcy proceeding. Although these bankruptcy-remote
structures may well turn out to be “bullet proof,” they are likely to complicate the resolution of a faltering LCFI, nonetheless.

The legacy of mergers and acquisitions

Mergers and acquisitions may have a significant impact on the degree of complexity of corporate structure. Relative to a firm of equal size that has grown organically, an acquisitive financial conglomerate is likely to have many more subsidiaries, if only because it may be costly to close or consolidate them. Most of the LCFIs have engaged in a remarkable amount of merger activity. LCFIs have initiated not only a large number of mergers, but also some very large mergers. For example, since 1990 Bank of America, Deutsche Bank, JP Morgan Chase and UBS have implemented mergers in which the target institution was larger than 10 percent of the acquiring firm’s total assets (SDC Thomson Financial). The acquiring firm may choose to retain a considerable amount of corporate separateness in the target firm for two reasons. First, it may perceive value in the brand and hope to retain the reputational capital of the target firm. Second, the willingness to retain the existing corporate structure may facilitate acceptance of the merger. As Dermine (2006) notes, by committing to keep in place a local structure and staff, local shareholders and the board of directors of the target may be reassured about the future of the target firm. Also, as we discuss below, host country regulatory authorities sometimes require that the acquiring bank maintain the target bank as a separate, locally-chartered corporation. Dermine (2006) observes, however, that this decision to maintain a separate entity is often tactical rather than strategic. Over time, LCFIs generally decide to build a global brand identity, which may be inconsistent with the retention of separate subsidiaries bearing legacy names. Based on his interviews with ING and Nordea, Dermine (2006) found that even though both
firms initially left many legacy organizations intact, they were also committed to building a
global brand over time.

JP Morgan Chase provides a good example of how mergers may increase corporate
complexity. The current organization is the result of a series of mergers of very large banks that
began in 1991 with the merger of Chemical Bank Corporation and Manufacturers Hanover
Corporation. This merger resulted in a near doubling of the size of the surviving institution,
Chemical Bank, and, in 1996, was followed by the merger of Chemical Bank with The Chase
Manhattan Corporation. The resulting institution merged with J.P. Morgan & Co. Incorporated
in 2000 forming J.P. Morgan Chase & Co. (JPMC). This series of mergers finally culminated in
July 2004 with the merger of JPMC and Bank One Corporation (BOC). At yearend 2003 JPMC
had 248 wholly-owned subsidiaries and BOC had 239. After the merger, at yearend 2004, the
surviving organization had 360 wholly-owned subsidiaries (Secinfo database). (Note that the data
in Figures 1 and 2 reflect majority-owned subsidiaries and are not directly comparable.)
Although this represents nearly a 30 percent reduction relative to the combined total number of
subsidiaries of the predecessor institutions, the result of the merger was, nonetheless, a much
larger institution of considerably greater corporate complexity.

The efforts of JPMC to reduce its corporate complexity are consistent with evidence presented
by Klein and Saidenberg (2005) that bank holding companies with many bank subsidiaries are
valued at a discount relative to similar bank holding companies with fewer bank subsidiaries.
Although this conglomerate discount has sometimes been attributed to inefficient internal capital
markets, they find that affiliated banks benefit from access to internal capital markets by lending
more and holding less capital than comparable unaffiliated banks. Since activity and geographic
diversification is broadly similar for their sample of affiliated and unaffiliated banks, they infer
that the valuation discount is attributable mainly to greater complexity of organizational structure rather than diversification (but Laeven and Levine (2007) adopt a different approach and find a diversification discount in financial conglomerates, and identify agency problems and insufficient economies of scope as probable causes). This finding may help explain why several large banks have attempted to simplify their corporate structures. Rosengren (2003, p. 111) presents evidence that from 1993 to 2002, eight large US bank holding companies reduced their number of subsidiaries relative to the number of subsidiaries in their predecessor organizations. Also, Citigroup (2007, p. 97) reported a consolidation project to merge twelve of its U.S.-insured depository institutions into four. These efforts notwithstanding, continuing merger activity undoubtedly adds to corporate complexity.

_Tax frictions_

Taxes can have a major impact on the choice of corporate structure for all firms, especially international financial firms, because they tend to have more flexibility to shift profits from one entity to another. Demirgüç-Kunt and Huizinga (2001, p. 430) observe that “[M]ultinational banks, perhaps even more than other multinational firms, have opportunities for reducing their tax burdens in high-tax countries by way of intra-firm transfer pricing.” The choice of corporate structure may be influenced by income taxes (and the details of permissible deductions and credits), capital gains taxes, taxes on interest and dividends, value-added taxes, withholding taxes, transactions taxes and stamp duties. It is difficult to generalize about the influence of taxes on corporate structure because tax codes differ markedly across countries,

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7 Banks are often subject to a number of implicit taxes as well, which may include the obligation to hold required reserves at the central bank at less than the market rate of interest or deposit insurance premiums that exceed the fair value of insurance.
even among the relatively homogeneous members of the European Union. Moreover, the application of tax laws often depends on complex interpretations and rulings by the tax authorities.

