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EDITORS: STAFFAN VIOTTI, KERSTIN MITLID
AND THE COMMUNICATIONS SECRETARIAT
Sveriges Riksbank, SE-103 37 Stockholm, Sweden.
Telephone +46 8 787 00 00

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Communications secretariat
Sveriges Riksbank
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However, maintaining financial stability calls for some form of hard-law international agreement among the partners on how problems will be avoided and handled, not simply a Memorandum of Understanding.

The regulatory framework for banks in the EU: An introduction[1]

BY JONAS NIEMEYER
Jonas Niemeyer is Adviser at the Financial Stability Department

As banks are inherently unstable, regulation is warranted. Also, since banks play an important part in the financial system, such regulation is of great public concern. The present regulatory structure is national and national authorities are responsible for maintaining stability in the financial system. However, banks are becoming increasingly active on an international scale, including the targeting of retail customers in several countries, especially within the EU. This poses a number of challenges for financial regulation.

Introduction

There are good reasons for specifically regulating, supervising and overseeing banks. One reason is that banks provide payment services that are liable to be disrupted, since banks are inherently unstable. Also, these services resemble public goods. Furthermore, given the amounts involved, only the government – through its right to levy taxes – can ultimately guarantee the financial system's stability. The authorities therefore have an explicit commitment to maintain financial stability. In practice, this means that the government needs to focus its work on reducing the risks of financial crises happening and on decreasing the economic consequences if they do occur.

Financial integration has the potential to improve economic welfare in all countries. The tendency for banks in different countries to merge and provide services across national borders is therefore beneficial. At the same time, it poses a number of challenges for the authorities in their regulation, supervision and oversight of banks. The purpose of this note is to outline some of these challenges.

Financial integration has the potential to improve economic welfare but also poses a number of challenges for the authorities in their regulation, supervision and oversight of banks.

The note is organised as follows. It starts with a few remarks on the

[1] I would like to thank Frida Fallan, Johan Molin, Lars Nyberg, Eva Srejber and Staffan Viotti for valuable comments on earlier drafts.

present regulatory framework, followed by some trends in banking. The main section describes the challenges to the regulatory framework as a consequence of market developments. Furthermore, a number of possible solutions are sketched. The note concludes with a summary.

The present regulatory framework

Within the EU, the main thrust of the present regulatory structure is national, with only some cross-border twists.

Within the EU, the main thrust of the present regulatory structure is national, with only some cross-border twists. Supervision is national and follows the country in which the bank or subsidiary is chartered, while foreign branches are supervised from the home country. For a banking group with foreign subsidiaries, the supervisors of its operations will differ from country to country. Deposit Guarantee Schemes (DGSs) are national and based on the country of the bank's (or subsidiary's) incorporation. Consequently, subsidiaries follow the local DGS, while branches fall under the DGS in the bank's home country. In order to achieve a level playing field, there is some scope for "topping-up" and adhering to a more generous DGS in the host country. Central banks may act as lender of last resort (LoLR) to the banks within its jurisdiction. Overall responsibility for financial stability is national. Therefore, any banking crisis will involve the *national* government, since the costs are large but uncertain and the right to levy taxes is national.

This national regulatory structure is designed for a system where banking – especially retail banking – is confined by national borders. This regulatory set-up was largely adequate as long as the cross-border retail activities of most banks were limited. Even the largest banks have had a clear national identity, with their main activities in one country. Also, foreign subsidiaries have usually been fairly independent and not fully integrated into the parent bank's operations.

Changes in the banking landscape

In recent years, banks have changed in a number of ways, with more numerous cross-border mergers, increased dependence on financial markets and more extensive international specialisation in order to reap the benefits from economies of scale.

However, in recent years banks have changed in a number of ways. First, some banks have merged cross-border, creating groups with major retail operations in several countries. Consequently, there are many countries where branches and subsidiaries of foreign banks could be systemically important. Second, large banks have become increasingly dependent on the international financial markets for funding, risk management etc. The inter-linkages between banks in different countries are increasing. Third, banks are progressively concentrating various functions, such as funding, liquidity management, risk management and credit decision-making, to specific centres of competence in order to reap the benefits of specialisa-

tion and economies of scale. With the ongoing financial integration in the EU, this specialisation also occurs cross-border. As a consequence, foreign subsidiaries (and branches) become less self-contained. Also, the distinction between branches and subsidiaries is becoming increasingly blurred. It can thus no longer be taken for granted that even a large subsidiary will be able to continue its business if the parent bank defaults – at least not in the short run.

With the EU enlargement in 2004, the change in the EU banking landscape became even more evident because foreign banks are much more important in the new member states than in the old EU-15.

Challenges

The market developments pose a number of challenges for the regulatory framework. The risks of cross-border contagion of a future crisis increase. The next financial crisis is therefore less likely to be a purely national problem. So far the regulatory response has been a modest increase in the responsibilities of the home supervisors. However, their role to date as consolidated supervisors is limited primarily to approving internal credit risk models in the new capital adequacy rules under Basel II.[2]

As the number of truly cross-border banks escalates, regulators in Europe face challenges in terms of coordination, conflicts of interest and accountability.

As the number of truly cross-border banks escalates, the need for more fundamental changes to the regulatory framework grows. The limited tinkering with the regulatory framework up to now will not suffice. Regulators in Europe therefore face a number of challenges. First, the developments underscore a need for coordination. Second, there are a number of conflicts of interest between countries. Third, as one authority's actions increasingly affect other countries' financial systems, there is an emerging concern about accountability. The national authorities are only accountable to their respective national governments and ultimately their voters.

These three challenges all apply to several areas of the regulatory framework. This note focuses on three such interrelated areas: acute crisis management, long term crisis resolution, and on-going crisis prevention in the form of supervision.

[2] Under the Basel II-rules and subject to approval of the regulatory authority, banks can use their internal credit rating models as a basis for calculating their regulatory capital. For cross-border banking groups, the competent authorities in the home and relevant host countries should cooperate to facilitate the approval and validation of a group-wide internal model. If the authorities cannot agree after six months, the home supervisor may make the final decision, which is then also applicable in the host countries.

A crisis entails an urgent need for quick decisions and a clear line of command. The relevant authorities have to have adequate power and ability to act.

A crisis entails an urgent need for quick decisions. A clear line of command is also important. The relevant authorities have to have adequate power and ability to act. For instance, the central bank has to decide whether or not to grant emergency liquidity assistance (ELA). Most central banks have a policy to grant ELA to banks only if they have liquidity problems but not if they have solvency problems. However, in practice it is often difficult to make a fast and correct distinction between solvency and liquidity problems and different central banks may make different assessments. Thus, if a bank with operations in several countries faces serious problems, the relevant central banks have to cooperate and coordinate potential decisions. Given the complex nature of many modern banks, coordination of the activities of the relevant central banks is likely to be complicated. This makes it imperative to have prior agreements on the division of responsibilities between the central banks and other relevant crisis management authorities.

The proliferation of banks' cross-border activities makes these institutions increasingly difficult to analyse. Thus, the information available to the central bank for decisions on ELA may be less complete than in a purely national context. Information-sharing agreements between authorities in different countries are therefore crucial for effective crisis management.

Furthermore, when ELA is provided, it could typically result in losses to the central bank. The ultimate costs of the support are unclear. If repayment by the rescued bank was certain, there would typically be no need for ELA and the liquidity shortage could be handled by the market. Thus, a central bank providing ELA must take the possibility of a loss into consideration.

A central bank providing ELA must take the possibility of a loss into consideration. In cases involving cross-border banks, this creates conflicts of interest.

Given the uncertainty about the ultimate cost of an ELA and the central banks' national mandates, conflicts of interest are likely to emerge in a decision to grant ELA to a bank with major cross-border activities. These conflicts are likely to complicate crisis management, especially if the institution is of systemic importance in any of the countries.

In the present situation, it is the home country's authorities that are likely to have the major responsibility. However, if the bank is systemic in the host country but not in the home country, the host country may have great difficulty in ensuring its financial system's stability unless ELA is provided by the home country central bank. At the same time, the home country central bank may be less willing to assume a potential loss if the failing bank is not systemically important in its jurisdiction. The host country central bank may have incentives to grant ELA but by doing so it may

risk its country having to save the entire banking group. This could be very costly for the host country if it is small compared to the home country or compared to the bank's or group's activities. Such situations may bode for complicated negotiations, even if prior agreements exist on how – in principle – to solve a crisis. Prior agreements therefore need to outline responsibilities for decisions and how to solve potential loss distributions. To avoid prolonged discussions when a crisis is already occurring and the time frame for decisions is highly limited, such agreements have to be clear and reasonably detailed.

CRISIS RESOLUTION

Resolving a crisis in a cross-border bank also poses challenges in the coordination of the activities and decisions by the authorities in different countries and in dealing with conflicts of interests.

A proper financial safety-net is necessary to minimise the risk of financial crises.

A proper financial safety-net is necessary to minimise the risk of financial crises. Without an appropriate safety-net, a simple rumour of problems with solvency or liquidity in a financial institution could be self-fulfilling and turn into a full-scale financial crisis. A vital part of the safety-net, apart from the central bank's possibility of granting ELA, is the DGS. These schemes insure a bank's deposits (up to a maximum amount) in the event of the bank defaulting, thereby reducing the risk of bank runs.

Although some minimum standards for the DGS in different countries have been established in an EU directive, these schemes vary substantially in several respects, such as financing, level, scope and rules. These differences may create problems, especially if there are clients with accounts in different jurisdictions of a cross-border bank. The main problem lies, however, in the different financing methods. According to the directive, all schemes should be funded by the financial industry. In most EU countries, this is achieved through fees to a fund. However, no fund will suffice if a major bank defaults and pay-outs are large. It is therefore envisaged that any deficits in the fund will be financed by future fees from the insured firms. However, it is highly questionable whether this framework is time-consistent. In such cases, the government would probably have to intervene to finance the guarantee system and thereby the depositors. The funding of any major banking crisis is therefore most likely to rest with tax-payers. In practice, the DGS involves an implicit government guarantee.

The emergence of true cross-border banks raises the question of how far this implicit guarantee extends. Would the tax-payers in a home country be willing to finance a crisis in a cross-border bank that has most of its

depositors in another country? This would entail substantial cross-border transfers, to which politicians tend to be sceptical.

A basic challenge for authorities dealing with cross-border banks is how to find an acceptable formula for sharing the burden and the costs of a crisis.

A basic challenge for authorities dealing with cross-border banks is how to find an acceptable formula for sharing the costs of a crisis. The conflicts of interest involved in this burden-sharing should not be neglected.

Besides conflicts of interest in burden-sharing, there are challenges in the potential reconstruction of a failing cross-border bank. Such a reconstruction will increasingly have an impact on the financial system in other countries where the bank has major activities. To achieve a successful reconstruction, it is therefore important to coordinate the activities of the authorities in the different countries.

In addition, as banks merge cross-border, some banking groups tend to become so big that saving the entire group could be difficult and costly for a small country. Interestingly, many comparatively small countries, such as Austria, Belgium and Sweden, are responsible for a large part of cross-border banking investments.[3] Traditionally, it has been feared that banks are becoming too big to fail on account of their importance for the financial system's stability. Now there is also a potential risk that, on account of relatively small countries' limited financial strength, banks are become too big to save.

SUPERVISION

One purpose of supervision is to ensure that financial institutions do not take excessive risks. Another purpose is to gather information about financial institutions so that, in the event of a crisis, the authorities will have a good enough background for making informed decisions on the best way to handle and solve the crisis. In that sense, efficient supervision is an important prerequisite for effective crisis management and an efficient crisis solution.

Efficient supervision in a landscape with major cross-border banks can only be achieved if the supervisors in different countries coordinate their activities and share their information.

Efficient supervision in a landscape with major cross-border banks can only be achieved if the supervisors in different countries coordinate their activities and share their information. Understanding the risks in a banking group requires a clear picture of all its various activities on a consolidated basis. As banks are becoming genuinely cross-border, with specialised functions in different countries, coordination of supervision becomes vital. Also, any lack of coordination and information-sharing

[3] While these countries are surely in a position to save the relevant banking groups today, one cannot rule out the possibility that in the future the national authorities of a small country, e.g. Luxembourg or Iceland, would be responsible for a major bank in a large country, e.g. Germany or France.

may actually increase the risk of financial problems because the firms could become subject to conflicting supervisory measures.

Furthermore, it is costly for the financial institutions to be subject to many different rules and reporting standards in different countries. Thus, without supervisory coordination and cooperation, it will be more difficult to reap the full benefits of financial integration.

However, the migration of major decisions on supervisory and stability matters to the consolidated supervisor in the home country reduces the ability of the host country authorities to guarantee a stable financial system. At the same time, the home country supervisor is only accountable to its government and ultimately to the home-country voters.

Possible solutions

In the international discussion on these challenging issues, various solutions have been outlined. The primary focus to date has been on the organisational structures of supervision. In most cases, however, similar solutions can be framed in the context of acute crisis management and crisis resolution.

A first solution is to let the home country take a firmer leading position.

A first solution is to let the home country take a firmer leading position. Potentially, the increased power for the home country authorities could be extended to cover subsidiaries as well as branches. The home country supervisor would then be responsible for supervising the overall group and in a crisis the home country authorities would have the responsibility for managing and solving the crisis. With the increasing emphasis on consolidated supervision the EU seems to be taking some steps in this direction. However, this does not solve the basic dilemma of giving one country (the home country) the mandate and possibility to act, while the host country remains responsible for its financial stability. The problem of accountability is also unresolved.

Another solution is to give the home country authorities a formal mandate to act in the interests of all relevant countries.

Another solution is to give the home country authorities a formal mandate – i.e. some kind of binding contract – to act in the interests of all relevant countries.[4] It is not clear, however, how such a contract could be made legally binding. So the issue of how to share the burden of a potential crisis remains an open question.

A third potential solution is to let authorities on the EU level be responsible for at least the cross-border banks.

A third potential solution is to let authorities on the EU level be responsible for at least the cross-border banks. Such a solution could entail establishing a European FSA, explicitly empowering the ECB to provide ELA to cross-border banks, and setting up a European Deposit

[4] This has been suggested by Oosterloo and Schoenmaker (2004) and by Schoenmaker and Oosterloo (2006).

Insurance Corporation (EDIC) that would run the DGS for cross-border banks. Such an agency could also be given the power to reconstruct banks, similar to what the FDIC has in the US. Achieving such a supranational system is going to be politically difficult, not to mention the fundamental question of how to share the burden. Several suggestions have been put forward but it is still not clear how these burden-sharing agreements can be made legally binding. Thus, it has been claimed that as long as there is no power to levy taxes at the EU level, the allocation of the cost of a crisis is uncertain. In any event, agreement on the burden-sharing issue is a precondition for ultimately dealing with the challenges outlined in this note.

Conclusion

Authorities in different countries need to enhance their cooperation. They also need to recognize that they have different – and sometimes conflicting – interests.

With cross-border banks, maintaining financial stability becomes a cross-border issue. At the same time, the authorities' mandate and their ability to promote stability in the financial system remain national. As the extent of cross-border banking increases, the risks of contagion also multiply. Thus, a future crisis is unlikely to be a purely national event. Authorities in different countries therefore need to enhance their cooperation. They also need to recognize that they have different – and sometimes conflicting – interests. A specific bank may be more important for the financial system's stability in one country than in others. When a specific cross-border bank faces severe problems, the willingness to intervene may therefore vary across authorities from different countries. There is also an accountability problem, since the authorities in different countries answer to different constituencies.

In managing a crisis, urgency is paramount. Issues such as information-sharing, decision-making powers, conflicts of interest, etc., therefore need to be clear in advance to all parties. If a crisis occurs, there is no time to debate whether information should be shared or not. In resolving a crisis, conflicts of interest become evident. Should a country save a non-systemic bank with financial problems, if its subsidiary is systemically important in another country? Such situations are prone to entail negotiation games at top levels. An important part of crisis resolution is deposit guarantee schemes – which typically are part of the funding of the crisis resolution. The differences between these schemes will be important in a crisis, but are also important in normal times for competitive reasons. In order to reduce banking risks and have sufficient knowledge of the banks to act in the event of a crisis, ongoing supervision is needed. Supervision, which currently has a national orientation, with mandates and accounta-

bility on a national level, is therefore intimately connected with both crisis management and crisis resolution.[5]

The growing cross-border activities of banks impose severe strains on the national regulatory set-up, where supervision, crisis management and crisis resolution have national mandates.

The growing cross-border activities of banks impose severe strains on this national regulatory set-up. An additional problem is that planning for crisis management and resolution is low on the political agenda. As crises are infrequent, the political urge to adapt the regulatory structure is limited, even though the potential costs of a crisis are huge.

This introductory note raises a number of issues to be considered in moulding the future regulatory framework for banks in the EU. Keeping the present framework unchanged entails a risk of encouraging economic nationalism, and thereby foregoing the economic benefits of financial integration. In the following three articles, alternative regulatory frameworks are discussed in more detail. First, Arnoud Boot focuses on how the role as lender of last resort (LoLR) can be arranged in a single European banking market (Boot 2006). Second, Charles Goodhart and Dirk Schoenmaker discuss the problems of sharing the financial burden of a banking crisis in Europe (Goodhart and Schoenmaker 2006). Third, David Mayes analyses various potential systems for cross-border financial supervision in Europe (Mayes 2006). All three articles were written for the workshop on the future regulatory framework for banks in the EU that the Riksbank hosted in Stockholm on 13–14 February 2006.

Keeping the present framework unchanged entails a risk of encouraging economic nationalism, and thereby foregoing the economic benefits of financial integration.

[5] These issues are also discussed in Chapter 4 in Sveriges Riksbank's Financial Stability Report 2005:2.

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Supervisory arrangements, LoLR and crisis management in a single European banking market

By Arnoud W.A. Boot
Arnoud W.A. Boot is Professor of Corporate Finance and Financial Markets at the University of Amsterdam and CEPR. He is also Member of the Bank Council of the Dutch Central Bank.

In this paper I discuss some key issues related to supervisory arrangements in the EMU countries, and particularly those relating to the LoLR structure and crisis management. The focus will be on the responsibilities and powers of individual countries and national central banks vis-à-vis the actors at the European level (the EU and the ECB). In this context various issues will be raised relating to the effectiveness and efficiency of the arrangements, and specifically the role and positioning of the lender of last resort (LoLR) in light of the fragmented supervisory structure.

1. Introduction

The fragility of the financial system is a key public policy concern. It is widely acknowledged that stability concerns and systemic risks in banking are real and warrant regulatory scrutiny. These issues have become more pertinent with the further integration of financial markets and the increasing cross-border footprint of financial institutions. For the European banking market Schoenmaker and Oosterloo (2005) document a sizable increase in the cross-border externalities coming from the growing number of banking groups that have a significant cross-border presence. Also, as highlighted in De Nicoló and Tieman (2005), real activities have become more synchronized, exposing EU member countries more and more to a common European business cycle.[1] These developments point at the need for an international perspective on regulation and supervision.

The focus in this paper will be on the responsibilities and powers of

[1] Simultaneously, domestic financial sectors have become more dynamic, less predictable and more exposed to competition. This has ignited a lively debate on the interaction between stability and competitiveness; see Boot and Marinc (2006) for an analysis on the interaction between competitiveness, stability and the effectiveness of regulation.

