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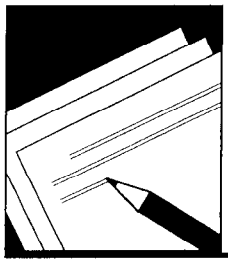

IMF Policy Discussion Paper

Large and Complex Financial Institutions: Challenges and Policy Responses – Lessons from Sweden

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Abstract

This paper examines the regulatory and supervisory implications stemming from the dominance of large and complex financial institutions, drawing on the recent Financial Sector Assessment Program (FSAP) mission work on Sweden. The analysis highlights the importance of consolidated supervision, of a greater emphasis on effective management and corporate governance structures, and of measures strengthening the disciplinary role of the private sector. It calls for developing credible liquidity and crisis management arrangements through appropriate attention to the cross-product and cross-border nature of large and complex financial institution (LCFI) operations. Strengthened supervisory and regulatory responses will enable financial markets to better assess the nature and sources of residual risks they have to face and, on this basis, to develop more effective risk-mitigating measures.

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I. Introduction

This paper is based primarily on the authors' involvement in a recent Financial Sector Assessment Program (FSAP) mission to Sweden. It examines the implications of a key feature of the Swedish financial system—that it is dominated by large and complex financial institutions (LCFIs) engaged in banking, insurance, and securities activities across jurisdictions.[1] Sweden is a pertinent case study both because of this dominance and because of its advanced financial supervisory institutions and practices. Sweden is state of the art in banking supervision and regulation and the policy treatment of LCFIs. Nevertheless, owing to the large role of LCFIs and their regional concentration, it faces greater risks and a number of challenges for financial supervision and regulation. While the cooperative Nordic policy response may be difficult to replicate for other multijurisdictional LCFIs with more geographically dispersed operations, the Swedish experience serves as a good example for highlighting the implications and bringing to policymakers' attention in other countries the responses that may be needed in light of their own emerging risks. For this reason, while the discussion stems primarily from characteristics observed in Sweden, the conclusions have wider applicability.

The Swedish financial system has recently undergone structural changes toward greater consolidation, internationalization, and product and service innovation. This process received a boost from financial sector liberalization and the financial crisis of the early 1990s, and

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[1] LCFIs are defined here as cross-functional and cross-border financial institutions engaged in banking, insurance, and securities activities with the potential to threaten financial stability owing to their size in more than one jurisdiction.

increasing competition stemming from the emerging single European financial market. An important feature of these structural changes was the growing dominance of LCFIs that emerged as a result of mergers and acquisitions.

The growing role of LCFIs poses numerous challenges. The complexity of these institutions has made financial analysis and effective supervisory oversight harder. The close linkages among business areas within an LCFI increase the risks of contagion from one business area to another as well as across jurisdictions. The size and multijurisdictional presence of the LCFIs can exacerbate moral hazard associated with a "too-big-to-fail" problem. Finally, the geographical diversification of LCFI operations has added to the complexity of coordinating emergency liquidity assistance, crisis management arrangements, and winding-up procedures across jurisdictions.

A better understanding of the domestic and cross-border challenges posed by LCFIs has emerged as a critical aspect of effective financial sector supervision and regulation in Sweden. It was also recognized by policymakers as key to the design of adequate crisis-management arrangements. More generally, it is increasingly acknowledged as essential for bilateral and multilateral financial system surveillance.

The paper reviews the key characteristics of the Swedish financial system in Section II, the main challenges posed in Section III, and the possible policy responses in Section IV. Section V concludes. The paper draws conclusions on the critical importance of (1) consolidated supervision of the LCFI, building on active coordination among all the supervisory agencies involved; (2) a greater emphasis on having in place effective

management and corporate governance structures as part of the supervisory process; (3) improved transparency in the published accounts of the overall operations; (4) the importance of developing credible liquidity and crisis-management arrangements through appropriate attention to the cross-product and cross-border nature of the operations of LCFIs in order to reduce a bias toward bailouts in the event of a crisis that can exacerbate moral hazard; and (5) the need to take appropriate account of the potential cross-border and cross-product contagion in the context of financial sector surveillance. Stress tests should seek to assess LCFIs on a fully consolidated basis, integrating their banking, insurance and securities activities.