Nonetheless, tax considerations appear to play a central role in a number of choices regarding corporate structure, including the location and organizational form of SPEs for leasing, real estate holdings, investment management and private equity. In the U.S. specific tax code provisions make it advantageous to organize real estate mortgage conduits (REMICs), financial asset securitization investment trusts (FASITs), regulated investment companies (RICs), and real estate investment trusts (REITs) (Gorton and Souleles, 2006, p. 550). In general SPEs are structured so that profits are not taxed in order to avoid double taxation that would otherwise occur if both the income of the sponsor and distributions from the SPE are taxed. Tax motives have also led to the creation of trusts for issuance of trust preferred securities that are taxed like debt obligations, so that interest payments are deductible, yet are treated as tier 1 capital by the bank regulatory authorities. Citi alone had established 19 of these subsidiary trusts by the end of 2006 (Citigroup 2007, p. 141).

Tax considerations are especially important for internationally-active financial groups. Because home countries often tax groups on their consolidated worldwide income and, at the same time, most host countries tax locally-generated income as well, cross-border transactions are usually subject to double taxation. Without some sort of relief, multiple taxes could stifle cross-border transactions completely.

Governments have devised a number of ways to alleviate double taxation, such as exempting foreign source income from the computation of taxable income or negotiating tax
treaties to reduce or eliminate withholding taxes among pairs of countries. Some countries have also negotiated tax-sparing conventions to preserve tax concessions granted by less developed countries. These conventions attempt to preserve the benefit of host-country tax incentives (such as tax holidays, credits, deductions or exemptions) through tax sparing. In the absence of such tax-sparing arrangements these incentives may be reduced or eliminated by the home country, particularly when the home country provides recognition for taxes paid to the host country under the credit system. Tax-sparing treaties generally grant home country tax credit for taxes that were not actually collected by the home country. The rationale for such arrangements is that host country tax concessions are economically equivalent to grants or subsidies. Proponents of such treaties argue that, just as it would be inappropriate for the home country to insist on repayment by the parent company for grants or subsidies received by its foreign subsidiaries, it is inappropriate to recoup the value of tax incentives.

More broadly, when foreign source income is not exempt from taxation in the home country, firms are often permitted to credit foreign taxes paid against domestic tax owed. Generally, the foreign tax credit is limited by the amount of taxes that the firm would have paid if the income had been earned at home. Thus firms have a strong incentive to reduce the average tax rate on foreign source income by shifting profits from relatively high-tax countries to tax havens (permissible foreign tax credits may be constrained in other ways as well; see Demirgüç-Kunt and Huizinga (2001) for restrictions imposed on profit-shifting by the U.S.).

A crude indication of the extent to which tax issues may have contributed to the corporate complexity of LCFIs may be seen in the number of entities located in tax havens. Our list of tax havens is based on the 42 countries/territories/jurisdictions classified by the Financial Stability Forum as Offshore Financial Centers (FSF 2000, IMF 2000). The list includes
countries/territories/jurisdictions which provide low or zero taxation, moderate or light financial regulation, and/or banking secrecy and anonymity. Of course, the impact of tax issues on organizational complexity is much more pervasive and complex than can be represented by a count of the number of subsidiaries in these centers. Nonetheless, even this number is substantial for some of the LCFIs (see Figure 1). Six of our LCFIs each have more than 100 subsidiaries located in these booking centers. Moreover, three of the LCFIs have located nearly 20% of their subsidiaries in tax havens.

*Regulatory constraints*

All of the preceding rationales for corporate separateness – asymmetric information problems, insulation against risk, the legacy of mergers and acquisitions and taxes – apply to large corporations in general, not just financial groups. But financial groups are subject to an additional source of constraints that complicates their corporate structures – regulation. This may help explain, at least in part, why they have a substantially greater number of subsidiaries than non-financial groups of comparable size. On average the 16 LCFIs have nearly 2.5 times as many majority-owned subsidiaries as the 16 largest non-financial firms ranked by market capitalization at yearend 2007 (Bankscope and Osiris data).

Banks are among the most regulated institutions in every country, although countries differ with regard to the constraints imposed on banks’ expansion into other lines of business. Broadly, three different regulatory models can be discerned: (1) complete integration; (2) parent bank with nonbank operating subsidiaries; and (3) holding company parent with bank and non-bank affiliates.

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8 Seven of the 16 LCFIs have bank holding companies (source: Bankscope). See Herring and Santomero (1990) for a more detailed discussion of these models and their variations.
follow the first model, with only minimal corporate separateness imposed for regulatory reasons. For example, Germany allows the combination of bank and securities businesses in a single legal entity. The U.S. Comptroller of the Currency (which regulates banks, but not bank holding companies) has long-argued for the second model and has permitted the national banks, which it supervises, to create subsidiaries to conduct some nonbank activities. The dominant model in the U.S., however, is the third. Moreover, the corporate separateness imposed on bank holding companies and financial services holding companies is reinforced by restrictions on the flows of credit between different functional units and the bank. Sections 23A and 23B of the Federal Reserve Act limit the amount of credit from banks to their affiliates and require that such transactions be collateralized and made at market prices. The Gramm-Leach-Bliley Act, which authorized financial services holding companies, extended these provisions to credit flows between banks and their own financial subsidiaries and, to some extent, to flows between holding companies and the financial subsidiaries of banks.

In a survey of 143 countries Barth, Caprio and Levine (2007) find that of the majority of 127 countries that permit banks to engage in some securities activities, 59 impose some form of corporate separateness on these activities. Of the 87 countries that permit banks to engage in the insurance business, 85 impose some form of corporate separateness. Finally, of the 62 countries that permit banks to engage in the real estate business, 45 require some form of corporate separateness.