My primary focus is on the lender-of-last-resort (LoLR) and the related crisis management structure.

individual countries vis-à-vis the EU and the ECB. In this context various questions will be raised, in particular relating to financial stability and the effectiveness and efficiency of regulatory and supervisory arrangements. My primary focus is on the lender-of-last-resort (LoLR) and the related crisis management structure. However, I will indicate that this role, and the allocation of tasks between ECB and national central banks, cannot be assessed independently from supervisory arrangements in the EU in general. Both supervisory and LoLR arrangements are fragmented with primary responsibilities at the national level. Key political concerns related to national sovereignty and (too much) concentrated authority at EU and ECB levels could explain this decentralized structure. I will critically evaluate these arrangements. My primary conclusion is that centralization of the LoLR function is desirable, and actually could help facilitate convergence – and ultimately – centralization of prudential supervisory practices. As I will argue some burden sharing arrangements are however needed to make this possible.

The organization of the paper is as follows. Section 2 provides a characterization of (prudential) supervisory practices in the EU, and notes the limited role of the ECB in this area. In section 3 the focus shifts to the LoLR arrangements. I discuss here three things: the sources of fragility and systemic risks, the allocation of LoLR responsibilities between ECB and national central banks, and the lack of fiscal authority at the EU level. The latter may well complicate the allocation of LoLR and crisis management responsibilities because of the potential budgetary consequences of LoLR support and crisis resolution. Section 4 asks the question whether current arrangements are sustainable, and particularly what distortions the present decentralized nature of arrangements may induce. In section 5, I discuss which improvements could be made. Section 6 concludes.

2. A characterization of ECB and EU arrangements

The European regulatory structure is best described as fragmented with primary responsibilities at the level of the individual nation states.

The European regulatory architecture is best described as fragmented with primary responsibilities at the level of the individual nation states. Under the principles of only minimum essential harmonization, home country control and mutual recognition of supervision embedded in the Second European Banking Directive, prudential supervision remains solidly with the home country (i.e., the member state in which the financial institution has been licensed).

At this national level a diverse assortment of institutional arrangements continues to thrive. If there is a trend, it seems that a domestically centered cross-sector integration of supervision is underway, with at the extreme the fully integrated FSA supervisory model in the UK.

Simultaneously, a 'twin peaks' type structure – separating prudential supervision and conduct of business supervision – is becoming more popular. Nevertheless, for now, a wide diversity of arrangements continues to exist. This is further highlighted by the fact that in some countries the central bank is the prudential supervisor, while in other countries – like in the UK – prudential supervision is the task of an independent supervisory agency.

At the European level, several arrangements are in place to facilitate the supervision of cross-border activities of financial institutions. For example, the European Central Bank has a limited coordinating role for the LoLR facilities that are placed in the hands of national central banks.[2] Also various multilateral arrangements exist. Within the ECB, the Banking Supervisory Committee (BSC) brings together banking supervisors of all EU countries to discuss financial stability issues, provide macro-prudential oversight, and assess draft EU and national banking legislation.

At the level of the EU, several cooperative arrangements are in place. Up to 2004 these arrangements included the Banking Advisory Committee (BAC) that advises the EU on policy matters related to bank legislation, and the Insurance Committee. In 2004, the European Parliament and the EU Council adopted a 'Lamfalussy type' framework (Committee of Wise Men, 2001) based on work by the Economic and Financial Committee (EFC) – a committee advising the Ecofin Council (EFC, 2002). This framework, which initially was designed for streamlining the regulatory and supervisory practices for the European securities markets, was subsequently applied to the financial sector at large. It introduces a structure for financial sector rule making at the European level.[3] In this restructuring and further formalization of the EU regulatory and supervisory framework the existing sectoral Banking Advisory Committee (now CEBS) and Insurance Committee (CEIOPS) both were being given important roles.[4]

These sectoral committees (banking, insurance but also securities, the CESR) and a separate committee addressing financial conglomerate issues, are essentially put under control of the finance ministers and kept at a distance from the ECB and national central banks. Non-supervisory national central banks and the ECB have observer status, but no voting

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2 The ECB has primarily a *facilitating* role for systemic issues. For example, its statute points explicitly at its role in promoting the smooth functioning of the payment system (Art. 3.1. and 22 of the Statute; see also Art 105(2) of the Maastricht Treaty).

3 The Lamfalussy approach encompasses a four-level regulatory approach: level 1 involves broad framework principles for legislation; level 2 detailed rules; level 3 aims at cooperation between national regulators, and level 4 addresses enforcement issues (see also Lannoo and Casey, 2005).

4 These committees have a role at level 2 in the Lamfalussy type four layer framework (see EFC, 2002). Also the existing supervisory oriented Groupe de Contact has a role to play.

rights. This effectively gives the ECB no formal role in (micro) prudential supervision.[5]

The hope is that the Lamfalussy approach at the EU level will lead to a further streamlining and coordination in supervisory and legislative practices.

Some convergence and increasing coordination in supervisory practices is observed. A recent development is the EU Directive on Financial Conglomerates that allocates group-wide supervisory responsibilities to a single coordinator located in the Group's home country. The hope is that the Lamfalussy approach at the EU level will lead to a further streamlining and coordination in supervisory and legislative practices, and – ultimately – convergence between member states.[6]

3. Lender of Last Resort

Bagehot's classical motivation for the LoLR was that it would lend freely to solvent but illiquid banks against good collateral at a premium price (Rochet, 2004). The reality of LoLR support in various countries in the world has been different in that net infusions of cash in troubled institutions have been quite common, in part because distinguishing between liquidity and solvency problems might be difficult.

The potential confusion and uncertainty about the true nature of illiquidity problems may have worsened over time.

This potential confusion and uncertainty about the true nature of illiquidity problems may have worsened over time. In particular, the proliferation of financial markets and the ways in which risks can be shifted through the system, undoubtedly complicate the assessment of the fragility of the financial system. For my analysis, an understanding of the sources of fragility, and their relative importance is important because it may impact the role that LoLR support plays, and this role might have changed over time. In turn, the assessment of the role of LoLR support in today's financial sector is of preeminent importance for evaluating the present EU arrangements when it comes to LoLR support and crisis management in general.[7] In subsection 3.1, I will further elaborate on this.

Another important issue is how the LoLR role is organized in the euro countries. The general principle is one of delegation (subsidiarity) with the LoLR role being given to national central banks. Understanding these arrangements is crucially important for assessing the effectiveness of crisis management in the euro area. The allocation of responsibilities between

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5 The ECB has been careful in defining its role in prudential supervision. While it downplays potential conflicts of interest that may arise in combining central banking and prudential supervision (ECB, 2001), suggesting with that possibly a bigger role for itself, it simultaneously expresses that it is not aiming at a bigger role in supervision but only attempts to broaden cooperation (Duisenberg, 2003).

6 Other arrangements are in place as well. Various bilateral arrangements, cq Memoranda of Understanding (MoU's) between national supervisors, help coordinate cross-border supervision. They further clarify, on a voluntary basis, the cooperation mandated in EU directives regarding information exchange, mutual assistance, establishment procedures and on-site examinations.

7 I will focus on crisis management in the context of systemic concerns. In this case, there is a direct link between the LoLR and crisis management.

national central banks and ECB with respect to LoLR support needs to be evaluated in the broader context of EU supervisory arrangements. In subsection 3.2, I will discuss the present allocation of responsibilities. A brief evaluation is contained in subsection 3.3.

3.1. ROLE OF LENDER OF LAST RESORT (LOLR)

In the classical interpretation, a financial crisis is directly linked to the notion of bank runs. In a fractional reserve system with long term illiquid loans financed by (liquid) demandable deposits, runs may come about due to a coordination failure among depositors (Diamond and Dybvig, 1983). Even an adequately capitalized bank could be subjected to a run if the deadweight liquidation costs of assets are substantial. Regulatory interference via LoLR support, deposit insurance and/or suspension of convertibility could all help, and could even fix – in this simple setting – the inefficiency. Observe that the externalities that a bank failure could create possibly provide a rationale for regulatory interference. These externalities could be directly related to the bank that is subjected to a potential run, but also be motivated by potential contagion effects. Many have generalized this simple setting by allowing for asymmetric information and incomplete contracts; see Rochet (2004) for a review. The general conclusion is that fragility is real, and information based runs are plausible.

The proliferation of financial markets weakens the liquidity provision rationale of deposits, which may help explain the lesser importance of deposits for banks.

For the purpose of this paper two observations are important; both are related to the proliferation of financial markets. First, access to financial markets weakens the liquidity insurance feature of demand deposit contracts. To see this note that the root cause of the fragility in the Diamond-Dybvig world is the underlying demand deposit contract. The rationale for this contract – as brought forward by Diamond and Dybvig (1983) – is the desire for liquidity insurance on the part of risk averse depositors with uncertainty about future liquidity needs. However, as shown by Von Thadden (1998), the very presence of financial markets allows depositors to withdraw early and invest in the financial market which puts a limit on the degree of liquidity insurance. This is related to the earlier work of Jacklin (1987) who shows that deposit contracts have beneficial liquidity insurance features provided that restricted trading of deposit contracts can be enforced.[8] In any case, these arguments suggest that the proliferation of financial markets weakens that liquidity provision

[8] Actually, Jacklin (1987) shows that with the 'extreme' Diamond-Dybvig preferences, a dividend-paying equity contract can achieve the same allocations without the possibility of bank runs. However, for basically all other preferences, a demand deposit contract does better provided that trading opportunities are limited.

rationale of deposits, which may help explain the lesser importance of deposits for banks.

A second observation is that the proliferation of financial markets may suggest that the LoLR role in providing liquidity loses importance. What I mean is that in Bagehot tradition one could ask the question whether the LoLR has a role to play in providing liquidity to liquidity constrained yet solvent institutions when capital markets and interbank markets are well developed. Goodfriend and King (1988) argue that solvent institutions then cannot be illiquid since informed parties in the repo and interbank market would step in. In this spirit, the former ECB board member Tommaso Padoa-Schioppa suggested that the classical bank run may only happen in textbooks since the "width and depth of today's interbank market is such that other institutions would probably replace those which withdraw their funds" (as quoted in Rochet and Vives, 2004).

While the proliferation of financial markets could weaken the need for a LoLR in providing liquidity support, it would go too far to see no role for a LoLR, particularly when information asymmetries are considered.

While these remarks rightfully suggest that the proliferation of financial markets could weaken the need for a LoLR in providing liquidity support, it would go too far to see no role for a LoLR, particularly when information asymmetries are considered. More specifically, an extensive literature on aggregate shocks has moved away from the pure 'sunspot' bank run equilibriums, as in Diamond and Dybvig (1983), focusing instead on fundamentals. This literature builds on the empirical evidence in Gorton (1988) showing that banking crises – prior to the creation of the Federal Reserve – were predicted by leading economic indicators. In a recent contribution Rochet and Vives (2004) show that a coordination failure in the interbank market may occur particularly when fundamentals are low, and that this may lead to a need for liquidity support by the LoLR for a solvent institution.[9]

Even though the proliferation of financial markets has improved risk sharing opportunities between banks, these very same interbank linkages may well have increased systemic risk.

Overall the preceding discussion warrants the conclusion that the proliferation of financial markets (including interbank markets) has improved the risk sharing opportunities between banks, and possibly has reduced sunspot type bank run problems on individual institutions.[10] But these very same interbank linkages may well have increased systemic risk, i.e. the probability of propagation of liquidity and solvency problems to the financial system as a whole. It is therefore at the very least premature to trivialize the need for a LoLR.

Actually, a more market-centered view on systemic risks has gained ground, at the expense of a more institutionally-focused view of systemic

[9] Another line of research points at asset price bubbles as potential source or cause of fragility and contagion (Allen and Gale, 2000). See Allen (2005) and De Bandt and Hartmann (2002) for surveys on contagion.

[10] Whether total insolvency risk of individual institutions has come down depends on the actual risk taking and capitalization. Evidence in De Nicolo and Tieman (2005) suggests that the insolvency risk of European institutions has more or less remained the same over the last 15 years despite increases in capital over time and a wider geographic range of operations.

risk. The propagation mechanisms for systemic crises have become substantially more complicated and possibly far reaching as well. For example, the revolution in structured finance and securitization may introduce all kinds of systemic issues. The risks in the markets for securitized assets are ill understood. Once big defaults would occur in this market a meltdown is not excluded, and systemic risks are possibly acute.[11]

3.2. LoLR RESPONSIBILITIES IN THE EURO AREA

The ECB has primary stability responsibilities when it comes to the payment system. But the ECB does not have an explicit task of preserving the stability of the financial system in general. This is left to the national central banks. These national central banks also have the LoLR role, and not the ECB. This formal description is of importance, but the practical allocation of tasks in the Eurosystem could deviate considerably, particularly because of the euro area wide consequences of the manifestation of systemic risks.

The practical allocation of tasks and responsibilities as it relates to the LoLR role in the euro countries between ECB and national central banks only became clear in 1999. At the presentation of the 1998 annual report (October 26, 1999) then ECB-president Duisenberg commented that on the part of the ECB "there is a clearly articulated capability and willingness to act if really necessary" (Duisenberg, as reported in Vives, 2001). He added on the procedural issue that "The main guiding principle within the Eurosystem with reference to the provision of emergency liquidity to individual financial institutions is that the competent national central bank would be responsible for providing such assistance to those institutions operating within its jurisdiction". For a general liquidity crisis in the payment system Duisenberg indicated that a direct involvement of the ECB could be expected.[12] The latter is directly in line with the mandate of the ECB that stipulates its role in the smooth functioning of the payment system (Article 105(2) of the Maastricht Treaty).[13]

This interpretation of the LoLR role of the ECB and the national central banks is in line with the rather flexible wording of the role of the ECB in the Treaty. The LoLR function is primarily a national responsibility, and the provision of liquidity support is under the responsibility and liability of

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[11] Problems include the mighty role of credit rating agencies, the dependence on monoliners, etc.; see Boot, Milbourn and Schmeits (2006) for an analysis of the growing importance of credit rating agencies for the functioning of financial markets.

[12] I am not distinguishing in the text between the European System of Central Banks (ESCB), which is the Eurosystem that Duisenberg is referring to, and the ECB. This simplification is not totally correct because the relevant decision making body at the center is the ESCB, and not the ECB as standalone organization.

[13] See also Schinasi and Teixeira (2005).

The LoLR function and the provision of liquidity support are primarily the responsibility and liability of national central banks.

national central banks. Nevertheless, also the ECB could engage in liquidity support, though it uses stricter collateral requirements. Moreover, the scope of the LoLR involvement at the ECB level is restrained by the lack of fiscal authority at the European level.

3.3. EVALUATION OF LoLR ARRANGEMENTS

The central role of individual national central banks in LoLR activities and the secondary role of the ECB is somewhat curious. Systemic concerns at the EU level, the increasing integration of the EU economies and the introduction of the common currency (euro) would seem to dictate a more well-defined LoLR role at the level of the ECB. However, one may argue that national central banks are often better able to assess the immediate liquidity needs of local financial institutions. This may well be valid, but only addresses the practical operational organization of the LoLR role. It does not explain why the *responsibility* of LoLR support is left to national central banks.

Political considerations, the lack of fiscal powers at the European level and the decentralized and fragmented nature of EU banking supervision, have all contributed to the resulting patchwork of national supervision and European-wide coordination.

The right way of looking at this is that political considerations have led to these arrangements. In particular, the Maastricht Treaty may have tried to prevent the emergence of an overly powerful ECB at the expense of national central banks. I do not think that there is a much deeper rationale for this, and I am reluctant to put forward more sinister arguments. For example, one could argue that preserving these powers locally serves the desire of national authorities to have better control over their home country financial institutions via the national central bank. This may well be the case. Such local power could help defend these 'national interests' when a crisis would occur. This would not be without cost since it would cast doubt on the desired independence of central banks. Nevertheless, I would more readily subscribe to the idea that a desire to protect national sovereignty has prevented national authorities from agreeing to more powerful EU and Euro area institutions.

Also the lack of fiscal powers at the European level is in part, or mostly, motivated by the same balance between national sovereignty and effective EU decision making. This lack of fiscal authority has made it more complicated for the ECB to assume broader powers in the LoLR role. That is, liquidity support is often provided in circumstances where losses may occur; the question then comes up who is responsible for these losses.

To complicate this picture even further, the decentralized and fragmented nature of EU-banking supervision, with primary responsibilities at the level of individual member states, and only a coordinating and facilitating role at the EU level, in all likelihood further reduces the power of

the ECB vis-à-vis the national central banks. National central banks in practice will be a natural partner to the primary local supervisory agencies. Indeed, in many countries the national central bank is also the local supervisory agency. Important in this respect are also the national – home-country – linked deposit insurance arrangements. Again, national authorities are in charge and the national treasury incurs the (contingent) financial obligations.

These contingent financial obligations combined with the absence of fiscal powers at the EU level, are a strong obstacle for the further centralization of both supervision at the EU level and LoLR responsibilities in the ECB. The well known motto, "who foots the bill decides", underscores the existing decentralized focus. I see no reason why this would be different here. The contribution of Goodhart and Schoenmaker to this workshop addresses this important financial matter.

4. Are current arrangements sustainable?

The resulting patchwork of national supervision and European-wide coordination has so far upheld itself reasonably well. The key questions are, however, how this system will work in crisis situations, and to what extent it accomplishes the efficiency objectives of regulation and supervision in general. In crisis situations important concerns can be raised about the adequacy of information sharing and cooperation between the various supervisors, the European Central Bank and the national central banks. In particular, in such situations the question about who will be in charge might become very urgent. Potential tensions can easily be envisioned between supervisory agencies, national central banks and the ECB.

Policy makers are aware of these issues. For example, the new Directive on Financial Conglomerates gives the home country supervisor the single coordinating responsibility in all member states for group-wide supervision of the financial conglomerate. Issues of financial stability however remain the responsibility of the host countries.

One key question is how to coordinate potentially diverse interests, not least in a crisis situation.

The question is how to coordinate these potentially diverse interests. Particularly in crisis situations these issues are of paramount importance. The core message of the second Brouwer-report (EFC, 2001) was that no mechanism was in place to coordinate in case of such crisis. For that reason a Memorandum of Understanding between virtually all European national central banks and supervisors was formulated that specifies principles and procedures for cooperation in crisis management situations (ECB, 2003). The fiscal side, in particular the budgetary obligations imposed on member states in case of bail-outs, however also requires the approval of national finance ministries that have to incur the potential

financial obligations. In a follow-up Memorandum of Understanding these finance ministries were also included (ECB, 2005).

Several questions can be raised about the efficiency of the arrangements in general. The decentralized structure may give rise to potential conflicts of interest between the national authorities and 'outsiders'. For example, national authorities might be prone to TBTF (too-big-to-fail) rescues.[14] Alternatively, national authorities may not sufficiently appreciate (that is, internalize) the disrupting consequences that a domestic bank failure could have in other countries. Efficiency might be hampered in other ways as well. For example, the national scope of supervision may help encourage the emergence of 'national champions'. More fundamentally, the decentralized structure could give rise to level playing field and regulatory arbitrage issues.

Casual observation and reasoning would seem to suggest that integration and further coordination of both regulation and supervision might yield substantial efficiency gains.

Casual observation and reasoning would seem to suggest that integration and further coordination (if not centralization of authority) of both regulation and supervision might yield substantial efficiency gains not only for the supervisory authorities but also, and maybe more importantly, for the supervised financial institutions themselves. There are currently more than 35 supervisory authorities responsible for prudential supervision in the EU, and a typical large financial institution might have to report to more than 20 supervisors (Pearson, 2003).