II. Key Characteristics of the Swedish Financial System

The largest Swedish financial groups play an important role in Sweden, and throughout the Nordic area. At the end of 2001, the Nordea Group, SEB, Swedbank, and Handelsbanken together accounted for two-thirds of financial sector assets, as well as four-fifths of bank deposits and of assets under management in mutual funds in Sweden. In addition, each owned a life insurance company ranked among the seven largest in the countries where they operated. These LCFIs were the principal counterparties in krona and foreign exchange interbank trading, the largest Riksbank counterparties in the money markets, and the largest authorized dealers of Sweden's National Debt Office in the government bond market. Together, they also owned the single depository and securities clearing and settlement system, and had majority ownership in the most important retail payment system.

Thus, Swedish LCFIs constituted the backbone of the banking and financial services industry of the Nordic region and Baltic states. For example, the Nordea Group, the largest Swedish

LCFI, accounted for 40 percent of market shares in Finland, 25 percent in Denmark, 20 percent in Sweden, and about 11 percent in Norway. SEB and Swedbank together owned more than 90 percent of the Estonian banking sector. These LCFIs can be regarded as systemically important not only in Sweden but also in several other countries in the Nordic area. The scope and the depth of the Nordic banking crises in the early 1990s also demonstrated that LCFIs' systemic importance extends beyond the financial sector, affecting the real economy through various macro-financial linkages.

III. CHALLENGES

LCFIs—which involve a conglomeration of financial service providers in banking, insurance, securities and asset management undertakings—differ from "solo" financial intermediaries, in that their balance sheet, operations and internal controls are generally more complex and less transparent than those of solo organizations. For example, the scope for cross-subsidization in a LCFI's multiple-service pricing complicates the evaluation of risk and return structure. This makes external assessment and analysis more difficult—e.g., in identifying the overall risk exposures and the viability of individual profit centers. LCFIs are also typically large relative to the financial system in the organization's home country, often having grown through expansion across borders and business areas.[2] These two aspects—complexity and size—jointly give rise to a number of specific challenges associated with LCFIs.

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[2] Solo institutions can also reach such a large size, but for them this is more an exception than the norm.

A. Regulatory and Supervisory Challenges

The key supervisory challenge is to ensure that all LCFI operations relevant for assessing group-wide risk are covered, taking due account of the interactions among various risks, business areas and regions. The additional regulatory and supervisory challenges posed by LCFIs include: (i) the systemic risk potential owing to their major role in payment and settlement systems;[3] (ii) the complexity of their balance sheet and organizational structures which, *inter alia* makes liquidity problems harder to distinguish from solvency problems, hampering early detection of insolvency; and (iii) their functional and geographical diversification which makes the assignment of crisis management responsibilities and eventual work-outs or winding-ups more difficult.

LCFIs have greater leeway than large conventional financial institutions to diversify risks and to absorb shocks in one business area through intra-group capital support from other business areas, which may be motivated by reputation considerations, e.g., the desire to avoid a rating agency's downgrading associated with the LCFI's business name. In addition, LCFIs—like large solo financial institutions—tend to have a wider geographical scope of activities, which also helps diversify risks. While these can be positive elements in reducing risk exposures, rapid growth in financial institutions can also involve increases in operational risk. Such risk is associated with e.g., difficulties of integrating diverse technological and management systems, problems of merging different corporate cultures, and achieving

[3] It may be argued that LCFIs do not pose a systemic risk to a real-time-gross-settlement (RTGS) payment system owing to its delivery versus settlement feature as payments would still go through even if a large intermediary became illiquid. However, knock-on effects from the failure of a systemically important player could still pose a systemic risk.

consistency in the overall risk management systems. The benefits of conglomeration may therefore take time to achieve and in the interim the organizations may have to confront problems of internal control, which can place a strain on scarce management resources.[4] Moreover, the integration of activities such as insurance in LCFIs creates additional and greater regulatory concerns, whereas insurance companies in and of themselves are typically not systemically important.