In countries that have not adopted the single or integrated regulator model, different functional regulators often require that the activities which they regulate be conducted in separate legal entities. This not only facilitates oversight, but makes it easier to ring-fence those
activities should it become necessary to intervene.\footnote{In some jurisdictions it is possible to ring-fence entities that are not separately incorporated; for example, the US regulatory authorities can ring-fence a foreign branch.} Thus, even without consideration of the complexities introduced by international expansion, financial conglomerates may be required to adopt a certain amount of corporate separateness for regulatory purposes.

LCFIs have established subsidiaries in numerous countries (see column 7 in Figure 1) and international expansion may require substantial additional corporate complexity for two reasons. First, host countries that apply some variation of model three to domestic financial conglomerates generally impose the same restrictions on foreign firms to maintain a level playing field. The fact that the United States, the largest market in the world for financial services, applies model three to domestic and foreign firms can account for a significant amount of the complexity of the corporate structure of LCFIs headquartered outside the U.S.

Second, even if the host country has not adopted a variation of model three for domestic firms, it may require that foreign-owned firms incorporate locally to ensure that the domestic authorities can intervene to protect domestic residents. New Zealand provides, perhaps, the most extreme example of the second rationale. More than 85\% of the banking system is controlled by foreign-owned banks and the New Zealand authorities have been uncomfortable accepting the passive role often associated with host country oversight of resident foreign branches (Woolford and Orr, 1995). They have insisted that systemically important foreign entities be organized as subsidiaries. Moreover, they have buttressed this corporate separateness by additional measures that ensure that a subsidiary could continue operation without interruption (and without its previous owners) should it become necessary.
Barth, Caprio and Levine (2007) find that in their sample of 143 countries only 3 countries prohibit entry by foreign subsidiaries, but 28 countries prohibit entry by foreign branches. Moreover, even if foreign branch entry is not prohibited, host countries often impose stricter regulatory requirements on foreign branches that make the formation of a separate subsidiary relatively attractive. For example, of the 19 Latin American and Central European countries surveyed by Cerutti et al (2005), 7 restrict foreign branches more heavily than foreign subsidiaries.

Functional and national regulators frequently employ corporate separateness as a means of regulating, supervising and monitoring the part of a financial conglomerate that falls in their bailiwick. While this may enhance local regulatory oversight an unintended consequence may be that international financial conglomerates may have significantly more complex corporate structures than domestic firms of comparable size.

More broadly, LCFIs often respond to new regulations with a still more corporate complexity. Kane (1977, 1981, and 1984) has characterized this dynamic as a regulatory dialectic, in which regulators impose a rule (or implicit tax) and the regulated firms react within their constrained environment to minimize the implicit tax burden. The regulators in turn react to perception of regulatory avoidance with still more regulations. Robert Eisenbeis, in correspondence with the authors, described how the regulatory dialectic evolved under the Bank Holding Company (BHC) Act: “From the very beginning, financial conglomerates exploited the BHC loopholes to expand geographically as well as into new activities. Finance companies were acquired to expand across state lines. Credit card special purpose banks were designed to get around usury ceilings. SPEs and off-balance-sheet activities were designed to avoid capital constraints. Mortgage banking subsidiaries were established to avoid having to pay taxes for
doing business across state lines.” This kind of dynamic has undoubtedly increased the corporate complexity of LCFIs. In the event of financial distress, however, this complexity could impede an effective regulatory response.

Implications of corporate complexity for safety and soundness of the financial system

Despite their corporate complexity, LCFIs tend to be managed in an integrated fashion along lines of business with only minimal regard for legal entities, national borders or functional regulatory authorities. Moreover, there are often substantial interconnections among the separate entities within the financial group. Baxter and Sommer (2005) note that, in addition to their shared (although possibly varying) ownership structure, the entities are likely to be linked by cross-affiliate credit relationships, cross-affiliate business relationships and reputational relationships.

What would happen should one of these LCFIs experience extreme financial distress? Quite apart from the difficulty of disentangling operating subsidiaries that provide critical services to other affiliates and mapping an integrated firm’s activities into the entities that would need to be taken through a bankruptcy process, the corporate complexity of such institutions would present significant challenges. The fundamental problem stems from conflicting approaches to bankruptcy across regulators, across countries and, sometimes, even within countries. There are likely to be disputes over which law and which set of bankruptcy procedures should apply. Some authorities may attempt to ring-fence the parts of an LCFI within their reach to satisfy their regulatory objectives without necessarily taking into account some broader objective such as the preservation of going concern value or financial stability. At a minimum, authorities will face formidable challenges in coordination and information sharing.
across and among jurisdictions. Yet experience has shown that in times of stress information-sharing agreements are likely to fray. (See Eisenbeis and Kaufman (2008) and Herring (2007) for examples.)

Bad news tends to be guarded as long as possible. Managers of a regulated entity are often reluctant to share bad news with their regulators because they fear they will lose discretion for dealing with the problem (and, indeed, may lose their jobs). Similarly, the primary supervisor of the regulated entity is likely to be reluctant to share bad news with other supervisory authorities out of concern that the leakage of bad news could precipitate a liquidity crisis or that other supervisory authorities might take action – or threaten to take action – that would constrain the primary supervisor’s discretion for dealing with the problem or cause it to take action rather than forbear. As Baxter, Hansen and Sommer (2004, p. 79) note, “Once the bank’s condition degrades, supervisors think less about monitoring and more about protecting their creditors. This creates a conflict among supervisors.” (See Kane (1989) for a thorough analysis of the incentives to forbear.)