Yet, practical considerations suggest that a full integration of all regulatory and supervisory functions at the European level may not (yet) be feasible. While it is clear that regulatory and supervisory integration needs to keep pace with the development of the size and the cross-border footprint of the covered banks, the heterogeneity of underlying supervisory systems and the implied costs of integration should not be underestimated. An interesting illustration is the evidence reported by Barth, Caprio and Levine (2002) on the variation across the European Union countries in supervisory institutions and practices. Their conclusion is that supervisory arrangements within the EU are as diverse as in the rest of the world. Also, illustrating this point further, the EU countries are current or former standard bearers of all major legal origins. A vast literature now documents how legal origin matters for the shape and functioning of the financial system (see La Porta, et al, 1998).[15]

While common sense suggests that ultimately a more integrated regulatory and supervisory structure is desirable[16], the way we would get

[14] One could replace too-big-to-fail with too-big-to-close to emphasize that replacing management, wiping out equity holders, etc. could still be done to mitigate moral hazard.

[15] Bank regulation and supervisory practices differ also considerably between civil and common law countries, with a more flexible and responsive approach in the latter.

[16] Actually, some theoretical work points at the potential value of competition between regulators, see also Kane (1988).

there is far from clear. The Lamfalussy approach may bring us in the right direction but it does not provide for authority at the pan-European level. Indeed, practical considerations, including political concerns, dictate for now a fragmented structure on which a coordination layer needs to be super-imposed; the lead regulator model is one example of that.[17]

While common sense suggests that ultimately a more integrated regulatory and supervisory structure is desirable, the way we would get there is far from clear.

However, the struggle for an efficient pan-European coordination and integration of regulation and supervision is more then just a practical issue that will be sorted out over time. Two things stand out. The first is that the scope of regulation and supervision needs to be contained. Effective supervision and regulation – given the mushrooming cross-sector and cross-border footprint – requires a better demarcation of safety and systemic concerns.[18] The cross-sector integration of financial institutions and the ever more seamless integration of financial markets and institutions have enormously broadened the scope of regulation and the potential sources of systemic risk.

Two things stand out. The first is that the scope of regulation and supervision needs to be contained.

This also relates to the issue of fire-walls. For example, does a subsidiary structure reduce systemic concerns? I do not think that an answer is readily available. More generally, what type of constraints, if any, should be put on the corporate structure of financial institutions? While we tend to think of further deregulation in the financial sector possibly leading to even bigger and broader financial institutions, it is far from clear what the future will bring. In any case, changes in the industrial structure of the financial sector are of paramount importance for the design and effectiveness of regulation and supervision.[19] If these issues cannot be satisfactorily addressed, I am not very optimistic about the possibilities for effective and efficient pan-European regulation even in the long run.

The second issue is that very little is known about the efficiency and effectiveness of various regulatory and supervisory structures. As Barth et al (2003) put it, "there is very little empirical evidence on how, or indeed whether, the structure, scope or independence of bank supervision affect the banking industry". Their own research suggests that the effect is at best marginal but measurement problems are paramount. They conclude

The second issue is that very little is known about the efficiency and effectiveness of various regulatory and supervisory structures.

[17] An important distinction needs to be made between business conduct regulation and prudential regulation. I have focused on the latter. The former is closer to the functioning of financial markets and lends itself more readily for centralization at the European level. In the context of these financial markets, the 'real' Lamfalussy report (Committee of Wise Men, 2001) does not directly propose authority at the EU level but it states that if its proposed approach is not successful the creation of a single EU regulatory authority should be considered.

[18] The earlier discussion on the precise source and propagation mechanism as it relates to systemic risk is actually pointing at the same issue.

[19] Earlier I referred to the concentration in the credit rating business and the importance of ratings for the markets for structured finance (securitization). It is interesting to ask the question what impact a meltdown of one of the main credit rating agencies would have on these markets, and what this in turn would imply for participants in these markets.

from this that we may thus choose to only focus on the effect that regulation has on systemic issues. But also here little is known. What this means is that we need much more work that tries to pin point the costs and benefits of different regulatory and supervisory arrangements. Obviously in the context of the widely different national supervisory arrangements the lack of evidence does not really help in evolving to a harmonized 'superior' model.

5. What should be done?

The missing command structure in EU arrangements (the various MoU's and the Lamfalussy framework) as well as that with respect to LoLR facilities needs to be addressed.

It is clear that further improving coordination and cooperation between supervisory bodies makes sense. The EFC (2002) proposals (based on the Lamfalussy approach) and the recent crisis management MoU's (ECB, 2003, 2005) are steps in that direction. Further improvements can be made by harmonizing accounting standards and improving procedures. But this is not enough. Ultimately more is needed than just good intentions and procedures.[20] The missing command structure in EU arrangements (the various MoU's and the Lamfalussy framework) as well as that with respect to LoLR facilities need to be addressed.

As stated already, an EU-wide regulatory and supervisory authority cannot be expected anytime soon. The LoLR function is directly related to crisis management, and in those circumstances a clear line of control is most important. But accomplishing improvements and particularly changing powers between national authorities and the ECB at the center is – as stated – a political issue. So far, whatever improvements have been made, were predicated by crises. Indeed, crises create urgency. The BCCI crisis was particularly important because this crisis led to willingness to address pan-European coordination failures in supervision. It is then immediately clear that – unless a major crisis would come about soon – there is for the moment no urgency for change. Matters might be even worse. With no crises in sight, complacency could set in.

My own assessment is that current initiatives, including the lead supervisor designation for banking groups, are improvements in the right direction.

My own assessment is that current initiatives, including the lead supervisor designation for banking groups, are improvements in the right direction. The Lamfalussy framework I see favorably as well. It will in my view indeed improve the efficiency of the legislative and rule-making process, and encourage convergence in regulatory and supervisory practices. Also the less formalized cooperative initiatives like the Banking Supervisory Committee within the ECB and the widely supported BIS ini-

[20] Cooperation between a system of dispersed (semi-autonomous) central banks and dispersed and autonomous prudential supervisors is very complicated. Decentralized systemic responsibilities combined with decentralized prudential responsibilities with each involving different bodies offer multiple coordination problems.

tiatives clearly put us on the path to further improvements and harmonization. These initiatives facilitate a continuous process for improving the supervisory process without having to make highly political and controversial choices. This process I judge very favorably. Nevertheless, a fear for complacency is in order. We need to continue to put improvements in supervisory practices and cooperation among supervisors high on the agenda, and be constantly critical about the speed, efficiency and effectiveness of the process. To speak with Lamfalussy, if the process slows down, more heavy-handed interventions should be considered.[21]

I am much less convinced that the same gradual process should apply to the LoLR structure. The LoLR role is intricately linked to crisis management, and that does not lent itself for a gradual approach or 'soft' agreements on cooperation. While the MoU's (ECB, 2003, 2005) help in overcoming some of the lacunae identified in the Brouwer crisis management report (EFC, 2001), I do not think this is a sufficient response. This is not to say that I would criticize these MoU's. Actually, I fully endorse them. The 2005 MoU that addresses cooperation and information sharing (including views and assessments) between supervisors, central banks and finance ministries is an important document. What it does not do (and does not intend to do) is bring the LoLR responsibility to a more central level. To the contrary, it remains with national central banks which possibly do not, and often cannot, sufficiently take into account the pan-European systemic problems that may have arisen in a crisis situation. This national authority then diffuses the command structure, while the LoLR should be at the heart of crisis management.[22]

In my conversations with some national central bankers in the euro area an amazing group feeling and feelings of collective responsibility are expressed. The suggestion is that such collective feeling of responsibility will effectively guarantee a central command structure at the ECB level because any serious problem with potential euro area repercussions would immediately be brought to the ECB, or more correctly the European system of central banks (ESCB). While one should be enthusiastic about the trust in each other and collective feeling of responsibility that has been

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[21] These more positive comments on the developments in supervisory arrangements in the EU do no imply that I fully endorse the current state of affairs. One issue that deserves much more attention is how to address too-big-to-fail (TBTF) concerns. US practice with clear-cut timely interventions could be particularly helpful in EU banking markets considering the massive domestic consolidation (see Eisenbeis and Kaufman, 2005).

[22] In my view the central role given to national central banks is really an artifact of the past when the then rather segmented markets allowed the local central bank to resolve a bank crisis by "forcing" the surviving institutions to take care of the problem. This no longer works because local banks in the increasingly open banking market do no longer feel the same responsibility for resolving problems in their home market. A case in point is the recent failure of a very small Dutch bank with only local Dutch operations (Van Der Hoop). Despite the potential reputation damage to the local financial sector, the (many times bigger) surviving institutions were not willing to step in. A further complicating factor is that due the substantial consolidation in domestic markets, a typical failure might be very difficult to handle for the surviving local institutions.

created at the ECB level, one has to be careful with trusting such informal approach when it comes to crisis management situations. Those situations are rare, involve novel occurrences that are rather unpredictable and can have very severe consequences for individual member states. In those situations national interests may collide with euro area wide responsibilities, and mutual trust might not be sufficient for aligning national interests with Euro-area interests. For this very reason a clear command structure at the euro level is important. This would imply that the ECB should get primary responsibility over the LoLR role.[23]

But is this feasible without other changes in EU arrangements? Particularly the fragmented domestically-centered regulatory and supervisory structures and the lack of fiscal authority at the EU level are problematic. To start with the latter, any more serious role of the ECB in LoLR operations (and crisis management) should go hand in hand with some burden sharing arrangements to cover potential losses in those operations. In my view, this is doable but needs to be arranged. More problematic is the fragmented supervisory arrangement. Several things can be said about this. As already stated, only over time can this be changed. In my view, it is important and absolutely necessary that this is dealt with.[24] But for now this will just not happen for all the reasons given before.

Considering the pan-European nature of systemic concerns, a more central authority is needed.

One could then argue is it not logical to also keep the LoLR role for now local? That is, why not keep it close to the local supervisor? Considering, as I have highlighted, the pan-European nature of systemic concerns, a more central authority is needed. Local central banks could however still continue to play an important operational role in LoLR activities. Authority at the ECB level will however give a powerful boost to information sharing, and this could distinctly improve the efficiency and effectiveness of the LoLR operations.

6. Concluding thoughts

My recommendation is to grant the ECB explicitly responsibility over the LoLR function; national central banks would then get a more operational role. This recommendation is not new. Several authors have suggested this (see Lannoo, 2002, and Vives, 2001). However, as I have indicated, the lack of fiscal authority at the European level makes this difficult.

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[23] Let me emphasize that trust and feelings of collective responsibility between national central banks and ECB even then remain important. Much of the information will come from the national level, and trust is needed to facilitate an optimal flow of information. This implies in the broader context of the 2003 and 2005 MoU's as well. Without trust and collective feelings of responsibility one cannot expect the good intentions with respect to information sharing in those MoU's to be of much value.

[24] This does not mean that there will not be a role for local supervisors in the future. Local supervisors will always play a role because of the proximity to local institutions which could offer information advantages.

Burden sharing arrangements are needed, and have to be arranged. As with the centralization of supervisory and regulatory responsibilities in Europe, the political feasibility of a centralized LoLR responsibility remains an issue to be dealt with. I alluded to this earlier.[25] The EU Treaty does allow for a heavier role of the ECB in LoLR operations,[26] so the true issue might be to get agreement within the decision making body at the ECB (the European System of Central Banks, ESCB).

An important question is whether there is a downside to a more centralized LoLR responsibility? Would this compromise the independence of the ECB? For example, political pressure (also via Ecofin) to provide liquidity support in the case of a bank crisis might become more intense. One could argue that this type of pressure has always been present in central banking, and is actually much more intense for national central banks. A related concern is that the heavier LoLR role could intensify the potential conflict between financial stability and monetary policy objectives within the ECB. It is hard to assess the importance of this argument. The current arrangement already has this potential conflict (and one could argue about the importance of this conflict between objectives, see Issing, 2003).

In my view, the benefits of a more centralized LoLR responsibility outnumber the disadvantages.

On the positive side – apart from the benefits related to a more central command structure (see section 5) – I see several other potential advantages:

i. More prudent use of the LoLR facility (see Vives, 2001 and Lannoo, 2002).
ii. Extra urgency on communication between the ECB on the one hand and national central banks and supervisory agencies on the other. National authorities could be more willing to share information with the ECB (only then support can be expected). Thus, self interest may facilitate the information exchange.
iii. It might be a catalyst for further reforms in pan-European supervision. In particular, a stronger position of the ECB could induce the EU (and Ecofin) to strengthen the role of the EU in supervision to 'counter' the enhanced power of the ECB. This would probably be positive because it would reduce the fragmentation in supervision, speed up convergence and enhance coordination. In a sense it would add urgency to the Lamfalussy process.

[25] National governments could find LoLR control at the national central banks convenient in the case of a crisis, particularly when financial difficulties threaten large domestic financial institution. This already suggests that national control could worsen TBTF incentives, and possibly also compromise the role of national central banks in crisis management (i.e. they would be 'forced' in providing LoLR support also in the case of solvency problems).

[26] Also the ECB statute allows for a more dominant role of the ECB with respect to the LoLR function.

We need a catalyst for further European regulatory and supervisory integration for the financial sector. Expanding the powers of the ECB could be such catalyst.

The latter benefit might at first blush sound tangential, but actually be a very important one. We need a catalyst for further European regulatory and supervisory integration for the financial sector. Expanding the powers of the ECB could be such catalyst.

Whatever path will be chosen, the integration of financial supervision and regulation will be far from easy. Resolving the fundamental issues related to the scope of regulation, and, to a lesser extent, our understanding about the costs and benefits of different arrangements (see the previous section), would help. Being pragmatic is important in this debate; first-best-choices are not in sight.

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Burden sharing in a banking crisis in Europe[1]

BY CHARLES GOODHART AND DIRK SCHOENMAKER
Charles Goodhart is Professor and Programme Director at Financial Markets Group, London School of Economics; Dirk Schoenmaker is Professor at Vrije Universiteit Amsterdam and Deputy Director at the Ministry of Finance (NL)

Pan-European banks are starting to emerge, while arrangements for financial supervision and stability are still nationally rooted. This raises the issue who should bear the burden of any proposed recapitalisation in the event of failures in large cross-border banks. A recapitalisation is efficient if the social benefits (preserving systemic stability) exceed the cost of recapitalisation. Using the multi-country model of Freixas (2003), we show that ex post negotiations on burden sharing lead to an underprovision of recapitalisations.

Against this background, we explore different ex ante burden sharing mechanisms. The first is a general scheme financed from the seigniorage of participating central banks (generic burden sharing). The second relates the burden to the location of the assets of the bank to be recapitalised (specific burden sharing). As the specific scheme gives a better alignment of costs and benefits, it is better able to overcome the co-ordination failure. Finally, decision-making procedures are required for the administration of an ex ante burden sharing mechanism.

1. Introduction

The emergence of pan-European banks has stimulated the debate on European arrangements for financial supervision and stability.

The establishment of a single, unified European financial system, plus a common eurozone currency, raises the issue of the appropriate level (federal or national) for managing financial stability. The emergence of pan-European banks has stimulated the debate on European arrangements for financial supervision and stability. The search for an appropriate division of labour between home and host supervisors in the European Union is part of this debate. The fiscal competence to deal with banking crises is inter-related with the banking supervisory function. It is not possible to move on one of these without the other (Goodhart, 2004).

[1] The opinions in the paper are those of the authors and not necessarily those of the Financial Markets Group or the Netherlands Ministry of Finance.

The fiscal costs of resolving a banking crisis can be large. In a worldwide sample of 40 banking crisis episodes, Honohan and Klingebiel (2003) find that governments spent on average 13% of national GDP to clean up the financial system. To clarify our position, the preferred route to solving a banking failure is a private sector solution. The use of public money should only be considered when the social benefits (in the form of preventing a wider banking crisis) exceed the costs of recapitalisation via taxpayers' money. The issue at stake in the European context is that not only national, but also cross-border, externalities should be taken into account in the decision-making process. The need for European arrangements ultimately depends on the intensity of cross-border externalities from bank failures within the EU (Schoenmaker and Oosterloo, 2005).

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The aim of the paper is to explore possible mechanisms for fiscal burden sharing in a banking crisis in Europe. The choice of mechanism for fiscal burden sharing is a political decision. The first mechanism could be a general fund to shoulder the burden of recapitalisation. This general fund could be financed from the seigniorage of the ECB (and of central banks from out-countries). Countries pay their relative share in the fund from their seigniorage. The main advantage of this system is that the costs of recapitalisation are smoothed over countries (and over time). There are, however, serious problems with this approach, not least that there is little (political) enthusiasm for cross-border fiscal transfers. The second mechanism involves specific burden sharing. In this scheme, only countries in which the problem bank is conducting business contribute to the burden sharing. A country's contribution can be related to the share of the problem bank's business in that country. In this way, cross-border transfers are largely avoided. Both schemes are subject to the free-rider problem. Countries that do not sign up to burden sharing nevertheless profit from burden sharing, as the stability of the European financial system is a public good.

The paper is organised as follows. In Section 2, we give a short overview of developments in financial supervision and stability. Section 3 contains the core of the paper. We first explain the possibility of co-ordination failure in crisis management in a multi-country setting. Next, we explore different mechanisms for *ex ante* burden sharing to overcome the co-ordination failure. The mechanisms are illustrated with numerical examples. In Section 4, we discuss briefly the decision-making framework for crisis management. The final section provides a conclusion.

2. Developments in financial supervision and stability

Large (cross-border) banks are emerging in Europe. Schoenmaker and Oosterloo (2005) document a statistically significant upward trend of emerging European banking groups in the period from 2000 till 2003. Until recently, there were just a few regional cross-border banks in retail, such as Nordea and Fortis. Other cross-border operations were mostly wholesale, often involving securities and derivatives operations in London. However, retail mergers are starting to take off. Examples are Santander-Abbey National in 2004 and Unicredito-HypoVereins and ABN AMRO-Antonveneta in 2005. Cross-border banking occurs across the EU and is not confined to the eurozone. London, and the UK, are central players. We argue therefore that EU-wide solutions rather than eurozone solutions are needed, following the legal framework of the EU banking directives.

The emergence of pan-European banks has implications for the role of both home country and host country authorities.

The emergence of pan-European banks has implications for the role of both home country and host country authorities. Functions such as risk management, treasury and internal audit are increasingly run on a group-wide basis at headquarters. These banks ask, for efficiency reasons, for a single supervisor for the whole bank, including the separately licensed subsidiaries. This reinforces the role of the home supervisor. Next, banks with headquarters in one EU country can have a large presence in other EU countries. This was not the case at the start of the single market for financial services, but is now starting to occur, particularly in the new Member States. Between 40 and 90% of the banking systems in the new Member States are foreign owned – mostly by West-European banks (ECB, 2005). Host country authorities have a legitimate interest in the financial stability of their market.