B. Moral Hazard

The moral hazard problem for LCFIs is that they or their counterparts may not take all risk-reducing measures that are warranted because they can (or are perceived to be able to) benefit from a bail-out from the authorities if they became distressed. This problem arises from the systemic importance of LCFIs (often in more than one jurisdiction) and the absence of credible crisis management arrangements, including well-defined lender-of-last-resort arrangements that distinguish between liquidity and solvency problems of financial institutions, and operational winding-up procedures for such institutions that are coordinated across jurisdictions where the institutions are important. The absence of such arrangements has created a potential bias towards official liquidity/solvency support as a response to crises, creating potential moral hazard. Past discretionary crisis management decisions in many countries have also given rise to market perceptions that governments would not allow a

[4] For example, the Nordea Group emerged from a merger of NordBanken in Sweden, Merita Bank in Finland, Christiania Bank in Norway, and Unibank in Denmark; subsequently, Nordea acquired the Swedish Postgirot Bank. Further restructuring has transferred the bulk of the group's assets and equity to Nordea Bank Finland, while the Nordea holding company (serving as headquarters) has remained in Sweden.

major financial institution to fail owing to the attendant systemic consequences.[5] Moral hazard may lead to excessive risk-taking by the entities involved, and weaker market discipline.

An additional source of moral hazard is the asymmetric information situation between the authorities (financial supervisory agency, central bank and government) and LCFIs, which clearly have superior information about their own overall operations and risk-taking level. The asymmetry in available information may be exacerbated by rapid changes in the legal and business structure of LCFIs. A combination of perceived availability of official liquidity/solvency support weakening market discipline, and asymmetric information between the supervisor and supervised institution leading to shortcomings in the adequacy of the supervisory arrangements, can give rise to adverse selection—i.e., the tendency for financial activities that seek out higher risk profit opportunities—to proliferate.

C. Contagion

Three potential types of significant contagion risks stem from the operation of LCFIs. The first concerns the intra-group contagion effects from one business area to another within a single LCFI. Thus a problem, for example, in an insurance subsidiary could give rise to broader reputation risk for the financial group, affecting its credit ratings and thus its

[5] For example, the Swedish authorities responded to the financial crisis of the early 1990s by providing a blanket government guarantee to banks' debt holders. However, the guarantee was not extended to shareholders, who lost their capital—a decision intended specifically to limit moral hazard.

profitability and longer-term viability. In more extreme circumstances, a serious solvency problem in part of the group could threaten the viability or solvency of the whole group.

The second contagion risk relates to the interbank contagion effects from one institution to another through inter-bank markets in a single country. The high concentration of large exposures among the major institutions themselves and to common counterparties is an important potential source of interbank contagion. In general, supervisors monitor banks' large exposures with maturities exceeding one year, but the liquidity and credit risks facing banks in the form of shorter-term, often uncollateralized individual counterparty exposures are not captured. This is a critical shortcoming, since these exposures may be very significant, especially in smaller markets.[6]

The third contagion risk refers to cross-country contagion between the various national financial systems where LCFIs operate and are systemically important. Such contagion could occur within the LCFI or across financial institutions. Direct (within group entities) and indirect (among LCFIs and/or cross-border) contagion could easily and rapidly turn an LCFI-specific event into a region-wide liquidity problem. In the absence of better-defined "rules of the game," there may well be a tendency toward automatic support of large institutions with potentially strong moral hazard consequences.

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[6] Going beyond the applicable EU Directive, the Sveriges Riksbank collects and analyses quarterly statistics on bank counterparty exposures to monitor developments of counterparty risk and assess banks' vulnerability to possible failures in the interbank market (Nimander and Blåvarg, 2002).

IV. Policy Responses

Appropriate policy responses are crucial for addressing the challenges since weaknesses in corporate governance and market failures can render market discipline inadequate. The appropriate policy response involves devising regulatory, supervisory, and crisis management arrangements that could help address or at least mitigate these risks. The Swedish authorities have not only recognized the challenges posed by LCFIs, but have already made headway in devising a cooperative Nordic approach to tackling them. This approach seeks to enhance supervisory and regulatory arrangements and channels of coordination across jurisdictions. More broadly, the international community has also recently launched a number of initiatives concerning LCFIs.[7]

A. Regulatory and Supervisory Arrangements

Effective consolidated supervision is a key element of the supervisory regime for LCFIs. It requires: (1) a clear division of responsibility and close co-operation among domestic sectoral supervisors in the home country and host supervisors abroad; (2) a focus on capital adequacy and large exposures measured on a consolidated basis at the group level, taking account of linkages among subgroups (e.g., the scope for intra-group capital support); and (3) assessments of risks posed on the total operation by the various group entities.