Generally, the primary supervisor will use its discretion to forbear so long as there is a possibility that the regulated entity’s condition may be self-correcting, particularly if the alternative is closure. A closure decision is sure to be challenged and so supervisors will tend to forbear until losses are so large that there can be no reasonable doubt that the entity is insolvent. Losses that spill across national borders, however, will intensify conflicts between home and host authorities and make it difficult to achieve a cooperative resolution of an insolvent financial group. (See Eisenbeis and Kaufman (2006) for an analysis of differences in resolution policies and procedures among member countries of the European Union.) Freixas (2003) has argued that disagreements regarding the causes of losses and metrics for allocating losses across countries
would lead to the underprovision of recapitalizations of international banks even when the social benefits of recapitalization exceed the cost.

Within the relatively homogeneous banking sector, despite thirty years of harmonization initiatives by the Basel Committee on Banking Supervision, approaches to bank resolution differ substantially across countries. For example, countries differ with regard to the point at which a weak bank requires resolution. In many countries, intervention is required when a bank’s net worth (which may be defined in a number of different ways) declines to zero, but in the United States, which has adopted a Structured Early Intervention and Resolution policy, action must be taken when the ratio of tangible equity to total assets is equal to or less than 2 percent. In Switzerland, the authorities may intervene even earlier if they perceive a threat to depositors’ interests. Countries also differ with regard to what entity initiates the resolution process. The supervisory authorities? The courts? Or the bank itself? Barth, Caprio and Levine (2007) find significant differences across the 143 countries they survey. The bank supervisor can legally declare that a bank is insolvent in 66 countries. Courts have this prerogative in 97 countries and the deposit insurance agency in only 4, while in 26 other countries this function is exercised by other agencies or the bank itself. In many countries more than one entity can declare insolvency. Clearly cross-border differences in regard to how and when the resolution process is initiated can cause delays that may be costly in a crisis.

In the event that an entity is declared insolvent, which jurisdiction will oversee the insolvency? The place where the bank was chartered? Where the management resides? The principal place of business? The domain of the largest concentration of assets? Or where the largest concentration of creditors resides? The collapse of BCCI revealed that each of these questions may have a different answer. Baxter, Hansen and Sommer (2004, p. 61) observe that it
is difficult to devise a good jurisdictional rule that “would be both *ex ante* predictable (to defeat forum shopping or subsequent jurisdictional squabbling) and sensible in application (to discourage name-plate incorporations or prevent unseemly jurisdictional choices).”

The choice of jurisdiction, however, may have important implications for the outcome of the insolvency proceedings. Most countries have adopted a universal approach to insolvency in which one jurisdiction conducts the main insolvency proceedings and makes the distribution of assets, while other jurisdictions collect assets to be distributed in the main proceedings. But the United States follows a more territorial approach with regard to US branches of foreign banks and will conduct its own insolvency proceedings based on local assets and liabilities. Assets are transferred to the home country only after (and if) all local claims are satisfied.

The choice of jurisdiction will also determine a creditor’s right to set-off claims on the insolvent bank against amounts that it owes the bank. The BCCI case revealed striking differences across members of the Basel Committee (Basel Committee, 1992). In the United States, the right of set-off can be exercised only with regard to claims denominated in the same currency at the same branch. Claims denominated in different currencies or at different branches may not be set off. In contrast, in the United Kingdom, the right to set-off may be exercised even when the claims are not denominated in the same currency, at the same branch or even at branches in the same country. And in Luxembourg the right to set-off may not be exercised after a liquidation order and may be exercised before a liquidation order only when the claims are fixed in amount, liquid and mature.

Similarly, the ability to exercise close-out netting provisions under the International Swap Dealers Association (ISDA) Master Contracts may vary from jurisdiction to jurisdiction. In
principle, in the event of a default, the non-defaulting counterparty can close-out all existing transactions under the Master Agreement, which may include many different kinds of derivative contracts with many different affiliates of the defaulting entity, making them immediately due and payable. The non-defaulting counterparty can then offset the amount it owes the defaulting entity against the amount it is owed to arrive at a net amount. In effect, close-out netting permits the non-defaulting counterparty to jump the bankruptcy queue for all but the net value of its claims. But the ability to apply close-out netting and the extent to which it may be applied may depend on whether the country in which the insolvency proceeding is conducted has enacted legislation to ensure that all outstanding transactions under a master netting agreement can be terminated upon the occurrence of an insolvency and that close-out netting will be respected by the bankruptcy trustee.

The outcome of insolvency proceedings will also depend on the powers and obligations of the resolution authority, which may differ from country to country. For example, does the resolution authority have the authority to impose haircuts on the claims of creditors without a lengthy judicial proceeding? Does the resolution authority have the power (and access to the necessary resources) to provide a capital injection? With regard to banks, is the resolution authority constrained to choose the least costly resolution method, as in the United States? Or is the resolution authority obliged to give preference to domestic depositors as the law requires in Australia and the United States?