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What are the implications of these trends? The home supervisor will have an EU-wide coverage as consolidating supervisor, but the home country may want to confine the costs of a possible recapitalisation to the bank's home operations and national depositors. The home country may thus not be prepared to pay for the rescue of the bank's presence and depositors in other EU countries. The problem becomes more acute for large banks in small countries. The cost relative to the fiscal budget may be large in small countries, so the home country simply cannot bear the full burden alone (Dermine, 2000).[2] But this problem is also relevant for large banks in larger countries. There seems to be an assumption that the home country will pay in full, because of the home country principle for

[2] The Swiss banks, for example, may be "too big to save". We understand that the professed policy of the Swiss authorities is that they could only help the Swiss banks up to a limited (capped) amount and also only the domestic part of such banks.

supervision. This assumption is, we suspect, wrong, as national authorities are not inclined to make cross-border transfers. And even if they were to propose doing so, national parliaments may demand that tax-payers moneys are only used for domestic purposes.

Working on such a false (optimistic?) assumption could aggravate a crisis, as it might slowly become clear in the course of a crisis that the national authorities were prepared to cover only the domestic parts of their international banks. History shows that countries are not likely to bail out foreign depositors. An example is the rescue of the Italian bank Banco Ambrosiano in 1982. While the rescue operation covered the Italian operations, the Luxembourg subsidiary was originally not included (Goodhart and Schoenmaker, 1995).

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It may be becoming increasingly difficult for a host country to manage financial stability, as the home supervisor takes all the main decisions on supervisory and stability matters. As explained more fully in the next section, Freixas (2003) has modelled the co-ordination between national authorities in crisis management.[3] His model indicates an underprovision of recapitalisation facilities in the case of improvised co-ordination. *Ex post* bargaining will lead to co-ordination failure. In theory, the problem for host countries only concerns branches. But banks manage their subsidiaries increasingly as dependent parts of the parent bank and prefer to avoid solo supervision of the subsidiary by the host country (in addition to consolidated supervision by the home country). Given that many key functions of international banks have become centralised, it could be extremely difficult for a host country to keep a subsidiary alive independently of the parent bank, even should it be willing in principle to do so.

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Before moving to solutions for home-host co-ordination, we note that early closure of problem banks would reduce the problem. There is an early precedent in European banking in the 18th and 19th centuries. An important feature of the free banking system in Scotland was unlimited liability (White, 1984). Unlimited liability provided shareholders with an incentive to behave prudently. Shareholders thus had an incentive to tackle problems timely, including, if needed, to close the bank. A more recent example of early closure is the prompt corrective action scheme (FDICIA) in the USA (Benston and Kaufman, 1997), which provides for a graduated series of sanctions that first may and then must be applied by the regulators to floundering banks. Finally, if capital drops below 2%, shareholders can recapitalise the bank, otherwise authorities will take it over and deal with it as appropriate. Early closure of problem banks would also be useful

[3] Following Freixas (2003), we focus on the fiscal costs of lender of last resort and solvency support operations in a multi-country context. We do not look at deposit insurance arrangements. Deposit insurance issues for multi-national banks also raise thorny home-host issues.

in the EU (see also the European Shadow Financial Regulatory Committee (2005) for a similar proposal). A concern has been that early closure of a bank, before it becomes patently insolvent, could be held to be tantamount to the expropriation of shareholder value. A riposte to this is that, under FDICIA, shareholders still have the option of recapitalising their bank. Moreover, supervisors have a duty to shut banks that appear unsafe. Finally, if bank assets do turn out to be more valuable than (fixed interest) bank liabilities, this excess would be available for the shareholders.

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To improve home-host co-ordination, we believe that the home supervisor should have an EU-wide mandate, but that, to incorporate their interests, host countries should also be involved. An example can be found in the Capital Requirements Directive (incorporating Basle II into European legislation). Responding to the centralisation and integration of risk management at banks' headquarters, the CRD has a provision that the consolidating or home supervisor can approve the internal model of a bank after 6 months of discussion with the host supervisors.[4] This may create an incentive problem, the so-called hold-up problem. The home supervisor waits 6 months and then takes his own decision.

To solve this latter problem, a committee could be established to intermediate between home and host supervisors. For example, the relevant European bodies (President of the ECB, Chairman of CEBS and Commissioner for DG Internal Market) could appoint a five to seven member committee. Members should be appointed on the basis of job profiles and proven expertise. The host countries would have a right to appeal to this committee. To avoid having one country persistently appealing, appeals might normally need to come from at least two countries. The committee could then publish its findings in full to the members (thereby including the grounds of the conclusions), while only the conclusions would be made fully public. This is a policy of 'naming and shaming', as there would be no legal framework for sanctions.

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A more formalised system would be the creation of a supranational body. A central European Financial Authority, in tandem with the national financial supervisors, would form a European System of Financial Supervisors. In this system, the home country takes the lead for EU-wide operations of banks, but incorporates the input from host countries. If the home country is held to be failing to do this job effectively, and/or is criticised by the host country(ies), the central European Financial Authority could overrule the home supervisor and take decisions (see Schoenmaker

[4] It should be noted that the CRD specifies that "the consolidating supervisors shall do everything within their power to reach a joint decision".

and Oosterloo, 2006 for further details). Such a European System of Financial Supervisors could lead to duplication between the central body and the national supervisors. Moreover, the political appetite for this type of solution is currently limited.

3. Mechanisms for fiscal burden sharing

The fiscal costs of resolving a banking crisis can be large. In a world-wide sample of 40 banking crisis episodes, Honohan and Klingebiel (2003) find that governments spent on average 13% of national GDP to clean up the financial system. Scandinavia and Japan, for example, experienced a severe banking crisis in the 1990s. While the Scandinavian crisis amounted to a fiscal cost of 8% of GDP, the long-drawn-out Japanese crisis added up to a total fiscal cost of 20% of GDP. There are also broader, real, costs to the welfare of the economy. Hoggarth *et al* (2002) find that the cumulative output losses incurred during crisis periods are roughly 15–20% of GDP. In this paper, we do not take a view on whether public sector recapitalisations (in effect, temporary nationalisation) are desirable or not. We work on the assumption that authorities would want to recapitalise one or more problem banks if the social benefits (in the form of preserving systemic stability) exceed the costs of the recapitalisation; this has, after all, been the historical experience.

In a multi-country setting, the costs of such recapitalisation can be shared between countries. Freixas (2003) shows in a model that *ex post* negotiations on burden sharing lead to an underprovision of recapitalisations. Countries have an incentive to understate their share of the problem so as to incur a smaller share in the costs. This leaves the largest country, almost always the home country, with the decision whether to shoulder the costs on its own or to let the bank close, and possibly be liquidated. Freixas (2003) labels this mechanism, which reflects the current arrangements in Europe, as improvised co-operation. At the outset, we note that burden sharing in the case of an international banking crisis is a general problem. The Freixas model applies to any multi-country setting. We confine our search for solutions to the European setting, as a jurisdiction is available in the EU to implement binding agreements amongst nation states. Treaties with a wider coverage of states can, of course, be signed, but there is no international enforcement mechanism.

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The policy question is whether to do nothing (and keep the current arrangements with a likely underprovision of recapitalisations) or to move to arrangements at the European level. The trends described in Section 2 illustrate that this policy question is becoming more acute. On the one hand, the role of the home authorities is increasing because of the cen-

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tralisation of key management functions. On the other hand, the cross-border presence of banks is rising, notably in the 10 new member states but also in the former 15 member states, while the tools for host authorities to manage financial stability remain limited.

The purpose of this paper is to explore *ex ante* mechanisms for burden sharing in Europe to overcome the co-ordination failure in *ex post* negotiations. Some would argue that, to counter moral hazard, crisis management arrangements for lender of last resort and solvency support should not be specified in advance. We agree that constructive ambiguity regarding the decision to recapitalise, or not, can be useful to contain moral hazard. But the model of Freixas (2003) demonstrates that additional ambiguity over burden sharing would lead to fewer recapitalisations than is socially optimal. Our goal is to attain the same clarity at the European level as we currently have at the national level. At the national level, the financial risk of support operations, if any, is carried by the ministry of finance and the central bank, which therefore decide these operations. Clarity at the European level about how to share the costs among treasuries (and central banks) does not increase moral hazard.

Another view, expressed at the Riksbank Workshop[5] at which this paper was initially presented, was that the support for failing banks that are too big to close should come from insurance, rather than from public sector use of taxpayers' funds. The argument was that the authorities should identify such 'systemic' banks and require them to pay premia (in addition to existing deposit insurance) into a special European Deposit Insurance Fund (EDIC), which might be topped up, if necessary, via reinsurance. This Fund should then be able to handle all but the most extreme tail events.

There would, however, be a transitional problem while the EDIC was initially accumulating premium income; what if the crisis came early? Moreover, crises affecting banks are commonly macro-economic and general in nature, following asset market collapses and economic downturns, rather than individual and idiosyncratic (Scandinavia rather than Barings). In other words, such crises are not easily diversifiable events, but contagious epidemics. For such reasons, deposit insurance schemes have at times run out of funds (as did the FSLIC in the USA) and, more generally, lack credibility without the ultimate back-up of pledged government support. While we have some sympathy for the concept of an (additional) EDIC, we nevertheless believe that this only takes the issue of burden sharing back one step. In order to establish a credible EDIC, it would be

[5] Workshop on the future regulatory framework for banks in the EU, 13–14 February, 2006.

necessary to decide how the burden of meeting shortfalls from the calls upon its funds could be met.

When designing *ex ante* mechanisms for burden sharing, the following issues arise. First, should all countries join in the burden sharing (in a banking crisis, every country pays relative to its size) or only the countries involved (countries pay relative to the national presence of the problem bank)? Second, should the burden be shared according to a fixed or a flexible key (accommodating the specific circumstances)? In this paper, we explore two main mechanisms for *ex ante* agreement on burden sharing at the European level:

In this paper, we explore two main mechanisms for ex ante agreement on burden sharing at the European level: a general fund and specific burden sharing.

1. A general fund to shoulder the burden, financed from the seigniorage of the ECB (and of other central banks). All countries contribute according to a fixed key in this scheme;
2. Specific sharing of the burden, financed directly by the involved countries according to some key reflecting the geographic spread of the business of the failing bank.

The working of the mechanisms will be illustrated with examples of sharing the burden for the recapitalisation of a large European bank. Table 1 provides some details on the 30 largest banks in Europe. The micro-problems likely to cause the failure of a large bank are threefold: 1) accounting problems leading to a wrong presentation (i.e. overstating) of the value of assets; 2) one-off frauds (e.g. Barings in Singapore); 3) large creditor defaults if banks fail to diversify appropriately (e.g. Crédit Lyonnais' exposure to the film industry in Hollywood).

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Our results with one bank can easily be generalised to multiple banks. However, moving to the mode of a full-blown banking crisis makes the differences between the mechanisms less relevant and macroeconomic factors, such as a deep recession or large terms of trade decline, come into play (see, for example, Caprio and Klingebiel, 1997; Kaminsky and Reinhart, 1999; Honohan and Klingebiel, 2003). During such crisis periods, the authorities (government and central bank) will need to stand behind the banks and implicitly or explicitly guarantee their deposits to restore confidence in the financial system. This was the experience of the Scandinavian authorities during the 1990s.

3.1 GENERAL FUND

In the first mechanism, a European fund could be set up to shoulder the burden of a recapitalisation. This fund would be financed *ex post* by a part of the seigniorage of the ECB. Goodhart and Smith (1993) advocated

TABLE 1. TOP 30 EUROPEAN BANKS (2004 FIGURES)

Bank (Country)	Tier 1 Capital in € bn	Assets in € bn	Assets h (%)	Assets e (%)
1. HSBC (UK)	49.4	937.4	32	11
2. Crédit Agricole (France)	46.5	912.6	77	15
3. Royal Bank of Scotland (UK)	32.2	821.9	68	10
4. HBOS (UK)	26.9	557.7	90	5
5. BNP Paribas (France)	26.2	905.9	41	28
6. Santander Central Hispano (Spain)	24.4	575.4	37	52
7. Barclays Bank (UK)	23.6	728.4	75	5
8. Rabobank Group (Netherlands)	22.6	475.1	72	9
9. ING Bank (Netherlands)	21.1	616.5	48	37
10. UBS (Switzerland)	20.1	1125.5	11	33
11. ABN AMRO Bank (Netherlands)	19.8	608.6	36	22
12. Deutsche Bank (Germany)	18.7	840.0	25	41
13. Groupe Caisse d'Epargne (France)	18.4	543.9	50	38
14. Société Générale (France)	18.4	601.1	56	24
15. Crédit Mutuel (France)	18.2	387.3	n.a.	n.a.
16. Lloyds TSB Group (UK)	16.6	396.7	94	3
17. Credit Suisse Group (Switzerland)	15.9	706.8	21	33
18. HypoVereinsbank (Germany)	15.7	467.4	56	40
19. Banca Intesa (Italy)	15.6	274.6	71	20
20. Banco Bilbao Vizcaya Argentaria (Spain)	14.7	311.1	78	3
21. Fortis Bank (Belgium)	14.3	484.1	57	32
22. Groupe Banques Populaires (France)	13.4	250.4	n.a.	n.a.
23. Unicredit (Italy)	11.9	265.8	70	21
24. Dexia (Belgium)	11.0	389.1	12	65
25. SanPaolo IMI (Italy)	10.9	211.1	79	16
26. Nordea Group (Sweden)	10.6	276.0	30	67
27. Commerzbank (Germany)	10.5	424.9	75	15
28. KBC Bank (Belgium)	9.8	249.2	40	22
29. Bayerische Landesbank (Germany)	9.4	324.8	72	14
30. Caja de Ahorros y Pen. de Barcelona (Spain)	8.4	113.1	n.a.	n.a.
Average top 30 banks	**19.2**	**526.1**	**55**	**25**

Source: Top 1000 World Banks, The Banker, July 2005 for Tier 1 Capital and Assets; Update of Schoenmaker and Oosterloo (2005) for division of assets between home country and rest of Europe.

Notes: Banks are ranked according to 'capital strength' (Tier 1 Capital as of year-end 2004). Home is defined as a bank's assets in its home country (denoted by h); rest of Europe is defined as a bank's assets in other European countries (denoted by e); rest of world is defined as a bank's assets outside Europe (figures not shown). The three categories add up to 100%. The abbreviation 'n.a.' means 'not available'.

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using such seigniorage as a source of funding for the EU's federal budget. There is no need to have a pre-funded (*ex ante*) fund, if receipts are invested nationally (Ricardian equivalence). Whereas there could be some advantages in building up a *masse de manoeuvre* in advance, there are strong political arguments against, since such *ex ante* contributions would raise the measured fiscal deficit. During a crisis, bonds are issued by the ECB to finance the recapitalisation. These borrowed moneys are used to recapitalise the failing bank. This would cover the full nominal value needed for the rescue. The annual servicing costs of the bonds would be

paid from the seigniorage fund and born by the governments. First, interest on the outstanding bonds (flow) is paid out of the fund. Second, any loss on the bonds (stock) is also paid out of the fund. This is a sinking fund for the amortization of losses. Each participating country would pay into the fund, as and when needed, according to its relative share of the seigniorage proceeds. The relative shares can be determined with the ECB capital key for sharing the monetary income of the eurozone countries (see table A.1 in Annex 1). The ECB capital key for a country is the arithmetic average of a country's share in total GDP and its share in total population. In Box 1 we illustrate the working of the general fund. The general fund mechanism is akin to a rescue by the ECB, which would then need to be backed explicitly by the national governments (possibly via the NCBs).[6]

Box 1. Numerical example of a general fund for burden sharing

The working of a general fund for burden sharing can be illustrated with a numerical example for a possible recapitalisation of a representative European bank. We make the following assumptions:

1. There is a large loss: equity is wiped out and there is negative equity of half of tier 1 capital;
2. Adequate recapitalisation requires the restoration of tier 1 capital;
3. In a worst case scenario, the write down is the full negative equity with a margin of 1/4 of tier 1 capital;
4. Write down is over a period of 4 years (given a loss of this extent, it will take at least 3 to 4 years to restore the bank to health and sell it back to the private sector);
5. Annual interest is 5%;
6. Tier 1 capital of a 'representative' European bank is €20 bn (average of top 30 banks in table 1);
7. All EU countries join the general fund.

The ECB needs to issue €30 bn of bonds to recover the negative equity of €10 bn and to restore tier 1 capital of €20 bn. The annual interest payment on the bonds is €1.5 bn. The sinking fund for write down is €15 bn. The annual write down is €3.75 bn. These amounts add to a total annual cost for countries of €5.25 bn. Countries that join the burden sharing scheme pay this amount out of their seigniorage according to the ECB capital key (see table A.1). The annual contribution is, for example, €0.78 bn (14.9% of €5.25 bn) for France and €1.11 bn (21.1% of €5.25 bn) for Germany.

The general fund mechanism is an example of generic burden sharing by countries (proportional to the size of the participating countries). The costs of recapitalisation are smoothed over the participating countries, irrespective of the location of the failing bank. In addition, the costs are smoothed over time. From a macro-economic perspective, these smoothing mechanisms are positive.

The general fund mechanism is an example of generic burden sharing by countries (proportional to the size of the participating countries). In addition, the costs are smoothed over time.

[6] While a central bank can create unlimited amounts of liquidity, its capacity to absorb losses is limited to its capital (Goodhart and Schoenmaker, 1995). To give the ECB a credible role in rescues (lender of last resort and/or recapitalisation), its capital needs to be explicitly underwritten by the national governments.

However, we see three major problems with such a general fund mechanism.

However, we see three major problems with such a general fund mechanism.[7] First, this construction will lead to international transfers between countries (a country may have to contribute its share to the recapitalisation of a problem bank that does not operate in its jurisdiction). Countries are not keen to sign up for schemes with built-in transfers, unless there is strong political commitment for solidarity (e.g. development aid and, less so, European regional funds). Second, general burden sharing generates adverse selection and moral hazard problems. Countries with weak banking systems profit over countries with strong banking systems. Therefore, countries with strong banks are less inclined to sign up (adverse selection). As the link between payment for a recapitalisation and responsibility for ex ante supervision is weakened, supervisory authorities may feel less of an incentive to provide an adequate level of supervisory effort (moral hazard). Third, burden sharing arrangements are subject to the free-rider problem. Countries that do not sign up to burden sharing still benefit from it, as the stability of the European financial system is a public good.

There are also some technical issues. What happens if the fund is exhausted? Box 1 illustrates that a large bank can be saved at a moderate annual cost for countries. The general fund can thus shoulder the recapitalisation of a few large banks. Multiple, contagious bank failures are a different case, as explained above. The authorities will then need to take more drastic action to restore confidence in the financial system. Moreover, the authorities may also need to take measures, such as reductions in interest rates, to counter the macro-economic causes of the banking crisis. Another issue is what to do with countries outside the euro-zone? We do not see a problem. The integration of European financial markets, as well as its regulatory backing, is EU-wide. All EU countries ('in' or 'out') can decide to join the burden sharing arrangement. This can only be done on an *ex ante* basis. If out-countries join the arrangement, their seigniorage is then notionally included in the fund. The General Council of the ECB (or a committee reporting to the General Council) is then the relevant decision-making body at the ECB (see section 4 on decision-making details). It is even conceivable that non-EU countries, such as Switzerland, might want to join. Switzerland has large banks (UBS and Credit Suisse in the top 30) with an equally large cross-border presence in Europe.

[7] A problem, not discussed here, is that the general fund mechanism may violate the EU Treaty's prohibition on monetary financing.