The establishment of a joint supervisory group for the largest Scandinavian LCFI involving the supervisory authorities in the countries where it is active, is a major step toward ensuring

[7] Such as the G-10's Ferguson report; the EU Economic and Financial Committee's Brouwer report; and a draft EU Directive for a special supplementary supervisory regime.

effective consolidated supervision of that LCFI in the Nordic area. The joint supervisory group consists of representatives from all concerned national supervisory authorities under the lead of Sweden's—the location of the LCFI's headquarters—supervisors and operates under a well-designed and detailed Memorandum of Understanding

The enhanced oversight of LCFIs would need to be accompanied by pro-active supervisory powers—founded in legislation—to enable supervisors to address incipient financial difficulties at an early stage. This would require that the authorities focus on identifying financial problems in systemically important institutions promptly, and take preventive and intermediate measures to correct detected problems. In addition, there are grounds for "setting the prudential bar higher" to capture the externalities posed by LCFIs, especially when assessing their capital adequacy, liquidity conditions and large exposures.

A crucial by-product of enhanced cross-border cooperation among supervisory authorities would be the identification and elimination of regulatory loopholes stemming from differences in national regulations that are conducive to regulatory arbitrage, or instances of harmful regulatory competition when LCFIs active in several countries play off national authorities against each other.

The above approaches must be supported by placing greater emphasis on management and corporate governance issues, especially the role of the Board of Directors and management in controlling risks, and by increased financial disclosure, including providing estimates of risk exposures on a group-wide basis to improve market discipline. This emphasis should include

ensuring that there are clear procedures for senior management to be held accountable for the risk exposures of their institutions, for example, by requiring the senior management to sign off on the audited accounts, and that there are well developed internal compliance and control systems that are appropriate to the business activities of the institutions. Where there is a consolidated supervisor, information on group-wide large exposure limits (including both on- and off-balance sheet exposures) should be a basic requirement of quantitative consolidated supervision of the group.

Direct supervisory actions need to be complemented by measures aimed at the private sector to improve financial sector resilience. In particular, policies aimed at strengthening the disciplinary role of accounting and auditing firms, regulating financial analysts, rating agencies, as well as widening the role of self-regulating organizations are all important components of a sound strategy to address the challenge posed by LCFIs.

B. Augmented Analytical and Diagnostic Tools

Early warning systems

Early warning systems to monitor the financial condition of systemically important institutions could help detect difficulties at an early stage and allow for corrective actions. The financial stability reports prepared by the Riksbank already provide a suitable framework for detecting problems in the financial system that takes into account both broad macroeconomic and financial sector considerations and industry-specific factors and

vulnerabilities.[8] More specifically, regular monitoring of large counter party exposures in foreign exchange and inter-bank markets, as well as LCFIs' large exposures to common non-bank counterparties or sectors, can be an important source of early warning signals. However, further cross-functional analytical work aimed at better understanding the full range of LCFIs' activities, as well as efforts to enhance the cross-border information flow among supervisors, central banks and governments is essential to ensure an appropriate and timely response in case of financial distress experienced by LCFIs.

Stress testing and crisis simulation exercises

Stress testing is an additional tool, which quantifies the impact of individual shocks (sensitivity analysis) as well as simultaneous shocks calibrated to be consistent with macroeconomic constraints (scenario analysis). Using readily available—although in some cases confidential—financial sector data and a range of statistical techniques, stress tests can help identify and quantify risk exposures of LCFIs both on and off the balance sheet (Box 1). Stress tests can also help assess the resilience of financial institutions and the financial system to shocks, taking account of their transmission through the financial system as a whole.