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10 The US resolution authority can choose a resolution method that is more costly to the FDIC only if the systemic risk exception is invoked. This requires agreement by two-thirds of the Federal Reserve Board, two-thirds of the FDIC Board and the Secretary of the Treasury in consultation with the President that the implementation of the least-costly resolution method would have serious adverse effects on economic conditions or financial activity.
More fundamentally, what is the objective of the supervisory intervention and the resolution process? Is it to protect the domestic financial services industry? Or to safeguard the domestic financial system? Or to protect domestic employment? Or to protect the deposit insurance fund? Or to minimize the fiscal costs of the insolvency to domestic taxpayers? Or to minimize the spillover costs in all countries in which the insolvent bank conducts business? Only the last of these alternatives is implausible. The priority that supervisors will inevitably place on domestic objectives in the event of insolvency is the essential source of conflict between home and host authorities.

Three asymmetries between the home and host country may create additional problems even if procedures could be harmonized. First is asymmetry of resources. Although international agreements among sovereigns are, necessarily, based on the polite fiction that all sovereigns are equal, this is demonstrably not the case. Supervisory authorities may differ greatly in terms of human capital – the number and quality of employees – and financial resources. This means that even if the fundamental conflicts of interest could be set aside, the home supervisory authority may not be able to rely on the host supervisory authority (or vice versa) simply because it may lack the capacity to conduct effective oversight.

Second, asymmetries of financial infrastructure may give rise to discrepancies in the quality of supervision across countries. Weaknesses in accounting standards and the quality of external audits may impede the efforts of supervisors just as informed, institutional creditors and an aggressive and responsible financial press may aid them. The legal infrastructure matters as well. Inefficient or corrupt judicial procedures may undermine even the highest quality supervisory efforts.
Perhaps the most important conflict, however, arises from asymmetries of exposures: what are the consequences if the entity should fail? Perspectives may differ with regard to whether a specific entity jeopardizes financial stability. This will depend on whether the entity is systemically important in either or both countries and whether the foreign entity is economically significant within the parent group.

A number of proposals have been advanced recently to enhance the oversight of LCFIs and safeguard their solvency. For example, Čihák and Decressin (2007) propose the creation of a European Banking Charter, to improve and harmonize supervision of LCFIs with systemic cross-border exposures. Nieto and Schinasi (2007) focus on decentralization and cooperation issues which arise from the nature of public good of the EU financial stability. Garcia and Nieto (2007) question the effectiveness of decentralization and voluntary cooperation in safeguarding financial stability in the EU and support the enhancement of market discipline and the adoption of prompt-corrective-action and least-cost resolution. Mayes, Nieto and Wall (2007) propose a U.S.-style prompt-corrective-action framework for preventing cross-border banking crises in the EU. Hüpkes (2005) advocates adoption of a functional approach to regulation and supervision. She favors a tighter alignment between legal entities and the functions they perform so that systemically important functions could be more easily protected in the event of a crisis either by insulating them from problems in the rest of the LCFI or detaching them from the LCFI.

While these proposals to enhance supervision have many attractive features, none can be relied upon to prevent insolvencies. Thus it is also important to consider ways to improve the resolution of insolvent institutions.

Concluding comments
The corporate complexity of LCFIs is likely to defy efficient resolution in the event of bankruptcy. It seems doubtful that going-concern value could be protected adequately and, worse still, the unwind is likely to spill-over to damage other institutions and market participants if counterparties attempt to liquidate positions at once, driving down prices and causing problems for other investors with similar positions. In the absence of workable procedures to unwind the affairs of a failing LCFI in an orderly manner, the result is likely to be a chaotic scramble for assets that could infect other markets and institutions, with potential disruption of the real economy.

Despite ex ante protestations to the contrary, the authorities are unlikely to risk such an outcome and so the result is likely to be a bailout that will prop up the failing group. The continuation of recent trends toward globalization, conglomerate, consolidation and increasing reliance on trading of OTC derivatives implies that we may be confronted with a growing category of firms that are too complex to fail. This, of course, has ominous implications for moral hazard. A market perception that such firms will benefit from official support in times of stress gives them a competitive advantage completely unrelated to their ability to add value to the financial system. It dulls the incentives for creditors to demand disclosure of risky positions and monitor such exposures. Weakened market discipline will enable such institutions to take larger, riskier positions without paying appropriately higher risk premiums to their creditors. The result may be larger potential insolvencies that require still larger bailouts to forestall systemic risk.

For market discipline to operate effectively in constraining risk taking by LCFIs, the regulatory authorities need a credible procedure to unwind the affairs of an LCFI in an orderly manner, without systemic spillovers. Simplification of the corporate structure of large complex
financial institutions would be a good place to start. Since regulatory and tax policies have contributed significantly to the problem, they need to be part of the solution.

Postscript on the Bankruptcy of Lehman Brothers

The preceding was written in 2007 before the actual collapse of an LCFI. The editors asked us to reflect on what we had learned from the costly experiences of 2008 about the implications of corporate complexity for systemic risk. The first observation to be made is that the list of 16 LCFIs was not nearly long enough to reflect the perceptions of regulators when they were confronted with the prospect of collapse of institutions not on the LCFI list. Bear Stearns may be the most obvious case. Although Bear Stearns was one of the five largest investment banks in the United States, it was less than half the size of the fourth largest investment bank, Lehman Brothers (LB). Nonetheless, when Bear Stearns was about to collapse, the US regulatory authorities subsidized a merger of Bear Stearns with JP Morgan Chase out of concern for the “interconnectedness” of Bear Stearns with the rest of the financial system. The enormous subsidy to AIG is another case in which intervention was justified on similar grounds. Other countries took similar measures to support other institutions that were not large enough or complex enough to make the official list.