3.2. SPECIFIC SHARING

In the second mechanism, the burden is shared only by countries in which the failing bank is present. Each involved country pays its 'relevant' part of the burden. A key can be designed to reflect the relative presence of the problem bank in the different countries. Sullivan (1994) has examined three indicators – assets, income and employees – for measuring the geographic segmentation of international firms. Using just a single indicator increases the margin for error, as the indicator could, for example, be more susceptible to external shocks. Sullivan (1994) has developed the Transnationality Index, which is calculated as an unweighted average of (i) foreign assets to total assets, (ii) foreign income to total income, and (iii) foreign employment to total employment.

In the second mechanism, the burden is shared only by countries in which the failing bank is present. A key can be designed to reflect the relative presence of the problem bank in the different countries.

The selection of an adequate key should be related to the aim of a possible rescue (i.e. the social benefits). We see two main aims. The first is to mitigate effects on the real economy. The second is to mitigate the impact on the wider financial system (contagion). We do not include a third objective of helping depositors. Mandatory deposit insurance already exists in the EU (with a minimum coverage of € 20,000 per depositor) to take care of depositors. A good proxy for the real and contagious effects of a bank failure is assets. On the real side, assets (including loans) reflect the credit capacity of a bank. The availability of credit will be disrupted in a failure. On the contagion side, assets reflect the size of a bank. The contagious impact is (partly) related to the size of a failing bank. To minimise the margin for error, assets can be taken from audited accounts (see also below). We have calculated how the assets of the top 30 European banks are allocated between the home market (*h*), the rest of Europe (*e*), and the rest of the world (*w*). While these three categories add up to 100%, table 1 only shows the home market and the rest of Europe shares. In Box 2 we illustrate the working of the specific burden sharing scheme.

While we, therefore, argue that assets represent a better key than deposits, there are various ways of measuring them, for example, risk-weighted assets or not, and historic cost or market value. At this early stage in the discussion we do not want to be too specific, except to note that, in order to deter gaming (see below), the key should relate to the last pre-crisis set of audited figures, not to post-crisis estimates.

An important advantage of specific sharing arrangements is that there are almost no international transfers. Countries that experience the benefits of the recapitalisation, also pay for it. Provided assets are a good proxy for measuring the benefits (i.e. averting the real and contagious effects of a bank failure), the costs and the benefits are fully aligned. The

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specific sharing scheme is also incentive compatible: the fiscal authorities as principal will require from the supervisor as agent an optimal level of supervisory effort.

As in the general fund scheme, however, the specific sharing is subject to a free-rider problem.

As in the general fund scheme, however, the specific sharing is subject to a free-rider problem. This would be a problem for the United Kingdom in particular. All major banks have a large presence in London: 24% of banking assets in the EU are located in the UK, whereas the UK's share in the EU economy is far smaller, 16.6% of GDP or 14.4% of the ECB capital key (see table A.1). So it might be more difficult for the UK to join such a specific sharing arrangement. The UK would have to pay a sizeable proportion of such burden sharing, as can be seen in the example of Deutsche Bank in Box 2. At the same time, the UK might also experience sizeable stability benefits from pre-arranged recapitalisations.[8]

Box 2. Numerical examples of specific burden sharing

The working of a specific burden sharing program can be illustrated with a numerical example for the possible recapitalisation of a few large European banks. Three different banks are taken to demonstrate the specifics of each case: a pan-European bank (Deutsche Bank), a regional bank (Nordea) and a global bank (HSBC). Again, we make the following assumptions:

1. There is a large loss: equity is wiped out and there is negative equity of half of tier 1 capital;
2. Adequate recapitalisation requires the restoration of tier 1 capital;
3. Write down is the full negative equity with a margin of ¼ of tier 1 capital;
4. Write down is over a period of 4 years;
5. Annual interest is 5%;
6. All EU countries join the specific burden sharing.

To rescue Deutsche Bank, the involved countries need to issue €28.1 bn of bonds. The specific key for Deutsche (in table 1) is used to calculate the respective shares of the countries. Deutsche has 25% of its assets in Germany and 41% in the rest of Europe. The United Kingdom accounts for over half of the assets in the rest of Europe (let's say 21%). So Germany needs to issue €10.6 bn of bonds, the UK €8.9 bn and certain other EU countries €8.5 bn.[9] The respective annual costs to service (interest and write down) the bond issue are €1.86 bn for Germany, €1.56 bn for the UK and €1.49 bn for the other EU countries.

To rescue Nordea, the involved countries need to issue €15.9 bn of bonds. Nordea has 30% of its assets in Sweden and 67% in the rest of Europe. The rest of Europe is divided into 26% in Denmark, 21% in Finland, 15% in Norway, 1% in Poland and the Baltic States and 4% in other EU countries. So Sweden needs to issue €4.9 bn of bonds, Denmark €4.3 bn, Finland €3.5 bn, Norway €2.4 bn and certain other EU countries €0.8 bn. The respective annual costs to service the bond issue are €0.86 bn for Sweden, €0.75 bn for Denmark, €0.61 bn for Finland, €0.42 bn for Norway and €0.14 bn for the other EU countries.

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[8] An issue for discussion is whether assets are a good proxy for the presence of banks in the UK. The London operations of the major banks are primarily wholesale. This should make no difference when measuring the contagious effects. But the real effects can be overstated as they are more related to banks' retail than wholesale operations.

[9] As only European countries join the burden sharing, the asset key needs to be rebased to the European part (h+e). The rebased home part (h*100/(h+e)) and the rebased rest of Europe part (e*100/(h+e)) then add up to 100 per cent.

To rescue HSBC, the involved countries need to issue €74.1 bn of bonds. HSBC has 32% of its assets in the UK and only 11% in the rest of Europe. France accounts for 5% of the assets in the rest of Europe. So the UK needs to issue €54.8 bn of bonds, France €8.2 bn and certain other EU countries €11.1 bn. The respective annual costs to service the bond issue are €9.59 bn for the UK, €1.44 bn for France and €1.94 bn for the other EU countries.

An important technical issue is gaming on the key. A country may have an incentive to put pressure on a faltering bank to move assets cross-border or off-balance (securitisation) to reduce its share in any such burden sharing. To prevent last-minute asset movements at the onset of banking problems, we would propose to use the last audited (and published) figures on assets. Moreover, securitisation does not pose a problem if it is properly done (i.e. the risk has really gone from the balance sheet in line with the Basle II rules on securitisation).

Finally, there are some concerns surrounding both mechanisms. First, there is a concern with foreign banks in small countries. What if the bank is systemic in the host country, but not in the home country? The bank might then not be rescued. This could be a problem for the new Member States in particular. To alleviate this problem, the key could be made a function of the assets of the problem bank in a country and the assets of the problem bank in that country divided by the total assets of that country's banking system. The small countries would then shoulder a larger share of the burden and have an, accordingly, larger share in the vote. However, the, mostly West-European, parent banks of the subsidiary banks in Eastern Europe are often large retail banks that are also systemic in the home country.

Finally, there are some concerns surrounding both mechanisms. First, there is a concern with foreign banks in small countries.

Second, it could be difficult to organise burden sharing for truly international banks which have a large part of their business outside Europe. While only a part of the benefit will fall within Europe, the European countries have to pay the full cost. Examples are the Swiss banks (UBS and SBC) and HSBC (see box 2). Moreover, such mechanisms fail to address crisis problems caused by the failures of banks headquartered outside Europe, e.g. in the Americas, Asia or Australia. That said, the specific approach to burden sharing could be undertaken for any international group, not just within the EU. Indeed, the wider the set of countries involved, the better. There would be nothing, in principle, to stop such cross-border burden sharing arrangements being extended beyond the EU to encompass the USA, Australia, Japan, and other willing countries.

Second, it could be difficult to organise burden sharing for truly international banks which have a large part of their business outside Europe.

It should be noted, however, that a legal basis is needed to create binding *ex ante* burden sharing arrangements. We believe that Memoranda of Understanding (MoUs), which are often used between national supervisors (and central banks), will not be sufficient because

It should be noted that a legal basis is needed to create binding ex ante burden sharing arrangements.

MoUs (soft law) are not enforceable. A legal basis (hard law) can be readily provided within the EU (the legal instruments and the institutional framework to negotiate and enforce such instruments are available). Legally binding arrangements beyond the EU (i.e. a full international Treaty) may be much more difficult to get agreed, signed and enforced. An example of legally binding burden sharing in the European context is contained in Annex 2. In the 1960s, a number of member countries of the OECD Nuclear Energy Agency agreed the Paris Convention and the Brussels Supplementary Convention to share the liability costs in case of a nuclear incident.

4. Decision-making framework

The guiding principle for decision-making on crisis management is "he who pays the piper calls the tune" (Goodhart and Schoenmaker, 1995). So long as recapitalisations are organised on a national basis, the national governments will normally want to oversee and undertake the function of supervision. That is the current set-up for financial supervision and crisis management, which are nationally organised. As there is no fiscal back-up to the ECB, the ECB is happy to let the NCBs take the lead on lender of last resort operations.

We now move to the question of how a possible European framework for crisis management might work.

We now move to the question of how a possible European framework for crisis management might work. The first step is that supervisors provide information on the severity of problems at banks in difficulties. This input can, for example, be organised through the Committee of European Banking Supervisors (CEBS), the new level 3 banking committee of the EU, or the Basle Committee on Banking Supervision. The former is more likely, as the latter only involves G-10 countries and leaves out non G-10 countries in the EU. CEBS is chaired by one of its members and has a secretariat in London. Teleconference facilities could be used for swiftly assembling information on banking problems. Gathering information to establish the size of the problem bank(s)'s loss should not be a problem. On the one hand, supervisors may have an incentive to underestimate the problem, because of the insurance through the burden sharing scheme (the smaller the loss, the larger the possibility of a rescue). On the other hand, supervisors (like any authority involved in crisis management) may have an incentive to overstate the problem. This is an example of disaster myopia (Guttentag and Herring, 1986). The bias can go either way, but we do not believe it is serious.

The second step is a possible rescue of banks in difficulties. The ECB could provide a proposal whether, or not, to undertake lender of last resort or recapitalisation actions. If out-countries have joined the burden

sharing system, the General Council of the ECB would be the appropriate decision-making body. The ECB's teleconference facilities could be used if needed. If there is a no-vote, national countries could do their own thing.

The third and final step would be that politicians (representing taxpayers) decide on the use of public funds. The key committee to prepare decisions is the Economic and Financial Committee (EFC) in which ministries of finance are represented. The Ministers of Finance in Ecofin would take the ultimate decision. This would, in effect, be the international counterpart of the tripartite decision-making systems (comprising supervisor (FSA), Central Bank and Ministry of Finance), now being established in several individual countries, e.g. the UK.

The European Commission should be involved in such decision-making. DG Internal Market is responsible for the internal market in financial services, while DG Competition is the relevant authority to check on the proper application of EU rules on state aid.

How many parties would be involved in the decision-making? The exact number would be determined by the model. In the general fund mechanism, the supervisors, central banks and ministries of finance of all EU countries (that join the loss-sharing) take part in the decision-making as well as CEBS, the ECB, Ecofin and the European Commission. This is up to 3*25 + 4 parties. In the specific burden sharing mechanism, only the *n* countries involved join the decision-making circle together with the European bodies. This is 3*n* + 4 parties (Goodhart, 2003). To enhance decision-making efficiency, a *de minimis* rule could be applied. For example, countries with less than 5% of the problem bank's assets do not come to the crisis management meeting, unless their small share of the bank's assets is large nationally, e.g. more than 15% of their overall national banking system (as in the case of Nordea in Estonia).

An organisational issue is how the involved countries meet: in an ad-hoc manner or in a fixed format?

An organisational issue is whether the involved countries meet, if and when needed, in an ad-hoc manner or in a fixed format? An example of ad-hoc meetings is the creation of interest groups. The countries that are relevant for each bank are identified. The supervisors, central banks and treasuries of those countries decide among themselves how to organise the meeting. The European framework would provide a fixed format. Given the growing number of pan-European banks, we do not believe it would be efficient to organise each case separately. The fixed format would allow for the inclusion of the relevant European bodies as well as the involved countries. The European bodies can then ensure that the rules of the game (see below) are properly applied.

Again, there are some technical issues. First, a crisis develops rapidly. So the chairman and the secretariat of the relevant committees and bodies have a prime role. Depending on the efficient organisation of the

committee or body (a teleconference can be organised at short notice, etc.), the members can influence the decision. Second, what are the dynamics of the decision-making? CEBS prepares a memo that states the problems at one or more banks. It is sent to the ECB with a copy to relevant members of Ecofin, so they can start to prepare. The ECB (not the European Commission) makes the proposal, if needed, within a few hours/half a day, because this requires financial stability experts. Third, how to vote? CEBS and the ECB can follow their own rules. The vote on the use of public money in Ecofin is different. In the general fund case, the vote will often be 'no' when banks pose problems in just a few countries.[10] In the specific sharing case, only countries involved subject to the *de minimis* rule vote. That can be done by simple majority voting with equal votes for everybody. The choice of voting scheme is a political, not an economic, issue.

What are the rules of the game? There is a precedent in European history for speedy confidential decision-making by many international players. In the former European Monetary System, confidential decision-making on realignments took place over the weekend by ministers of finance, central bankers and the European Commission. The rules of procedure of that committee, including the decision-making rule, could serve as a starting point for thinking about the development of a European structure for crisis management (Kremers, Schoenmaker and Wierts, 2001). More specifically, there should be a rule distinguishing cross-border crises with European burden sharing from national crises with no burden sharing. We note that burden sharing on a cross-border basis will assist cross-border mergers, as national authorities can also share the problems. In the design of the rules, proper attention should be paid to the incentives of all involved parties.

Finally, the recapitalisation we envisage would involve sacking the pre-existing management and writing down shareholder value to zero. This represents, in effect, temporary nationalisation. Somebody then has to appoint, and monitor, a new management team. We envisage that this task should normally be delegated to the authorities in the home country, subject to accountability, including annual reports to all those involved in such burden sharing. Those reports should also include estimates of likely time, and method, for re-sale to the private sector, i.e. exit. Such reports could then be debated by the same groups as initiated the recapitalisation.

[10] Some US academics would say that is no problem, as it will lead to fewer recapitalisations.

5. Conclusions

Our concern is simple and straightforward. We doubt whether, in the event of the failure of a large, integrated, cross-European bank, the home country supervisors, politicians and taxpayers would be prepared to meet the costs of recapitalising such a bank in its entirety. While depositors would be protected, up to a point, by national deposit insurance, the bank itself, perhaps outside its own country, would then probably be forced to close, and be liquidated. Such abrupt closure could cause widespread concern, possible panic, and systemic effects.

While we would not want to prejudge whether closure might, or might not, be preferable to recapitalisation, we feel reasonably sure that it would not be possible to bargain internationally over burden sharing after the event, *ex post* (see also Freixas, 2003). It would not work. If pan-European burden sharing, to allow for cross-border recapitalisation, is to be made possible, it would have to be on the basis of agreed *ex ante* rules.

If pan-European burden sharing, to allow for cross-border recapitalisation, is to be made possible, it would have to be on the basis of agreed ex ante rules.

We have therefore explored two alternative sets of *ex ante* burden sharing mechanisms. The first is a general mechanism, based on the use of seigniorage funds. While this has some attractive smoothing properties, it runs into problems of causing cross-border fiscal transfers, and adverse selection, moral hazard and free-rider concerns. The other alternative is a specific burden sharing mechanism. This has somewhat fewer problems, but might cause particular problems for the UK. There would also be a number of technical problems, e.g. of preventing 'gaming'.

For its implementation, any such international, *ex ante*, burden sharing system would, unfortunately, require a complex, and somewhat unwieldy, decision-making process. We have outlined how this might work. But if it were established in advance, simulated 'war-games' could be undertaken to try to iron out complications, so that a real crisis could be handled more expeditiously. Again we emphasise that *ex post* improvisation will not work. To be effective, any cross-border rescue mechanism should be established *ex ante*. Any decision to move to any such European arrangement, and the choice of a particular mechanism for burden sharing, would, of course, be determined politically.

For its implementation, any such international, ex ante, burden sharing system would, unfortunately, require a complex, and somewhat unwieldy, decision-making process.

Of course, if the whole exercise, involving supervision, lender of last resort, and recapitalisation, could be handled at the central EU level, then much of the above complexity could be avoided. But it cannot; recapitalisation, and sometimes lender of last resort, need fiscal back-up, and no central fiscal competence is available for this purpose. Hence both LoLR and recapitalisation have to be supported by national Treasuries, with federal bodies playing, at best, a co-ordinating role.

Fiscal and supervisory arrangements are inter-related and should move in tandem, if at all.

With the ongoing integration of European financial markets, symbolised by the emergence of pan-European banks, there may be a future need for European arrangements for financial supervision and stability. We have argued that fiscal and supervisory arrangements are inter-related and should move in tandem, if at all.

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Annex 1 Country keys

Table A.1 contains several keys that can be used to share the costs in the event of a general burden sharing mechanism for a banking crisis. The ECB capital key for a country is the arithmetic average of a country's share in total GDP and its share in total population. The ECB capital key is used to share the monetary income (seigniorage) of the ECB. The GDP key is a country's share in total GDP. GDP reflects the wealth of a country and is an indirect indicator of the size of a country's financial system. The assets key is total assets of credit institutions (banks) in a country divided by total assets of EU-25 credit institutions. The banking assets key is a direct indicator of the size of a country's banking system.

TABLE A.1. COUNTRY KEYS (IN %; 2004 FIGURES)

Country	ECB capital key	GDP	Assets
Austria	2.1	2.3	2.2
Belgium	2.6	2.7	3.2
Cyprus	0.1	0.1	0.1
Czech Republic	1.5	0.8	0.3
Denmark	1.6	1.9	2.1
Estonia	0.2	0.1	0.0
Finland	1.3	1.4	0.7
France	14.9	15.9	15.2
Germany	21.1	21.4	22.7
Greece	1.9	1.6	0.8
Hungary	1.4	0.8	0.2
Ireland	0.9	1.4	2.5
Italy	13.1	13.0	7.8
Latvia	0.3	0.1	0.0
Lithuania	0.4	0.2	0.0
Luxembourg	0.2	0.2	2.4
Malta	0.1	0.0	0.1
Netherlands	4.0	4.7	5.8
Poland	5.1	1.9	0.5
Portugal	1.8	1.4	1.2
Slovenia	0.3	0.3	0.1
Slovakia	0.7	0.3	0.1
Spain	7.8	8.1	5.9
Sweden	2.4	2.7	2.0
United Kingdom	14.4	16.6	24.0
Total EU-25	**100**	**100**	**100**

Source: Website ECB (www.ecb.int) for ECB capital key; EU Banking Structures, ECB (2005) for GDP and Assets.

Annex 2 Burden sharing after a nuclear incident

This annex provides an example of international burden sharing in the event of a nuclear incident. A general mechanism is applied to share the burden. This example is interesting for two reasons. First, the geographical scope of damage caused by nuclear accidents is not confined to national boundaries. The meltdown of the Chernobyl reactor in 1986 is a clear example of an incident with severe consequences both in the former Soviet Union and in other countries. The pure form of externalities in nuclear incidents (partly) explains the choice of a general mechanism. Second, the Paris Convention and the Brussels Supplementary Convention are legally binding arrangements. The Conventions provide for a Tribunal to settle disputes amongst member countries.