Stress tests involve both quantitative (capital, large exposures, liquidity, etc.) and qualitative (nature of the risk to which a LCFI is exposed) analyses. They rely crucially on the quality and availability of data, and the risk management capabilities of the financial institutions

[8] A number of other central banks, for example in the United Kingdom, Belgium, Norway, and Hungary also publish detailed financial stability reports.

themselves. While it is important for the home (and host) supervisors to monitor the source of risks by business area and location, stress tests should also consider financial groups as a whole, covering both domestic and foreign activities, including those of their foreign subsidiaries. This two-pronged approach emphasizes the collection and analysis of subgroup as well as group-level data in order to capture incipient financial difficulties and identify the channels of transmission within the group. The consolidated approach is particularly relevant when a single agency is responsible for the supervision of the consolidated operations of LCFIs headquartered in a given jurisdiction. It is also necessary for assessing the overall level of risk faced by LCFIs, given the widespread use of instruments (e.g., intra-group guarantees and credit derivatives) to transfer credit risk among entities in the LCFI. Even when such transfers are not a concern, stress tests need to capture potential spillovers among business areas within the group. For example, a bank in an LCFI may be more vulnerable than a solo bank because it is exposed to substantially higher market risk related to securities and real estate through the LCFI's insurance arm than the solo bank.[9]

While stress tests are forward-looking in nature, the design of stress scenarios and the parameterization of shocks need to take into account the experiences of recent stress events. In this context, case studies analyzing the impact of notable exogenous stress events on the operations and financial conditions of LCFIs can—in addition to helping identify any immediate vulnerabilities in the system—provide useful insights into stress test design. An

[9] This also depends on the regulatory capital regime and the adequacy of capitalization of the insurance arm in covering market, credit, and insurance technical risks.

example for such a study is the analysis—performed, e.g., in Sweden and Norway—of the impact on the financial system of the September 11 terrorist attack on the United States. Stress tests, as well as any corporate or market monitoring, must rely on financial and accounting information made available by financial institutions themselves. Hence they are not fool-proof against inaccurate or outright fraudulent accounting practices. Operational and legal risks (analyst independence, IPO allocations, etc.) affecting reputation and market confidence are also important potential sources of risk. To the extent possible, risks arising from business areas outside the scope of formal stress testing exercises need to be carefully quantified to complement the analysis of balance sheet exposures. This is critical for arriving at a realistic judgment about the overall impact of specific shocks.

A further critical aspect of stress testing LCFIs is contagion analysis, which tracks not only the primary, but also the secondary and further cascading effects of shocks on financial groups, tracing out the propagation of shocks conveyed through financial linkages. Quantitative assessments of financial sector risks need to encompass this aspect as well, covering all key channels of shock transmission. For instance, the presence of concentrated uncollateralized exposures among LCFIs in small financial markets can give rise to devastating contagion. The failure of one or more of an LCFI's counterparties to make a payment can give rise to severe liquidity or solvency problems, which may pose a threat to the stability of the financial system as a whole.

Nordic central banks and supervisory authorities have already made some headway in the design and implementation of crisis management arrangements involving LCFIs, and the existing cooperation among Nordic supervisors ranks among the best in the world. Their

coordinated approach—building on the experience of the banking crisis in the early 1990s—consists of regular coordinating meetings; the preparation of memoranda of understanding on specific LCFIs; and the conduct of joint crisis simulation exercises aimed at revealing existing gaps in the lines of command and communication among and within the authorities concerned.

A crisis simulation exercise would typically assume a single shock (e.g., in securities trading in one of the Nordic countries) being rapidly propagated within an LCFI that is systemically important in several Nordic countries, also affecting other financial institutions. Key issues to explore include rapidly producing relevant information about the size and impact of the shock throughout the financial system(s); putting in place a common set of emergency measures to protect national payment systems; forming views and deciding in a timely manner on the type and magnitude of liquidity support needed and ways to deliver this support; and agreeing on the preconditions and modalities for involving ministries of finance (e.g., when an LCFI may be deemed to be insolvent). Given the growing importance of LCFIs and the additional complexities they introduce, such work is critically important.

Box 1. Stress Testing the Swedish LCFIs

As a first step, a list of potential macroeconomic and market risks and plausible magnitudes for the shocks to be applied were established in a dialogue with the authorities. It was agreed that two kinds of stress tests would be performed: individual shocks to selected key variables affecting the financial sector, and a scenario-based stress-test assuming simultaneous shocks of all macroeconomic variables. The central bank and the financial supervisory agency performed the stress tests to analyze the macroeconomic and financial sector implications of potential shocks, and the four LCFIs were requested to apply the shocks described below to their consolidated books to calculate mark-to-market sensitivity for market risk at the group level.