There was one significant exception, however, to the general trend of hastily improvised bailouts. After trying to broker a merger of LB with other, stronger institutions, the US authorities declined to bail it out and sent the holding company, Lehman Brothers Holdings International (LBHI) to the bankruptcy courts for protection under Chapter 11 of the US bankruptcy code, the largest bankruptcy in US history. Although LB was by far the smallest and one of the least complex institutions on the list of LCFIs, it was nonetheless of sufficient
systemic importance that its collapse led to substantial spillovers on global capital markets. Credit risk spreads rose to record highs, equity prices fell by 4% worldwide when the bankruptcy was announced and government bond yields declined sharply as foreign exchange carry trades were unwound.

Lehman’s total reported assets were roughly $700 billion. Figure 8.3 shows its corporate structure at the end of 2007. It included 433 subsidiaries in 20 countries. This corporate complexity greatly impeded the orderly resolution of the firm, created significant spillovers to other institutions and markets and led the Group of 7 finance ministers to pledge (Guha 2008) “to do everything in their power to prevent any more Lehman Brothers-style failures of systemically important financial institutions.”11

Understandably, after the US government had subsidized the merger of Bear Stearns, a much smaller, less complex investment bank, the market expected that Lehman Brothers would receive similar treatment. Why then was LB permitted to fail? The Fed and the Treasury claimed that lacked authority to bail it out. It is also likely that they wished to limit moral hazard by engaging in a bit of “constructive ambiguity,” a dubious remedy at a time when a consistent policy framework might have helped stabilize expectations. Moreover, since they had a team of examiners in LB ever since the collapse of Bear Stearns, they knew much more about the condition of LB and may have believed they could predict and control the spillover costs. They may have thought that counterparties and creditors had sufficient warning about LB’s weakening condition to take precautionary measures. But, of course, in a complex and integrated financial

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11 Observers said that it came close to a Group of 7-wide temporary implicit guarantee for many or all of the liabilities of systemically important financial firms. See Guha (2008).
One of the major concerns was that LB was the sixth largest counterparty in over-the-counter derivatives markets. But back offices succeeded in processing billions of dollars of contracts and the International Swap Dealers Association organized an auction to determine settlement prices. Because derivatives contracts in which LB was a counterparty were usually marked to market daily and collateral was adjusted each evening to reflect changes in market prices, losses were relatively light. Losses were much greater, however, with regard to credit default swap contracts written on LB. Those selling protection on LB are in a similar position to bondholders and received a similar price. Buyers of $100 of default protection will receive $91.375, a substantial loss for sellers of protection.

A second major concern was LB’s key role in the Repo market, which totals roughly $11 trillion and is the short-term, collateralized lending market that banks, broker/dealers, and hedge funds use to finance securities positions. The Fed attempted to address the risk that the market would seize up by allowing broader use of the Primary Dealer Credit Facility through expanding the list of eligible securities. In addition a group of global banks announced plans to use their own capital to establish a $70 billion private sector credit facility for those securities not eligible for the Fed facility. The Fed also announced an increase in its Treasury Securities Lending Facility to $200 billion.

What turned out to be more disruptive were the traditional exposures to LB’s outstanding debt. Among the largest unsecured creditors were the US federal government’s Pension Benefit Guaranty Corp. and the German government’s deposit-insurance arm (McCracken, 2008) and
money market mutual funds. The latter proved to be one of the most important channels of contagion. One of the oldest money market funds, the Reserve Primary fund, was forced to write-off $785 million of short and medium-term notes and became the first money market mutual fund to “break the buck” in 14 years. This triggered $184 billion in money market mutual fund redemptions and forced fund managers to sell assets into illiquid markets. This spilled over into commercial paper markets including not only asset-backed commercial paper, but also non-asset backed commercial paper that had held up reasonably well and was a key means of financing corporations and banks. The interbank market seized up entirely with the almost complete collapse of confidence in counterparties in money markets. Spreads between the euro-dollar interbank rate and the comparable US Treasury rate rose to nearly 450 basis points, more than double the already high spreads that prevailed before the LB bankruptcy.

In addition, failed trades proved particularly disruptive. Prior to LB’s bankruptcy, portfolio managers placed thousands of trades with LB’s broker dealer (LBI), many of which were subsequently transferred for settlement to LBI affiliates throughout the world. After the bankruptcy, these failed to settle and this has led to civil proceedings on three continents. The UK administrator said that about 43,000 trading deals were still “live” in the London subsidiaries alone and would need to be negotiated with each counterparty (Hughes, 2008).

But the fundamental problem was that LB was managed as an integrated entity with minimal regard for the legal entities that would need to be taken through the bankruptcy process. LBHI issued the vast majority of unsecured debt and invested the funds in most of its regulated and unregulated subsidiaries. This is a common approach to managing a global corporation, designed to facilitate control over global operations, while reducing funding, capital and tax costs. LBHI, in effect, served as banker for its affiliates, running a zero balance cash
management system. LBHI lent to its operating subsidiaries at the beginning of each day and then swept the cash back to LBHI at the end of each day. The bankruptcy petition was filed before most of the subsidiaries had been funded on September 15th and so most of the cash was tied up in court proceedings in the US.