A significant number of member countries of the OECD Nuclear Energy Agency are party to the Paris Convention on Third Party Liability in the Field of Nuclear Energy, established in 1960, and to the Brussels Convention Supplementary to the Paris Convention, established in 1963. These Conventions arrange the amount of compensation for damage which might result from an incident in a nuclear installation used for peaceful purposes. After the most recent update in 2004, the scheme works as follows:

1. Liability up to € 700 million rests on the operator of a reactor (i.e. a nuclear installation). The operator is required to insure his liability (Paris Convention);
2. Liability from € 700 up to 1200 million rests on the country in whose territory the liable reactor is situated (Brussels Supplementary Convention);
3. Liability from € 1200 up to 1500 million is shared among all participating countries (Brussels Supplementary Convention).

The third tier is international burden sharing. The Brussels Supplementary Convention is basically a West-European Treaty administered by the OECD. The contracting parties are 13 European countries: the former EU-15 countries (except for Austria, Greece, Ireland, Luxemburg and Portugal), Norway, Slovenia (the first East-European country to join) and Switzerland (to be a party soon). The burden sharing arrangement is an example of general burden sharing. The burden sharing key was originally based for 50% on a country's share in total GDP and for 50% on a country's thermal power of reactors in its territories as a ratio of total thermal power of reactors in all participating countries. In 2004 the key was renegotiated to 35% related to GDP and 65% related to thermal power. The

burden sharing mechanism has not been invoked since its inception in the 1960s.

Article 17 of the Brussels Supplementary Convention provides for the settlement of disputes between member countries. After bilateral consultations (6 months) and multilateral consultations (a further 3 months) between member countries, the dispute can be submitted to the European Nuclear Energy Tribunal.

Cross-border financial supervision in Europe: Goals and transition paths*

BY DAVID G MAYES
David Mayes is Adviser to the Board at the Bank of Finland

In this paper, I consider how the authorities in European countries might work together to ensure a framework for the efficient supervision of cross-border banks that are of systemic importance in at least one country, in a way that enables each country to claim credibly that it will be able to maintain financial stability. After reviewing the options, I argue that a collegial approach to supervision, where all the authorities are jointly responsible under a strengthened lead supervisor, might work well in normal times. However, maintaining financial stability calls for some form of hard-law international agreement among the partners on how problems will be avoided and handled, not simply a Memorandum of Understanding. This involves an explicit commitment to Structured Early Intervention and Resolution, with rules for Prompt Corrective Action and a new legal basis whereby the resolution of a bank in difficulty is feasible without a break in its operations, without a taxpayer bailout and with a requirement to minimise losses, in a manner similar to that in the United States. While in the short run, with a small number of banks involved, the lead country could be responsible for resolution on a case-by-case basis, in the longer run a limited European Deposit Insurance Corporation might be the way to go.

If we were discussing an ideal world for handling a European financial supervision that could cope with large, complex cross-border institutions, the task would be relatively straightforward. Clearly, everything would be much simpler if we had a single legal framework and a set of detailed regulations that were simply translated into the various national languages.

* The ideas expressed in this article are my own and designed to promote discussion. They do not necessarily coincide with any views that may be held by the Bank of Finland, the Finnish Supervisory Authority or my colleagues in those institutions. I am grateful for the help of Esa Jokivuolle, Jukka Vesala and Kimmo Virolainen in the preparation of this paper and for the comments of the participants at the Workshop on The Future Regulatory Framework for Banks in Europe held on 13–14 February 2006 at the Sveriges Riksbank.

We could then have a fairly straightforward discussion about how to handle supervision. We would face the usual choice about whether a single organisation should handle every aspect or whether there should be a separation between prudential and conduct-of-business issues.[1] (This has been labelled the 'Twin Peaks' approach; see Taylor (1995) for example.) In the same way, we can discuss whether there should be separate organisations to supervise the overall holding company, banks within it, insurance and other financial services. We can also debate whether central banks should be supervisory institutions at any of these levels of concentration.[2] Clearly, this gives us the opportunity to have an entire mountain range and various proposals for more peaks have emerged – Di Giorgio and Di Noia, (2003) have four.[3]

Clearly, everything would be much simpler if we had a single legal framework and a set of detailed regulations that were simply translated into the various national languages.

In other words, the debate that occurs within single national jurisdictions could be raised to the international level. But even at the national level, virtually every possible combination of concentration and separation of responsibilities already exists in practice, with firm advocates of the merits of each of them. That debate is extensive in its own right. Furthermore, since Europe is a large area, it would be quite reasonable to expect that some hierarchy in the organisation of supervision would be appropriate. Even if the organisation straddled the boundaries of lower level jurisdiction, as is the case for several Federal Reserve districts in the US, some regional division would be necessary to keep the administration manageable, ensure staff can speak the local language and be familiar with local conventions, facilitate relationships and so on. In this way, supervisory approaches might very well be devised with a distinction between supervised institutions with just a regional presence and those that extend across regions. The first group could be assigned to regional supervisors, while the second would require supervisors in a number of regions and/or a Europe-wide supervisor or co-ordination arrangement.

Even at the national level, virtually every possible combination of concentration and separation of responsibilities already exists in practice, with firm advocates of the merits of each of them.

However, we are a long way from that ideal world. Even if we found the target reasonable, implementing the changes would take time and we would have to decide on the likely time horizon for achieving that objective, as it would affect the process. This might make sense in a Nordic context. Current legislation, institutions and approaches are sufficiently similar for a single approach to be feasible over a ten or twenty year hori-

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1 Schoenmaker (2004, pp.434–7) gives a clear exposition of the synergies that can be achieved by combining the functions and the conflicts of interest that can arise.

2 Currently, of course, there is also diversity in the organisation of the central banking system in Europe; only some countries are members of the EU, which makes their national central bank a part of the ESCB, and a subset of those countries are a part of the euro area, which means that they also participate in the principal activities assembled under the European Central Bank. See Goodhart (2000) for a helpful set of papers considering how the role of lender of last resort provided by central banks and the shared responsibility for financial stability can best be combined in the EU.

3 The article also contains a helpful summary of the previous literature; see their fn. 8 for a list of references.

It makes sense to design a set of institutional arrangements that is appropriate for managing a process of change in a world of increasing cross-border activity and ever closer economic, political and legal integration.

zon, depending on one's optimism about the speed of legislative change. For Europe as a whole, however, the time horizon is so long that the political destination is quite likely to change substantially from what is currently thought likely. It thus makes more sense to design a set of institutional arrangements that is appropriate for managing a process of change in a world of increasing cross-border activity, increasing economic, political and legal integration but without any strong regard for where it will end up. Thus, the steps on the way would stand on their own merits, not just on the merits of the hoped-for end point. While the discussion could be treated as a problem for the future in several EU/EEA countries, in the Nordic-Baltic region it has been brought firmly into the present by Nordea's announcement that it hopes to take advantage of the European Company Directive and restructure itself as a single entity based in Sweden with branches rather than subsidiaries in the other countries in the region (see Mayes, 2005, for a more detailed description). Nordea is already of systemic importance in Denmark, Estonia, Finland, Norway and Sweden and this structural change would completely alter the balance of supervisory responsibilities between the home and the host countries without any matching change in the responsibilities for financial stability. However, because Nordea's shares of the respective markets vary quite considerably, authorities might well disagree about the effort that should be made to avoid various problems. Holthausen and Rønde (2004) show how the outcomes would be clearly suboptimal if supervisors co-operate in a manner whereby they simply pursue their own national interests. A means of coping with this new circumstance needs to be negotiated within the next couple of years and is already well under way (Mayes, 2006).

TABLE 1. NORDEA'S MARKET SHARES IN THE NORDIC COUNTRIES

	Denmark	Finland	Norway	Sweden
Mortgage lending	17%	32%	12%	16%
Consumer lending	15%	31%	11%	9%
Personal deposits	22%	33%	8%	18%
Corporate lending	19%	35%	16%	14%
Corporate deposits	22%	37%	16%	21%
Investment funds	20%	26%	8%	14%
Life & pension	15%	28%	7%	3%
Brokerage	17%	5%	3%	3%

Source: Finnish Financial Supervision Authority.

The Lamfalussy process for financial integration might be seen in the same light. Rather than design a single system, the intention is to harmonise many major facets of the existing systems sufficiently for them to operate together effectively and fairly. What converges is then a matter for market and regulatory processes. There is a tendency to assume that

convergence is generally likely; beyond a certain point, however, markets tend to thrive on variety, except as regards common standards for networks, as in various parts of the financial infrastructure.

Padoa-Schioppa (2004) argues that current processes of moving to a single 'rule book' and 'supervisory convergence' through CEBS (the Committee of European Banking Supervisors) could actually get us to the desired position. In this position, a cross-border institution could organise itself to comply with a single set of rules in all the EU/EEA countries in which it operates. He stops short of the second requirement, suggested by the European Financial Services Round Table (EFR, 2004), that the institution could also deal with a single *lead* supervisor that co-ordinates the activities of the network of responsible supervisors. He repeats the current arrangement of having a *consolidating* supervisor that forms a coherent whole out of the parts of the supervisory process and is responsible for deciding on the approach to be permitted under Basel 2 on capital adequacy and risk management. Schoenmaker and Oosterloo (2004) make the same point – a lead supervisor is necessary and the current 'home-host' arrangements are insufficient.

In this paper I review the available range of plausible options and conclude that it is necessary to go beyond even the EFR (2004) proposals and agree on a single system, applicable to any cross-border financial group, in which a single authority has the lead responsibility, not just for supervision but for taking prompt corrective action and ultimately intervening to resolve any solvency or capital adequacy problems. However, in exercising that lead, the authority must consider the financial stability concerns of all the countries involved. I conclude that the simplest solution would be to have a European level agency, established for this purpose, but that it would be possible, at least in the short run, to operate case by case with the current system. If a European level, with a built-in framework for balancing interests, is not introduced, the existing supervisors need to work together as a 'college' or 'network' led by the home country, with a shared information base and a means of resolving their differences, including the provision of restitution if required.

In this paper I review the range of plausible options and conclude that it is necessary to agree on a single system, applicable to any cross-border financial group, in which a single authority has the lead responsibility.

Home-host: an outdated approach?

Attributing motives retrospectively is easy but it does seem likely that when the home-country responsibility principle for supervising cross-border activity was drawn up, it was expected that direct cross-border activity would be small and multi-country institutions would operate in other

markets largely through subsidiaries.[4] Thus, rather than being clearly multinational companies, international banking groups would be more like a 'multidomestic' set of companies that operate relatively separately (Mayes, 1991, 1997) and have reasonably restricted relationships both with each other and with their parent. The more effective the national legal, fiscal and administrative barriers, the more this separation would be perpetuated.

The home country responsibility for regulating and supervising operations of branches in the host countries is not generally followed outside the EU.

Thus, under the current system, the home country is responsible for regulating and supervising operations in the home country. How this is done will depend somewhat on the structure of the institution, which can be quite complex when there is a range of subsidiaries involved in a variety of financial and non-financial activities. Since we are concentrating on prudential supervision, the same supervisory structure will apply both to direct cross-border activities performed from the home country and to activities performed in other EU/EEA countries through branches of a legal entity in the home country. However, those activities have to be performed according to the rules of the host country in a conduct-of-business sense. We immediately have a lack of continuity, because outside the EU/EEA the host country would normally supervise the activity of a branch. In this context, the EU/EEA approach seems more logical as it is the legal entity's total assets and liabilities that would normally be relevant for meeting claims or obligations. However, their location and indeed currency denomination will affect their usefulness. Outside the EU/EEA there could also be a territorial approach to the handling of assets in the event of insolvency.

Although there is an important legal distinction between branches and subsidiaries, in many respects the practical differences for ongoing supervision may be much more limited.

Inside the EU/EEA, the host country is not able to compel the institution to operate as a locally incorporated subsidiary; elsewhere it could and thereby have the legal neatness of an operation with a separate asset base. But although there is an important legal distinction between branches and subsidiaries, in many respects the practical differences for ongoing supervision may be much more limited. Indeed, they can be reversed. A bank may run its subsidiaries as a highly integrated operation, for instance with integrated risk management, a single treasury operation, common products and so on, giving local management very little independent scope for action. Alternatively, a branch may have substantial autonomy and manage business that is very different from that in the

[4] The home country is the label for the country in which the financial institution or at least its EU/EEA operations is headquartered, host countries being those other countries in which the institution carries out activities. The headquarter country is not immutable. While it needs to be a centre where an institution has a presence, a large majority of the activities can take place in a range of host countries. If the home country's characteristics, such as supervisory or tax regimes, are unattractive compared to those of its major hosts, the headquarters could be expected to migrate if the relative benefits seemed likely to be long term and exceeded the switching costs.

home country. The important distinction may concern insolvency rather than operation. Host countries may be supervising entities whose real management is outside their jurisdiction, while home countries may be supervising branches where the entire operation is effectively abroad.

While it may make sense for the supervisory responsibilities for largely independent entities to be aggregated under a consolidating or lead supervisor, more integrated supervision would probably be more appropriate for entities that are largely integrated. In a complex organisation that is running a number of rather different financial activities, this might involve having one supervisor for the banking activities and another for, say, insurance activities, with consolidation for the group as a whole. However, such rather pragmatic solutions would be rather difficult to build into a legal framework and might encourage undue regulatory arbitrage.

Clearly, then, although current supervisory structures may match legal structures of firms, this does not ensure that the home-host approach meets the needs for which it was designed. It is not necessarily best designed for facilitating the creation of cross-border entities in Europe. Still less is it necessarily well-designed for enabling high quality supervision and the management of prudential risk.

The Committee of European Banking Supervisors (CEBS) is working steadily to put together an efficient means of getting the various supervisors involved in a cross-border group in the framework of the new Capital Requirements Directive (CRD) implementing the Basel 2 framework in the EU/EEA. The guidelines (CEBS, 2006) are designed to promote cooperation and the sharing of information and hence to encourage convergence in supervisory requirements. They help explain how to organise the Supervisory Review Process under the CRD. A detailed set of tables spells out what the roles of the home and the host supervisors are, depending on the circumstances. They do not prescribe a specific approach to maximising the benefits from the host supervisors' detailed local knowledge and the consolidating (home) supervisor's view of the group as a whole. The hope is that by working together, the supervisors will achieve consensus and the outcomes that each of them needs. This is not the same as articulating how the review for the group as a whole can best be undertaken as a co-operative exercise among the members of the supervisory college.

An inter-related problem

When discussing the most suitable approach to supervision, there is a tendency to start from a particular standpoint: for example, what would

If there are unresolvable deficiencies in the design of problem resolution or of deposit and other insurance, that could have implications for the appropriate structure of supervision.

make best sense to current supervisors in the execution of their tasks; what would be most efficient for the supervised institution in the exercise of its business. Indeed, the suitable conduct of supervision has often been treated separately from the suitable means of handling problems, should they occur.[5] Since supervision is the ongoing process and problems are rare, the former tends to drive the latter, whereas the point of having supervision is to make problems manageable. Furthermore, it is clearly not possible to discuss one part of the regulatory framework without considering the others. If there are unresolvable deficiencies in the design of problem resolution or of deposit and other insurance, that could have implications for the appropriate structure of supervision.

Arguing the case backwards, the framework needs to cope with

1. insolvency or sufficiently low capitalisation for the authorities to feel compelled to intervene because of systemic risks
2. insolvency or sufficiently low capitalisation for the authorities to feel compelled to withdraw the licence to trade
3. low capitalisation, breaching regulatory requirements, necessitating prompt corrective action to restore compliance
4. poor performance, requiring some change in ownership or management action to improve performance – but no regulatory breach
5. normal circumstances, under which both the market and the supervisors are satisfied with performance.

In most EU/EEA countries, responsibility rests primarily with the supervisor in every stage, although where the supervisor is not the central bank, the latter may be providing emergency assistance to one or more institutions, providing they are thought solvent, and the government may create special-purpose vehicles for handling serious problems – in the form of investment agencies, supplementary insurance funds, asset management corporations etc. The deposit insurance fund normally plays a passive role and in many countries has almost no staff of its own.

A supervisor primarily charged with ensuring the good running of the system faces a dilemma once an institution starts getting into difficulties.

This is in contrast to the United States and a number of other countries, where a different agency, in the US case the FDIC (Federal Deposit Insurance Corporation), cuts in once problems are threatening to emerge. This counters one of the incentive problems supervisors can face. A supervisor primarily charged with ensuring the good running of the system faces a dilemma once an institution starts getting into difficulties. If it can help the institution recover and recapitalise with the instruments at its

[5] This is emphasised by the two Brouwer Reports (2000, 2001), one on relationships among authorities in Europe in normal times and the other on crisis management.

command, then it can successfully prevent a difficulty from turning into a default or a failure. Even if the mandate is silent on the point, in practice institutional failure may be equated with supervisory failure. In many countries this has tended to encourage forbearance and allowed problems to build up.

If, as in the United States, a second organisation is involved with the objective of minimising losses should a problem occur (in the US case it is to minimise the loss to the deposit insurance fund), then the incentive to keep an institution in being and refrain from really harsh action will be much more limited. It will not be zero; before the 1991 FDICIA (Federal Deposit Insurance Corporation Improvement Act), the FDIC also tended to keep institutions alive (Benston and Kaufman, 1994). In part this was because they are worth more 'alive' than dead even if they are technically insolvent (Guttentag and Herring, 1983). Hence intervention as the problem worsened was mandated by FDICIA, giving the FDIC relatively limited scope to defer action or run institutions itself. This framework of mandatory Structured Early Intervention and Resolution (SEIR) and Prompt Corrective Action (PCA) is also missing in general in the European environment. Action is indeed required under present rules but its timing and nature, as well as the degree of discretion involved, vary considerably across the member states (Nieto and Wall, 2005). Furthermore, the ability of the authorities to intervene early in the EU/EEA is more limited than in the US. In the US, the FDIC is obliged to step in when the leverage ratio falls below 2%. In the EU, however, the authorities are often not in a position to step in and take over a bank as long as its shareholder value is positive even if it is seriously undercapitalised; moreover, the Pafitis case (Hadjiemmanuil, 2003) imposes limits on action, making minimisation of the cost to the deposit insurance fund more difficult.[6] Experience from the Norwegian crisis (Moe et al, 2004) illustrates the importance of being able to intervene early, compared to what was feasible in Finland and Sweden during their crises.

The fact that these issues in the event of difficulty have not been sorted out has implications for decisions about the operation of supervision across borders. In a cross-border environment, not only do the authorities need to be able to act efficiently and effectively under each of the five circumstances listed above but this ability needs to be credible and predictable both to the authorities of the countries involved and to the supervised entities, so that moral hazard is limited. It is by no means clear that this is the case at present. Certainly no government would be

[6] There are some specific difficulties for cross-border deposit insurance that are only briefly touched on here (Mayes, 2005; Mayes et al., forthcoming).

prepared to pre-commit to burden-sharing arrangements without being convinced that at all stages the system would manage the risk and minimise the potential losses.

In the preceding paragraphs I have suggested that there are clear problems with stages two and three. There are also reasons for being somewhat cautious about the market's ability to exert effective discipline in many cases in stage four. The financial institution may not be openly traded for a variety of reasons: because it is part of a wider entity, because it is privately owned, because it is a mutual, because it is state owned, etc. All of this increases the need for supervisors to try to ensure that the system operates well in stage five and hence places greater weight on prevention as opposed to insurance, risk management and resolution of problems.