Six single-shock sensitivity tests were carried out to estimate market risk, each calculating the mark-to-market value at risk for one of the following shocks effective for ten days: (1) a 20 percent drop in the broadest index of the Stockholm Stock Exchange; (2) a 40 percent drop in the price of residential and commercial real estate in greater Stockholm, Göteborg, and Malmö; (3) a 10 percent effective depreciation of the krona; (4) a 30 percent effective appreciation of the krona; (5) a 300 basis point increase in the 10-year government bond yield, holding the rest of the yield curve constant; and (6) a 300 basis point increase in the yield curve. These assumptions were extended for other countries and currencies relevant for the financial groups, holding cross exchange rates constant. Financial institution solvency was assessed on a hold-to-maturity accounting basis.

As for credit risk, using the credit loss and exposure data provided by the financial groups, the Riksbank estimated parameters relating net losses to the output gap and a proxy for the yield curve (the difference between the long-term and short-term interest rates). The Riksbank's BASMOD model was used to produce simulated values for the output gap and yield curve data consistent with a scenario assuming a rather extreme materialization of the main macroeconomic risks facing Sweden. The macroeconomic model simulation assumed an unlikely, but not entirely implausible, catastrophic drop in external demand for goods and services from Sweden and other Nordic countries and a large, persistent negative productivity shock. This would have led to a sharp and sustained decline in business and household confidence, a large drop in investment comparable to that experienced in the early 1990s, and a fall of 5 percent in equity and 12 percent in real estate prices, yielding an immediate fall in GDP of 4.5 percent and zero annual average growth for 2002–04. These assumptions were extended to the Nordic region in the context of assessing the group exposures to the major banks. The macroeconomic policy stance was assumed to respond appropriately to these shocks. The resulting loss estimates were within the range of those that had actually occurred in Sweden's largest financial crisis of the past decades. For a fuller discussion, see Sweden—Financial System Stability Assessment.

With hindsight, the choice of the hypothetical shocks proved to be appropriate, as did the magnitudes chosen for the shocks, with one exception. The Stockholm Stock Exchange all-share index has in fact declined by 35 percent in the first seven months of 2002, compared with an assumed decline of 20 percent in the stress test. Subsequent calculations incorporating this larger shock plus a hypothetical further 20 percent drop have validated the analysis and policy recommendations derived from this stress test.

C. Emergency Liquidity Assistance

The design of emergency liquidity assistance (ELA) arrangements is complicated by the cross-border nature of LCFIs. A liquidity crisis in a LCFI could be exacerbated by: (i) uncertainties about which central bank(s) could be approached for support; (ii) operational complications in the likely event that more than one authority were to be involved

(supervisory authorities, ministries of finance and central banks); (iii) differences in current institutional arrangements concerning the ELA decision-making and implementation processes; and (iv) differences in the degree of crisis preparedness in the countries. This is an extensive list, requiring ex-ante coordination among concerned central banks and greater harmonization in current institutional arrangements to develop a well-functioning joint mechanism to respond to financial distress involving LCFIs.

Therefore, to facilitate effective use of ELA for crisis management, as well as for crisis prevention, the following measures may be appropriate:

- Draw up clear rules and procedures for distinguishing between institution-specific and market-wide events in the assessment of liquidity problems and responses. Liquidity analysis should identify all the potential sources of liquidity problems by carrying out vulnerability assessments encompassing not only individual institutions, but also the markets where these institutions trade. Similarly, it should distinguish between the conditions where it would be appropriate to provide liquidity to the market—e.g., to all primary dealers through standing facilities or repos—and where it would be appropriate to provide liquidity to the institution in question;

- Seek a greater cross-border harmonization of approaches to distinguishing between liquidity and solvency problems, as well as to the implementation of ELA. In the event of a liquidity problem, timely decisions will need to be made in different national jurisdictions on whether an institution is eligible for ELA support and the modalities for this support. One approach might be to assign a clearer responsibility

to the lead supervisor (the jurisdiction where the LCFI is headquartered) to provide a view on the solvency position of the LCFI as a whole. In any event, as is clear from the previous discussion, terms and conditions for ELA support to LCFIs need to be harmonized;

- Conduct regional joint crisis simulation exercises involving all concerned central banks and supervisory authorities. These exercises help form common views on key issues and hone joint procedures to address them.

Given the difficulty of ex ante resolving all problems that may arise, a premium should be placed on opening and maintaining communication lines, developing mutual trust, and nurturing an appreciation for others' constraints and interests.