Lehman also centralized its information technology so that data for different products and different subsidiaries were comingled. This was an efficient way of running the business as a going concern, but presents an enormous challenge in global bankruptcy proceedings. LB stored data in 26,666 servers, 20,000 of which contained accumulated emails, files, voice mail messages, instant messages and recorded calls. The largest data centers were in New York, London, Tokyo, Hong Kong and Mumbai. Moreover, LB used approximately 2,700 proprietary, third-party and off-the-shelf programs each of which interacted with or created transactions data. The bankruptcy administrators must preserve, extract, store and analyze data relevant to the entities they are dealing with. This problem was made more difficult by the success of the administrators of LBHI in selling two important entities that were rapidly declining in value because of loss of human capital: its investment banking operations and its asset management business.

Most of the US investment banking operations -- the assets, not the legal entities – were sold to Barclays. This necessitated bringing a Securities Investor Protection Corporation (SIPC) proceeding, which put all LBI accounts under the control of the SIPC Trustee and permitted the broker-dealer to be liquidated. Nomura bought most of the investment banking business in Asia and continental Europe and LB’s asset management business was sold in a management buyout. But this meant that the data was owned by Barclays, Nomura and the now independent asset management division and so bankruptcy administrators are dependent on the new owners for
access to data to determine the assets and liabilities of each legal entity. The administrator of the 4 London subsidiaries complained that 9 weeks after the bankruptcy, he has yet to receive a confirmation of the assets owned by these subsidiaries.

The US administrators expressed the optimistic view that they would be able to complete the resolution within 18 to 24 months, but the presiding judge reminded the administrator that the biggest impediments to a timely completion of the administration are the timetables of the other insolvency fiduciaries around the world. The administrators in London warned that it may take years for creditors to get their money back, noting that they were continuing to work on Enron, which failed 7 years ago, which was about one-tenth the size and complexity of Lehman (Hughes, 2008).

The conclusion we draw from the LB experiment is not that all systemically important institutions should be bailed out, but rather than regulators and supervisors should focus on devising orderly resolution plans that will enable them to unwind even the largest most complex institution with minimal spillover to the rest of the financial system. A useful first step would be to require that each institution create and maintain a plan for winding down the institution just as they now maintain plans for business continuity. (The bankruptcy administrator of LBIH has claimed that the hastily prepared bankruptcy filing has cost as much as $75 billion in lost value (McCracken, 2008).) If the regulators deem the plan unworkable, the institution may be required to reduce its complexity or set aside a higher capital charge. An institution that is too complex to fail is simply too complex and presents too great a threat to the rest of the financial system.

References


Figure 8.1. Overview of Large Complex Financial Institutions*

| LCFIs                      | Total assets (billions of $, yearend 2006)
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total subsidiaries</td>
</tr>
<tr>
<td>----------------------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>UBS AG</td>
<td>1.964</td>
</tr>
<tr>
<td>Barclays Plc</td>
<td>1.957</td>
</tr>
<tr>
<td>BNP Paribas</td>
<td>1.897</td>
</tr>
<tr>
<td>Citi</td>
<td>1.884</td>
</tr>
<tr>
<td>HSBC Holdings Plc</td>
<td>1.861</td>
</tr>
<tr>
<td>The Royal Bank of Scotland Group Plc</td>
<td>1.711</td>
</tr>
<tr>
<td>Deutsche Bank AG</td>
<td>1.483</td>
</tr>
<tr>
<td>Bank of America Corporation</td>
<td>1.460</td>
</tr>
<tr>
<td>JP Morgan Chase &amp; Co.</td>
<td>1.352</td>
</tr>
<tr>
<td>ABN AMRO Holding NV**</td>
<td>1.300</td>
</tr>
<tr>
<td>Société Générale</td>
<td>1.260</td>
</tr>
<tr>
<td>Morgan Stanley</td>
<td>1.121</td>
</tr>
<tr>
<td>Credit Suisse Group</td>
<td>1.029</td>
</tr>
<tr>
<td>Merrill Lynch &amp; Co., Inc.</td>
<td>841</td>
</tr>
<tr>
<td>Goldman Sachs Group, Inc.</td>
<td>838</td>
</tr>
<tr>
<td>Lehman Brothers Holdings Inc.</td>
<td>604</td>
</tr>
</tbody>
</table>

* Yearend 2007 (unless otherwise specified). **After the most recent list of LCFIs (Bank of England 2007b) was published, a consortium of three banks (RBS, Fortis and Santander) acquired ABN AMRO.

1 Source: Bankscope. Data on subsidiaries refer to majority-owned subsidiaries for which the LFCI is the ultimate owner with a minimum control path of 50.01%.

2 Source: annual reports for each LCFI. Net income before taxes with five exceptions: net income after taxes for Citi and net revenues for Barclays plc, BNP Paribas, Lehman Brothers Holdings Inc., Merrill Lynch & Co., Inc.

3 Source: Oliver Wyman. The Herfindahl-Hirschman Index ranges from 0 to 10,000 and it is calculated on the percentage of revenues per business line. Higher values indicate a higher degree of specialization. Lower values imply a higher degree of diversification.