I have deliberately emphasised these subsequent steps because some of the arguments put forward for arrangements among supervisors in the EU/EEA concern problem resolution rather than supervision per se. If problem resolution can be addressed head on, then it may be more possible to arrive at workable and less complex arrangements for supervision. However, I have deliberately set aside one of the most difficult problems, which is the treatment of systemically important institutions or institutions with systemic functions (Hüpkes, 2005). This is the biggest conundrum for supervisors and has a major impact on the plausible variety of arrangements for cross-border supervision. It is therefore the subject of the next section.

One helpfully comprehensive approach to these issues is the November 2005 Statement by the European Shadow Financial Regulatory Committee (ESFRC, 2005), which envisages three main vehicles:

- a European Banking Oversight Board that would monitor national discretionary decisions that have cross-border implications – they cite the ABN-AMRO-Antonveneta case by way of illustration
- a system of Prompt Corrective Action in all member states
- a European Standing Committee on Crisis Management.

It is no surprise that the ESFRC should be addressing these issues, as their very first statement (ESFRC, 1998) was on 'Dealing with Problem Banks in Europe' and focused on the creation of an SEIR regime in Europe of which PCA forms an important part. What their November 2005 Statement makes clear is their dissatisfaction with the (lack of) progress on most of these key issues. They want to see formal procedures established in order to achieve proper accountability for supervisors in a cross-border frame-

work. Hüpkes et al. (2005) also look at this issue of accountability in a wider context.

Even if it were thought desirable, a simple transposition of the US system to the EU would not be possible (Eisenbeis and Kaufman, 2005). A crucial difference from the US system is the absence of a federal level of insurance or other funding on which to draw in the event of difficulty – the funds will have to come from the member states and other national sources. This applies to deposit insurance as well as to fiscal transfers. So there needs to be a precise, sovereign interest in the problem and the solution. Even a European level solution would have to differ from the federal solution in the US. However, it does not obviate the need for a comprehensive approach, as the ESFRC suggest. It is possible, however, that the creation of a European equivalent to the FDIC would be the most effective EU/EEA level institution to start with.

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Too big

So far, the concern has simply been that the key issue for prudential supervision of institutions operating cross-border is that the supervision itself should be done efficiently and effectively. We have seen that there are strong reservations as to whether, in present circumstances, problems can be resolved, or in some cases avoided, in a manner that minimises the losses to the insurance fund or more widely to creditors and depositors. However, with the exception of drawing on the deposit insurance fund, which may impose some short-run costs, to date there has been no question of using public money. Nor has there been any doubt that the institutions involved or the functions they perform are sufficiently important for their closure to have significant knock-on costs with a serious direct spillover onto other financial institutions or onto confidence in the banking system in general. In those circumstances, the systemic stability of the financial system would be threatened.

The authorities in each country normally have an explicit commitment to maintain the financial system's stability, though what that implies remains largely undefined (Schinasi, 2005). The cross-border arrangements for supervision have to be such as to enable that function to be exercised. This is not just a matter of managing current circumstances but also of offering a credible approach to future events, particularly to those that no-one can currently envisage. It is not quite clear what this entails but the key ingredients appear to be: adequate access to *information* before the event to detect incipient pressures, and adequate *powers* in the event to *take action* to maintain stability (Mayes and Vesala, 2000). It

The key ingredients of cross-border arrangements for supervision appear to be: adequate access to information before the event to detect incipient pressures, and adequate powers in the event to take action to maintain stability.

is rather unlikely that the current home-host arrangements can deliver that result.

The information issue is perhaps easier to solve than the power to act. It entails national supervisors having access to the same range of information in a cross-border case as they do in a domestic case. As Schinasi (2005) makes clear, in addition to a variety of macro-economic and industry information that can be obtained by an external institution (such as a central bank), this includes supervisory information. This implies access to a common database on important cross-border institutions and participation in the supervision as such, so that the national supervisor has an adequate opportunity of detecting the signals. This implies a very different relationship from the current MoUs (Memoranda of Understanding) among supervisors on information sharing,[7] but it does not necessarily entail changing the existing structure (Vesala, 2005). There would need to be rather different working relationships, which are essentially much closer. However, Basel 2 is already requiring a move in that direction, such that, inter alia, the lead (consolidating) supervisor can establish a single approach to risk management for the financial group as a whole. This may require some legislative change if disclosure rules currently prevent foreign supervisors from participating in the supervisory process and having access to the resulting information.

The single approach to the risk management of the financial group, 'Enterprise Risk Management' as Schmidt Bies (2004) describes it, clearly makes sense, as entities can be created within the structure of the group 'to transfer and fund assets [that] may or may not be consolidated for accounting purposes, depending on their structure' (p.1). However, while supervisors may well have a common view on how the risks within the group as a whole should be handled, there may still be conflicts of interest when it comes to the treatment of problems. Irrespective of size, there are going to be disputes because there may well be a country-by-country mismatch between the distribution of losses and the distribution of their causes. Without common supervision of the entity, there may be little chance of feeling that the common pool, single entity approach to handling the problems will be equitable.[8] However, as soon as an institution reaches systemic proportions (as illustrated by Nordea), the conflict of interest may be much greater, as the systemic effect may not apply in

[7] Holthausen and Rønde (2004) suggest why the current system may not result in adequate information sharing.

[8] Deposit insurance under current rules may complicate this as it follows the home-host divisions and is not pooled over the entire area in which the bank does business. Hence, if it is contributory from the rest of the banking system, the cost of meeting a claim could fall rather unevenly, as the customers of branches in other countries will be covered by the banking system in the home country. This is a clear contributor to making some banks 'too big to save' in the sense that the losses are concentrated disproportionately on the home country, perhaps beyond the point that it is prepared to bear.

some countries. If the failing bank is systemic in a host country but not in the home country, simple aggregation would lead to accepting closure and triggering the systemic event in the host country. Similarly, a decision to 'save' an institution because it is sufficiently systemic will raise the question of the extent to which countries that would have been quite willing to let the enterprise fail because it was not systemic in their jurisdiction will want to contribute to the costs of resolving it.

It is thus immediately apparent that if a financial institution or some of its activities become in some sense 'too big to fail' in any of the jurisdictions involved, then it poses a special problem, not just for resolution but also for supervision. In this respect, the US cannot provide a direct indication of the way forward. Any exception there from the provision that the FDIC should seek a least-cost solution to its funds is a national (federal) issue, not a state or regional one. It is also an extreme circumstance and has not (yet) been invoked.[9] The number of institutions to which it might apply may be of the order of 10 to 20 (Stern and Feldman, 2004). In the European environment there is no federal level for spreading losses and less cross-border insurance of the consequences through the structure of asset portfolios and activities. As a result, localised (national) systemic events are more likely and require special handling arrangements where they relate to cross-border institutions. Thus, the subject here is not necessarily EU level systemic crises but national systemic events involving cross-border institutions. (Of course, the handling of possible EU level crises must be and is already being addressed.) One might choose to label these issues 'European', since both prior supervision and ex-post resolution need to be viewed in a cross-border framework. If they involved a smaller member state, such as Estonia, a European level event could then be considerably smaller than what in the US would constitute a national level event requiring an exception to the normal FDIC requirements.

If a financial institution or some of its activities become 'too big to fail' in any of the jurisdictions involved, then it poses a special problem, not just for resolution but also for supervision.

Even so, a look at the analysis in Schoenmaker and Oosterloo (2006) and elsewhere indicates that the number of EU/EEA institutions which any supervisor would judge to be systemic from their point of view but not under their adequate control (as either a home or a host) is relatively limited at present. Schoenmaker and Oosterloo suggest that only some of the largest 30 banks in Europe are sufficiently cross-border to generate home-host problems. They classify nine of them as European and another four as primarily international. Only 25 are identified as having more than 10 per cent of their business outside the home country and 19 as having more than 10 per cent in other 'European' countries. However, their table

[9] It requires the agreement of the Chairman of the Federal Reserve, the Comptroller of the Currency and the Secretary of the Treasury.

does not include some directly cross-border institutions that are systemic in a range of countries, like Euroclear, CLS or SWIFT, where arrangements have already had to be made to establish adequate involvement. Nor do they necessarily pick up some of the smaller banks that play an important role in certain other countries. A foreign bank based in a large country may pose systemic concerns in a small country even though its foreign activity is trivial compared to its domestic activity.

It is worth more than a footnote to point out that, by confining the discussion to the current EU/EEA, the extent of the problem is artificially limited by the jurisdiction of the EU/EEA countries. The problem certainly extends to immediate neighbours, such as Switzerland, the Balkans and Turkey. It would be inappropriate to neglect the concerns of a country whose membership is a possibility even a long time ahead. Similarly, some of the largest institutions in the US are deeply involved in the European financial system. Nevertheless, even if we take a fairly wide view, are forward-looking and assume that trends towards cross-border activity will continue, the institutions that generate external systemic concerns are countable and do not call for a vast additional organisation. Counting institutions is clearly a very misleading measure of size, since these are the largest. We are in effect talking about virtually the whole of the Estonian banking system, the major parts of the banking systems in the Czech Republic, Hungary, Slovakia, Lithuania, Poland and Latvia, potentially more than half in Finland and Malta and significant proportions elsewhere, covering all the member states one way or another.

Whenever an institution attains the potential to cause systemic problems, the authorities concerned could be required to assess the problem and state how they propose to handle it.

Stern and Feldman (2005) have suggested that in the US, whenever a merger (or other change in financial holding company structure) could potentially lead to systemic problems, the Federal Reserve should first have to state the possible extent of such problems and how they would be handled. The implication here is that because such institutions place an extra cost on the taxpayer and insurance funds in the event of problems, they should pay a higher premium for this. To some extent, that would offset their gain from the lower cost of funds that being thought too big to fail confers (Granlund, 2003; Stern and Feldman, 2004). A similar arrangement could be applied in the EU/EEA. Whenever an institution attains the potential to cause systemic problems, the authorities concerned could be required to assess the problem and state how they propose to handle it. That would at least clearly separate financial institutions into two groups: those for which there is thought to be a cross-border systemic issue and those for which there is not.

This would be a considerable advance on the current situation: where the problem exists but the question of how to handle it is treated as a secondary matter. Since it is just a contingency, there is always a chance

of discussion being unnecessary. This greatly increases the likelihood that a full discussion will not get under way until the first systemic event has revealed the difficulties. In addition to institutions that are 'too big to fail' in the traditional sense, there are currently others that are too complex or cross-border to be resolved fast enough without a crisis or public sector intervention, as well as others that are potentially 'too big to save' from the point of view of the home country. The latter case has been recognised explicitly by Switzerland (in effect with respect to UBS and Credit Suisse), which for deposit insurance payouts has imposed a cap of CH4bn for a single event. All this needs to be addressed in the EU/EEA.

The realistic options

In sorting out a way forward, it is thus worth restricting the problem. Most banks and other financial institutions are purely domestic or operating across borders to an extent that would make a traditional domestic-driven approach satisfactory to all parties. A small number of banks but a much larger proportion of assets and transactions are sufficiently big and cross-border to pose a regulatory and supervisory problem. They are a problem because in one or more of the countries in which they operate they are sufficiently important for the authorities concerned to be unwilling to see all or some of their activities cease abruptly, because that would cause unacceptable losses or disruption of the financial system in the area under their responsibility. This distinction between the institution and its activities is important. As Hüpkes (2004) points out, the authorities may be relatively unconcerned about much of an institution's business, which can survive a substantial pause without generating systemic consequences.

As we have noted, this second group is a countable number. Padoa-Schioppa (2004) suggests around 40 banks, Srejber and Noréus (2005) slightly more. Schoenmaker and Oosterloo (2006) consider the top 30 banks in Europe and find that some of them do not fall into this category. Fortunately, we do not yet have enough observations to decide when or under what circumstances a bank on its own constitutes a potential 'systemic' problem. Stern and Feldman (2004) suggest that in the US the number of banks in that position is not much more than the top 10. However, political tolerance is likely to be lower than the levels indicated by more objective studies of potential contagion. Hence the numbers might be larger.

This leaves a middle group where cross-border activities are non-trivial but do not amount to a systemic threat. In many respects, the problem for this third group is inverted. Supervisors may be able to live with

the arrangements they have or foresee in the next few years, whereas the banks want a much more integrated approach to supervision to enable them to reduce compliance costs and rationalise operations across Europe to a much greater extent.

If our study of cross-border arrangements is confined to the second group, where systemic matters and burden-sharing among countries become a significant issue, then case-by-case arrangements are possible, certainly in the short run, according to the circumstances and the urgency perceived by the supervisors concerned. Once we include the third group, it becomes more difficult to envisage some sort of voluntary ad hoc arrangements that go beyond the existing legal requirements, and the framework needs to be changed.[10] Most of the schemes that do not involve a European level supervisor consider case-by-case arrangements under generalised principles. Depending on one's point of view, that is either a pragmatic approach to the considerable inherent variation in circumstances or a failure to grasp the profound difficulties involved.

Rather than create a new classification scheme, I prefer to build on the two-way classification developed by Schoenmaker and Oosterloo (2006).

Rather than create a new classification scheme, I prefer to build on the two-way classification developed by Schoenmaker and Oosterloo (2006). As its first dimension, it provides a neat categorisation of the main options for a more general scheme (Table 1):[11]

A continue with a version of the current home-host arrangement
B make the home country the lead supervisor
C make the home country the lead supervisor but find some means of their taking the interests of the host countries into account
D go to a European level system where the interests of both home and host countries are explicitly balanced
E go to a host supervisor arrangement

and, as the other dimension, a set of five criteria by which one might want to judge the schemes:[12]

1. *effectiveness* of supervision in the sense that both all the parts and the group as a whole are properly covered

[10] Padoa-Schioppa (2004) points out an obvious solution to this, again similar to the US approach, drawing on the example of Italy. A European-level supervisor would be required for groups that extend across borders and have a systemic implication. Home-host or one of the other home leadership approaches could be used for other cross-border activity and purely national for cases where there is no cross-border interest.

[11] Srejber and Noréus (2005) also explore options B, C and D as alternatives to A, which they see coming under strain.

[12] Other criteria have been advanced. Di Giorgio and Di Noia (2003), for example, suggest stability, equitable resource distribution and efficiency, where their concept of efficiency applies to the economic system as a whole, not just supervision. They also stress ensuring competition rather than competitiveness.

2. *efficiency* of supervision in the sense that duplication or overlaps are avoided
3. *financial stability* concerns of all of the parties stemming from a failure of the institution are addressed
4. *competitiveness* in the sense that there is a level playing field where domestic and foreign institutions face a similar regulatory burden
5. *proximity* in the sense that the supervisor(s) are close to the main activities of the institution.

TABLE 2. STRUCTURE OF FINANCIAL SUPERVISION: POLICY OPTIONS

Supervisory structure	Criteria				
	1. Effectiveness of supervision	2. Efficiency of supervision	3. Financial stability	4. Competitiveness of financial firms	5. Proximity to financial firms
A. Home and Host (current system)	+	+/–	+/–	+/–	+
B. Home on the basis of a national mandate	+	+	-	+	+
C. Home on the basis of a European mandate	+	+	+	+	+
D. Central body on the basis of a European mandate	+	+	+	+	–
E. Host on the basis of a national mandate	+/–	+	–	–	+

Source: Schoenmaker and Oosterloo (2006)

In the above I have adapted the phraseology used by Schoenmaker and Oosterloo (2006) to make the issues stand out a little more sharply. However, the conclusion from this analysis is straightforward. A system run by a home supervisor who takes into account the (national) concerns of the other countries involved is both the best of the five schemes and appears to meet all of the criteria.

Schoenmaker and Oosterloo (2006) consider that a system run by a home supervisor who takes into account the (national) concerns of the other countries involved is both the best of the five schemes and appears to meet all of the criteria.

Many aspects of this analysis are debatable but our starting point is the conclusion that national concerns for financial stability must be taken into account and this is not clearly achieved with the current home-host regime. Again I shall avoid exploring the clearly suboptimal cases and concentrate on the areas where a reasonable compromise among the competing objectives might be achieved. Three key questions here are:

– Is it possible to reform the home-host regime within the current framework so that it performs adequately?

– How could one ensure that a home supervisor takes the other countries' national needs into account?
– Would it be possible to introduce a European level supervisor in a way that would meet all the concerns?

I interpret the underlying differences behind the first two questions to be

(a) that the second requires a specific international legal agreement in the form of, say, a directive or regulation at the EU level, whereas the first simply requires some appropriate soft-law arrangement among the countries concerned, either in the form of a series of institution-specific agreements or multilateral agreements covering any institutions, functions or circumstances that might lead to cross-border systemic issues on which the interests of the different countries may conflict.
(b) that the second entails a much stronger role for the home or lead supervisor.

Unfortunately, these two issues are somewhat intertwined, so it is not possible to discuss one without introducing some of the other.

WHAT SORT OF LEAD SUPERVISOR?

In a home-host environment where the institution operates through subsidiaries or extends across the boundaries of supervisory responsibility, more than one prudential supervisor will be involved either domestically or internationally.

In a home-host environment where the institution operates through subsidiaries or extends across the boundaries of supervisory responsibility, more than one prudential supervisor will be involved either domestically or internationally. Hence, some form of agreement among supervisors will be required and there will need to be a designated responsibility for supervising the entity as a whole. However, even if the organisation were unitary, which is not a normal case, there still needs to be a relationship between the sole supervisor (in the home country) and host-country authorities that perceive the institution as involving systemic issues.

This sole supervisor case helps polarise the issues over which there has to be an agreement. Three main areas of agreement are required:

(i) the supervisor needs to provide host country authorities with sufficient *information* to make them feel comfortable about financial stability (this issue of financial stability is the only column in Table 1 where a minus sign distinguishes row B from row C).
(ii) the supervisor has in place a set of rules for standards of prudential behaviour, their monitoring and their enforcement, with which host authorities feel comfortable. Host authorities need to be convinced

that the home authority will apply as good standards to supervision as they would.

(iii) Host authorities need to feel that actions which will be taken if something starts to go wrong will be similar to what they would have done, that they will be treated fairly compared to the other interests in play and that special systemic concerns will be allowed for.[13]

Of these, the first is probably the easiest to handle but is not without problems. The requisite conversations and information flows are the same as would occur between supervisors and those responsible for financial stability in the national environment (Srejber and Noréus, 2005). One difficulty is that this inherently includes information about the financial group's activities outside the country. The environment in which stability needs to be judged is extended. This does pose problems of confidentiality that may require legislative changes or at least some means of including the host country authorities in the ambit of confidential disclosure. However, it is debatable whether the understanding can be built up without participation in the supervisory team. Direct contact with the directors and management and a possibility of comparing with the other major players in the sector could be necessary.

As soon as subsidiaries are involved, supervision automatically includes the host country. So the question is then how the supervisors should best work together. A highly hierarchical arrangement could hamper an understanding of the behaviour of the group as a whole. This leads directly to Vesala's (2005) suggestion of a 'college of supervisors' under the leadership of the home supervisor, rather than collation by the home supervisor of information from the hosts and from its own direct supervision.[14] This could be amplified by practical co-operation through the delegation of tasks among supervisors, thereby increasing efficiency, utilising local knowledge/skills and easing the burden on the supervised.

CEBS (2006, para 46) has gone a long way in spelling out the 'essential information' that should be communicated by both home and host supervisors on their own initiative to meet each other's needs. This relates

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[13] Meeting these criteria is clearly possible. Nordea Finland is of systemic magnitude in Estonia, yet operates there as a branch. The Finnish and Estonian authorities have been able to agree on its continued supervision following Estonia's accession to the EU in May 2004.