D. Handling Insolvency in LCFIs

The establishment of an enabling legal framework for winding-up financial institutions that takes account of the special circumstances of such institutions is the crucial underpinning of a credible capacity to manage the insolvency of a financial institution, especially a LCFI. Such legal framework would help achieve the objectives of minimizing the ambiguity that could support the assumption of an implicit government guarantee, while providing sufficient flexibility to the authorities to address crises on a case-by-case basis. Additionally, a credible regime for handling insolvent financial institutions would need to be underpinned by a greater harmonization of national legal, regulatory, and supervisory frameworks, as well as a

clearer ex-ante assessment of whose laws would apply under different scenarios.[10] National-tailored arrangements might not sufficiently capture the increasing cross-border dimension of LCFIs owing to the existing differences in current legislative, regulatory, and supervisory frameworks among the various jurisdictions where LCFIs operate. Resolution of these issues could be facilitated by the forthcoming EU Directive on winding up LCFIs.

E. Crisis Resolution Arrangements

Absent a credible failure management capacity, government-to-government negotiations may well be involved in resolving solvency problems in LCFIs. As the time factor would be of the essence, prior understandings on how things would be handled in a crisis situation would be desirable. Hence, Contact Groups including representatives from concerned ministries of finance and supervisory authorities in addition to central banks would need to be established and convened on a regular basis to reach common assessments of vulnerabilities stemming from the operation of LCFIs. These assessments of risk and impact would need to go beyond liquidity issues to also cover solvency questions. However, it may be inappropriate to publicize specific possible solvency support arrangements in view of the potential moral hazard that this could create. It would also be useful to reflect on whether different

[10] The recent G-10 Contact Group report on *Insolvency Arrangements and Contract Enforceability* describes the important role of international judicial cooperation in facilitating the resolution of cross-border insolvencies. The report stresses the need for continued substantial efforts to reduce legal uncertainty and systemic vulnerabilities for the international financial system, and to enhance its efficiency.

procedures should be followed if the undercapitalization arises in an LCFI's banking or insurance arm.

V. Concluding Remarks

The analysis in this paper points to the following conclusions on how to better address the additional risks associated with the growth of LCFIs:

The critical importance of consolidated supervision of the LCFI, involving the coordination among all the supervisory agencies involved – both those involved in the supervision of specific financial service sectors and in the different countries where the LCFI is active—under the direction of a clearly defined lead supervisory agency.

A greater emphasis on having in place effective management and corporate governance structures and measures that strengthen the disciplinary role of the private sector. In particular, it needs to be ensured that management and shareholders take responsibility for risk exposures of their organizations, and that effective procedures are in place for proper internal and external audits.

The need for improved transparency in the published accounts of the overall operations, risk and profit centers in the LCFI to improve market discipline. In particular, an LCFI should provide both qualitative (preferably forward-looking) and quantitative information (such as their value-at-risk (VARs)) for subgroups as well as the group as a whole. It should also be encouraged to undertake sensitivity and stress testing at both subgroup and group levels, and to publish the results.

Developing credible liquidity and crisis management arrangements through appropriate attention to the cross product and cross border nature of the operations of LCFIs in order to reduce a bias toward bail-out in the event of a crisis that can exacerbate moral hazard. In particular, since potentially several supervisory agencies, central banks, and finance ministries may need to become involved in the resolution of a crisis in an LCFI, it is critically important that the problems of coordinating actions are anticipated and to the extent possible resolved in advance of any crisis.

Taking appropriate account of the potential cross-border and cross product contagion in the context of financial sector surveillance. Stress testing of financial institutions should endeavor to take account of potential contagion through examining large exposure risks that may be common among systemically important financial institutions.

Stress tests should also seek to assess LCFIs on a fully consolidated basis integrating the banking, insurance and securities activities. Financial sector surveillance should examine whether the extent of coordination among the supervisors, central banks and ministries of finance in the countries where the LCFIs are systemically important is adequate, and whether these institutions have taken into account the potential contagion risks.

Advancing the regulatory and supervisory agenda outlined above will provide a critical additional benefit. It will enable financial markets to better assess the nature and sources of residual risks they have to face, and on this basis, to develop more effective risk mitigating measures (e.g., collateralization, netting, etc).

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