4 Number of countries in which the LCFI has at least one majority-owned subsidiary.

5 Offshore Financial Centers identified by the Financial Stability Forum (2000). We exclude Swiss subsidiaries for Credit Suisse and UBS and Hong Kong subsidiaries for HSBC. Four subsidiaries were allocated to OFCs on the basis of locations designated in their names even though Bankscope did not specify a home country.
Figure 8.2. Breakdown by industry of subsidiaries of Large Complex Financial Institutions (yearend 2007)

<table>
<thead>
<tr>
<th>LCFIs</th>
<th>Banks</th>
<th>Insurance companies</th>
<th>Mutual &amp; pension funds/nominees/trusts/trustees</th>
<th>Other financial subsidiaries¹</th>
<th>Non-financial subsidiaries²</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASN AMRO Holding NV¹</td>
<td>50</td>
<td>7</td>
<td>123</td>
<td>204</td>
<td>288</td>
</tr>
<tr>
<td>Bank of America Corporation</td>
<td>52</td>
<td>24</td>
<td>396</td>
<td>232</td>
<td>673</td>
</tr>
<tr>
<td>Barclays Plc</td>
<td>49</td>
<td>21</td>
<td>306</td>
<td>230</td>
<td>365</td>
</tr>
<tr>
<td>BNP Paribas</td>
<td>99</td>
<td>74</td>
<td>103</td>
<td>432</td>
<td>473</td>
</tr>
<tr>
<td>Citi</td>
<td>101</td>
<td>35</td>
<td>706</td>
<td>694</td>
<td>1,009</td>
</tr>
<tr>
<td>Credit Suisse Group</td>
<td>31</td>
<td>4</td>
<td>91</td>
<td>63</td>
<td>101</td>
</tr>
<tr>
<td>Deutsche Bank AG</td>
<td>54</td>
<td>9</td>
<td>468</td>
<td>526</td>
<td>907</td>
</tr>
<tr>
<td>Goldman Sachs Group, Inc.</td>
<td>7</td>
<td>4</td>
<td>48</td>
<td>151</td>
<td>161</td>
</tr>
<tr>
<td>HSBC Holdings Plc</td>
<td>85</td>
<td>37</td>
<td>248</td>
<td>381</td>
<td>406</td>
</tr>
<tr>
<td>JP Morgan Chase &amp; Co.</td>
<td>38</td>
<td>17</td>
<td>229</td>
<td>145</td>
<td>375</td>
</tr>
<tr>
<td>Lehman Brothers Holdings Inc.</td>
<td>9</td>
<td>3</td>
<td>84</td>
<td>210</td>
<td>127</td>
</tr>
<tr>
<td>Merrill Lynch &amp; Co. Inc.</td>
<td>16</td>
<td>9</td>
<td>88</td>
<td>88</td>
<td>68</td>
</tr>
<tr>
<td>Morgan Stanley</td>
<td>19</td>
<td>22</td>
<td>225</td>
<td>170</td>
<td>816</td>
</tr>
<tr>
<td>The Royal Bank of Scotland Group Plc</td>
<td>31</td>
<td>29</td>
<td>168</td>
<td>450</td>
<td>483</td>
</tr>
<tr>
<td>Société Générale</td>
<td>81</td>
<td>13</td>
<td>93</td>
<td>270</td>
<td>367</td>
</tr>
<tr>
<td>UBS AG</td>
<td>29</td>
<td>2</td>
<td>121</td>
<td>66</td>
<td>199</td>
</tr>
</tbody>
</table>

TOTAL BY INDUSTRY                   | 726   | 310                 | 3,490                                         | 4,263                         | 6,729                        |

% by industry                       | 5%    | 2%                  | 22%                                           | 27%                           | 43%                          |

Source: Bankscope. Majority-owned subsidiaries. For methodology see footnote for Figure 1.

* See footnote for Figure 1.

¹ “Other financial subsidiaries” include private equity subsidiaries.

² “Non-financial subsidiaries” include all companies that are neither banks nor insurance companies nor financial companies. They can be involved in manufacturing activities but also in trading activities (wholesalers, retailers, brokers, etc.). We have allocated foundations and research institutes to this category as well.
Fig. 8.3. Corporate Structure of Lehman Brothers (yearend 2007).

<table>
<thead>
<tr>
<th>Country</th>
<th>Majority-owned subsidiaries</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>238</td>
</tr>
<tr>
<td>UNITED KINGDOM</td>
<td>120</td>
</tr>
<tr>
<td>CAYMAN ISLANDS</td>
<td>18</td>
</tr>
<tr>
<td>AUSTRALIA</td>
<td>9</td>
</tr>
<tr>
<td>LUXEMBOURG</td>
<td>6</td>
</tr>
<tr>
<td>IRELAND</td>
<td>5</td>
</tr>
<tr>
<td>NETHERLANDS</td>
<td>5</td>
</tr>
<tr>
<td>BERMUDA</td>
<td>4</td>
</tr>
<tr>
<td>FRANCE</td>
<td>4</td>
</tr>
<tr>
<td>HONG KONG</td>
<td>4</td>
</tr>
<tr>
<td>JAPAN</td>
<td>4</td>
</tr>
<tr>
<td>KOREA REP. OF</td>
<td>4</td>
</tr>
<tr>
<td>GERMANY</td>
<td>3</td>
</tr>
<tr>
<td>SINGAPORE</td>
<td>2</td>
</tr>
<tr>
<td>THAILAND</td>
<td>2</td>
</tr>
<tr>
<td>ARGENTINA</td>
<td>1</td>
</tr>
<tr>
<td>CANADA</td>
<td>1</td>
</tr>
<tr>
<td>SWITZERLAND</td>
<td>1</td>
</tr>
<tr>
<td>INDIA</td>
<td>1</td>
</tr>
<tr>
<td>MAURITIUS</td>
<td>1</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>433</strong></td>
</tr>
</tbody>
</table>

**number of countries** 20

Source: Bankscope. Majority-owned subsidiaries.