[14] As is common in this area, people use the same words but with different meanings. CEBS (2006) and EFR (2004) also refer to 'colleges' but apart from signifying a group of people who need to arrive at a joint decision, it is not clear how far their understandings of the concept coincide. Agreement in any body normally means that if the body is to function, the minority will have to give way on certain issues. There are various ways of achieving such agreement, from a simple majority to consensus. There can also be key issues on which there is a right of veto. One might expect a veto could apply in the case of small countries with systemic concerns, otherwise they might always be out-voted. Most proposals are non-specific on this point because a small host has no way of opting out – at least not without leaving the EU, which destroys the point. In CEBS (2006) it is simply assumed that the necessary agreements will be reached.

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to changes in structure, changes in reporting by the institution and potential spillovers of difficulties. Looking at this simply from the viewpoint of the host misses the fact that the home supervisor also needs a highly co-ordinated operation in a framework where the institution is centralising various activities. There is a need to co-ordinate inspections across the different parts of the group. Moreover, since much of the disclosure and market discipline is applied only at group level, where this requires open market shareholding and the raising of subordinated debt, the lead supervisor's role should be stronger than 'consolidation'. This implies a need to move from aggregating entity and functional supervision to what Schmidt Bies (2004) describes as an enterprise or group risk management basis. This accordingly takes us from the problem of providing adequate information to the actual ability to provide an ongoing supervisory arrangement that is acceptable to all the parties.

For this to work, however, the supervisory cultures of the home and host countries need to be sufficiently similar. As Kane (2005) points out, Australia's and New Zealand's approaches to supervision differ considerably. New Zealand has a disclosure regime with direct responsibility for bank directors and stiff penalties for non-compliance, while Australia has a traditional intrusive regime. A joint regime would not be possible unless one or other partner changed its regime. In the European environment, the convergence of practices is much greater in monitoring, so operating a joint or 'college' system could work.

The CEBS approach envisages a 'case-by-case' arrangement that takes into account the risks and burden on the institution. The idea is that the cooperation should reflect the supervised institution's relative importance in the various host markets.

What makes this seem most likely is the 'Basel 2 committees' that have already been formed among the supervisors of each major enterprise to sort out the single approach to risk management that will be applied to each banking group. They have to reach a decision, although it will be up to the lead supervisor if the committee as a whole cannot agree.[15] This is heavily emphasised in the CEBS approach to the problem (CEBS, 2006). Whether this will answer many of the perceived problems will depend to some extent on what is achieved in practice. It envisages a 'case-by-case' approach that takes into account the risks and burden on the institution. The idea is that the cooperation should reflect the supervised institution's relative importance in the various host markets. The consolidating supervisor needs to consider the risks from the structure of the institution and correlated risks in the various host locations. This entails developing a 'common understanding' of how the entity should be handled, which should be codified in specific written agreements, such as

[15] Basel 2 (and Solvency 2) both require greater co-operation among supervisors and introduce much wider scope for discretion by moving from simpler to more complex rule systems. It is not clear what the outcome will be. The industry fears more variety but the likelihood is more variety between supervised institutions than more variety of supervisory rules within any given institution.

Memoranda of Understanding. The running of this set-up should be transparent to the supervised institution and the consolidating supervisor should be the primary point of contact with the group – local contacts with host supervisors are also expected to continue.

The 'college' approach has the advantage that it is easier for all of the supervisors to feel they are jointly responsible, because they are all part of the supervisory team. That may not be so easy to achieve in a hierarchical arrangement. Nevertheless, despite the existence of the team, the home country will still be the leader. How they will manage to run the joint arrangement is more difficult to establish. Each country's interest in the joint enterprise could be thought to be proportional to its share of the group's activities or assets. (Its interest in what should be done in any particular situation will of course be far more related to the potential impact on the market for which it is responsible.) However, there is a clear danger that joint responsibility could result in nobody really taking responsibility. It is difficult to set out how to avoid such an abdication but it clearly can be avoided in practice, as indicated, for example, by cabinet government.

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The CEBS (2006) guidelines provide quite detailed lists of the areas that need to be addressed, first in assessing the cross-border issues that supervisors need to cope with, second in setting out how they will cover these in their supervisory arrangements in the light of an assessment of the risks that seem to be involved with the institution. Once applied, these results need to be evaluated and a further interaction with the institution itself will be necessary to establish the ongoing approach to supervision of the group. Because the CRD implementing Basel 2 is a new process, it provides a very specific opportunity to evaluate how each financial institution should be supervised, whether cross-border or not.

The collegial approach can be interpreted as an extension of the current home-host arrangement but it is not quite clear where this falls between Schoenmaker and Oosterloo's categories A and C in Table 1. Its governance is not clear, a point we return to in the next section. The home-host arrangement works because each of the parties has a defined set of tasks they undertake on their own, subject to the prior multilateral or bilateral agreement of the group of supervisors, and the consolidating supervisor assembles the picture for the enterprise as a whole. The home country, acting as lead supervisor and operating the system after discussion with the host supervisors, also has a clear format. The collegial approach would effectively be a scheme somewhat more akin to the set up of the Eurosystem, where the Governing Council (the college) is the decision-making body and the ECB and the national central banks are the executive bodies. (Schoenmaker (2005) refers to a European System of

The collegial approach would effectively be a scheme somewhat more akin to the set up of the Eurosystem.

Financial Supervisors and a European Financial Agency as the equivalent concepts.) The ECB has competence in only a number of defined areas and acts in many as the co-ordinator and consolidator of the activities of others – Eurosystem forecasts are a simple case in point. For ongoing supervision, where detailed control and rapid decision-making are not normally required, this sort of arrangement could well be effective, since all the parties have an interest in making it work. The stronger the role of the lead supervisor, the more carefully spelt out the agency relationship has to be.

Schoenmaker and Oosterloo question the efficiency of the home-host approach, arguing that it may lead to duplication. In a sense, the same question could be asked of the US system, where there are multiple supervisors. The key questions remain: how great is this particular cost in practice, and does having different supervisors with different mandates crawling over the same information from different perspectives not in fact lead to better rather than worse supervision? It is difficult to answer this in advance.

The EFR concept is to have the same cross-border supervisory arrangement, whether the enterprise is operated through branches or subsidiaries.

It is also a little difficult to sort out whether this collegial approach would meet the industry's concerns, at least as expressed in EFR (2004, p.6), which uses all the terms – 'college', 'lead' and 'consolidating' – as if they were part of the same scheme. The EFR concept is to have the same cross-border supervisory arrangement, whether the enterprise is operated through branches or subsidiaries. The home (lead) supervisor would:

- be the sole point of contact for supervisory issues on prudential matters, whether relating to the group as a whole or to its parts
- decide on the reporting schemes
- validate and authorise internal models
- decide about Pillar 2 issues under Basel 2 and Solvency 2
- decide on capital adequacy on a top-down basis (not bottom up)
- decide on rules for liquidity and its allocation across the group (treasury management)
- organise site inspections which may be undertaken by or with host supervisors
- approve cross-border functions within the group.

The EFR admits that this may be too difficult for a conglomerate and that there may have to be separate lead supervisors for a group's banking, insurance, investment and other functions, subject to an overall group supervisor.[16] It also notes that there are problems when subsidiaries are

[16] Others, such as Di Giorgio and Di Noia (2003), argue that it is important to have a unitary view of supervision and not divide it according to functions.

not wholly owned and where links are required with supervisors outside the EU/EEA, on either a home or a host basis.[17]

What the EFR (2004) paper does is separate the roles of the 'college' in different circumstances. In normal circumstances the role is described as 'advisory', while in a crisis the college would become the management team. They suggest that any deep differences of opinion among the supervisors could be referred to CEBS or other relevant EU Level 3 committees. This is a somewhat different arrangement from what I have outlined above. There a team approach would work for ongoing supervision but crisis management would need to be centred on someone who can act firmly and rapidly on the basis of a predetermined mandate from the various countries involved, with only limited need for recourse to the principals at the height of the crisis. Resort to CEBS would presumably take the form of identifying issues where more detailed agreement is necessary at a European level, rather than implying it should play some sort of judicial role. This would therefore be a form of feedback to the committees on problems that arise from parts of the supervisory arrangements that are not sufficiently convergent for national differences to coexist harmoniously. Members of CEBS or another specific body could of course act as 'mediators' in disputes, enabling the parties to come to an agreement more readily, but without any power of enforcement either over the agreement itself or its implementation.[18]

If the lead (home) supervisor operates under a 'European' mandate, home and host supervisors would still do much of the work.

In concluding this section, it is worth adding a couple of remarks on the European level approach to the problem. Schoenmaker and Oosterloo (2006) argue that the lead (home) supervisor needs to operate under a 'European' mandate, i.e. to have proper regard for the interests of all the parties. The European level supervisor for these cross-border groups with potential systemic implications would do the same. While this would involve creating a more elaborate institution in order to play the lead and consolidating role, it would be the home and host supervisors who would be doing much of the work, with the European level supervisor fulfilling a role, like that of the Federal Reserve, as the umbrella supervisor. It is therefore not clear that this need suffer from the remoteness from the supervised and the markets in which they operate that Schoenmaker and Oosterloo fear, as shown in the last column of Table 1. The European level group does not need to sit in offices in a single European capital. It

[17] The European Financial Services Roundtable is of course an interest group, representing the views of the larger institutions in Europe. Hence while they may be concerned to ensure that cross-border institutions are not disadvantaged relative to purely national ones and indeed can exploit all the advantages of consolidating operations, they do not have any obligation to consider any unequal advantages large players gain over small (Stern and Feldman, 2004).

[18] CESR set up a Mediation Task Force that produced a consultation paper, 'CESR Mediation Mechanism', in September 2005; this discusses the sorts of matter that might be handled and the structures that could be used to handle them.

could easily be relatively dispersed, so that each unit is closer to those it is supervising.

If, as suggested in Mayes and Liuksila (2003), the European level only focuses on crisis management, it can be a much smaller organisation that is only enlarged when a crisis erupts, drawing on the national supervisors involved. That also considerably reduces the need to focus on the resolution of disputes.

Srejber and Noréus (2005) make the telling point that many of the suggestions for national linkages and lead supervisors are means of getting an outcome similar to that which might be achieved with a Europe-level institution – so why not just create one?

A HARD-LAW APPROACH?

If the current home-host relationship is to be replaced by a lead supervisor model which includes subsidiaries, this too will require European level legislation, at least to the extent of a directive.

If a European level institution is to be set up, then clearly it will require a European level agreement. If the current home-host relationship is to be replaced by a lead supervisor model which includes subsidiaries, this too will require European level legislation, at least to the extent of a directive. It will clearly require national legislation to permit the appropriate delegation of powers to the lead authority and indeed in the opposite direction for the effective supervision of large branch operations in other countries.

Currently, however, most supervisory co-operation is done through soft law, using Memoranda of Understanding. But to what extent can such soft law cover the effective operation of these joint arrangements? Clearly, forming a college of supervisors for individual institutions and agreeing on the sharing of *information* with a common database can follow that route, although changing the confidentiality requirements may well require suitable national legislation to permit other members of the college to have full access to the information on the same basis as domestic supervisors. Similarly, simple agreements are possible for the delegation of tasks among hosts and home supervisors – delegating responsibility is, however, a much deeper issue.

It seems unlikely that credible power could be procured for the lead supervisor to act on issues that affect the financial stability of other member states without some clear mechanism for resolving disputes and obtaining restitution.

What seems much more unlikely is that credible *power* could be procured for the lead supervisor to act on issues that affect the financial stability of other member states without some clear mechanism for resolving disputes and obtaining restitution. So this is likely to involve more than an MoU. While supervisors may be able to agree on the standards to be enforced through soft-law arrangements, as supplements to the Lamfalussy process, their actual enforcement and the imposition of penalties through SEIR and PCA would involve very considerable harmonisation of legislation and it is not clear what could be done if the legislation were not fully implemented. Holthausen and Rønde (2004) doubt whether

supervisors will reach an agreement under soft law that results in them sharing the difficult information. They assume there will be a 'cheap talk equilibrium' where supervisors only disclose what is in their (national) interests, despite what is agreed in the MoU.

However, fully effective PCA and resolution in particular require far more comprehensive changes in banking legislation and insolvency law, taking them at least as far as the Swiss reforms (Hüpkes, 2003). The lead authority needs to be able to intervene and ultimately take over the running of a noncompliant systemic institution, particularly if it becomes so undercapitalised that its solvency is threatened and public confidence in it is liable to evaporate. The terms for doing this would need to be set out explicitly in a form equivalent perhaps to FDICIA. Furthermore it would need to be clear how burden-sharing in the event of losses would be arranged and how it would be met. These are major changes. There is a danger that the member states would be tempted to agree the more straightforward items, particularly those that can be covered by soft-law processes, and put off dealing with the tougher issues that relate to contingent events which are hopefully very unlikely to occur. That route would probably have three consequences. First, there is the moral hazard from knowing that the countries do not have the means to step in early or take over the institution to head off a crisis. Second, the lack of prior processes for swift action greatly increases the chances of a crisis in the event of a difficulty and hence the likelihood of the very financial instability that it was hoped could be avoided. Third, it makes it almost certain that public money will have to be used, certainly in the form of guarantees, and possibly also the use of deposit insurance funds.

However, fully effective PCA and resolution in particular require far more comprehensive changes in banking legislation and insolvency law.

In any case, changes in the structure of deposit insurance are likely to be necessary to achieve a better match between the constituency from which depositors are being drawn and the constituency that is providing the insurance. This is particularly important if branches in other countries (and deposits with them) are to become a significant proportion of the exposure of a particular deposit insurance fund. While some of that can be achieved by reinsurance, a change in the deposit insurance directive is more likely to be required. As suggested earlier, the way forward with this is perhaps to take deposit insurance to the European level earlier than other aspects of supervisory/safety-net co-ordination. This might be done in the form of a European Deposit Insurance Corporation (EDIC). However, such an organisation covers primarily the failure (and prior co-

In any case, changes in the structure of deposit insurance are likely to be necessary to achieve a better match between the constituency from which depositors are being drawn and the constituency that is providing the insurance.

rective action) of non-systemic institutions that run across borders.[19] A wider framework is likely to be needed for the systemic cases, as in the United States.

Specifying any of these contracts will be inherently more difficult than in the US, as systemic issues in one country need to be balanced against non-systemic issues in others.

Specifying any of these contracts will be inherently more difficult than in the US, as systemic issues in one country need to be balanced against non-systemic issues in others. Clearly, as in FDICIA, formulating an ex ante agreement would be facilitated by having a largely rule based approach, requiring early action, minimising costs with respect to the insurance fund or some other straightforward criterion, and having no access to public funds, except through an extreme procedure. Problems differ and it is better not to have to specify actions closely. While individuals and corporates that are harmed need a legal route of redress, only an EU level body, such as the ECJ, will offer the member states any redress from negligence or inequity in the treatment by another country's supervisors or indeed by an EU level body.

Taken together, this implies that in the longer run the appropriate way to go is likely to be a version of Schoenmaker and Oosterloo's option D.

Taken together, therefore, this implies that in the longer run the appropriate way to go is likely to be a version of Schoenmaker and Oosterloo's option D. In the meantime, however, it is necessary to resort to a solution that falls under their option C. A leader is needed but the interests of all authorities concerned also need to be taken into account in a manner they find satisfactory at the time and in prospect.

Turning one's back on the game

A workable alternative is to accept that divisions actually offer the best way forward, at least in the short run, even if closer integration is the objective in the longer run.

Instead of trying to find some co-operative arrangement that will function adequately, a workable alternative is to accept that divisions actually offer the best way forward, at least in the short run, even if closer integration is the objective in the longer run. This is the current approach in Australia and New Zealand and it is shown as option E in Table 1. In this approach, the host country can insist that the financial institution's corporate structure and 'outsourcing' policy enable the host country to intervene rapidly in the event of a failure or unacceptably low capitalisation and have an

[19] There are many ways an EDIC could operate, not just simply by having a European level fund. It could be a means of organising the funds of the existing national institutions. If a bank operates through branches in host countries, it can become very large compared to the depositor base in the home country, with a corresponding gain in the host countries, where only a limited proportion of depositors may be domestically insured. Existing national choices of the coverage of insurance can be respected. The main point is the requirement to intervene early and minimise losses with respect to the different interests involved under previously agreed rules, thereby avoiding a time-consuming debate during which possible solutions unravel.

entity within their jurisdiction that can be run on an independent basis before the end of a value day (RBNZ, 2006).[20]

These are strong requirements that would prevent banks from exploiting many of the synergies they hope to achieve by merging operations in different markets. I shall not explore it here because it undermines the whole philosophy of trying to have a single market and make it work. It is considered in more detail in Mayes (2006). However, this approach does have five major advantages that need to be borne in mind in designing any European arrangement:

- it focuses on the practical needs for action and the legal ability to act, not on the nominal structure of branches or subsidiaries
- it focuses on the ability to have a rapid response and on the core functions that need to be maintained without a break in operations
- it focuses on required outcomes, not processes or structures
- it distinguishes between systemic and non-systemic cases, allowing much less onerous conditions in the second case, with the supervisor deciding which category applies
- it specifies the objective, in terms of maintaining financial stability and avoiding 'significant damage to the financial system'.

To exercise these powers, the host authority has to be able to control entry (Mayes et al., 2001), which is not the case in the EU/EEA.

Nevertheless, without a satisfactory solution to the current dilemma in the EU/EEA, the authorities will be inclined to do what they can to preserve economic nationalism in the ownership, structure and control of their banking system so as to protect their financial stability. Indeed, this has already been observed in Poland, where there has been concern that bringing Bank Pekao and BPH under the same foreign ownership (Unicredito) could create an unwelcome systemic risk.

Without a satisfactory solution to the current dilemma in the EU/EEA, the authorities will be inclined to do what they can to preserve economic nationalism in the ownership, structure and control of their banking system so as to protect their financial stability.

Conclusions and issues for discussion

In drawing out the conclusions for discussion, when assessing the problems of cross-border supervision in the EU/EEA it is helpful to divide the institutions to be supervised into three categories. Those with insignificant cross-border activity, those with significant cross-border activity but not

[20] This is set out as the 'legal and practical ability' to ensure that in any event the following can be assured:
- meeting the clearing and settlement obligations on that day;
- the bank's risk positions can be identified on that day and monitored and managed on subsequent days;
- the bank's customers can have access to payment facilities on the following and subsequent days.

A local Board needs to be responsible and accountable for the actions of the entity in the host country.

such as to pose any potential systemic threat to the authorities concerned, and those where at least one authority has concerns that if some or all of the institution's activities were to come to a disorderly halt, that would have an unacceptable impact on financial stability.

1. Differences across countries in supervisory arrangements among the first group may offer competitive advantages (Granlund, 2003) but, given the degree of supervisory convergence being encouraged by CEBS and the level of competition emerging in European markets across borders, this is not seen as particularly important. Other cross-border concerns for this group of institutions, which is numerically large but much smaller in terms of its share of activity, are not significant, except as regards the treatment of mergers, acquisitions and other restrictions on entry. The European Shadow Financial Regulatory Committee has suggested that an 'observatory' or European Banking Oversight Committee be set up to look at issues where national discretion may have been used to the detriment of cross-border activity. This could be widened to Financial Oversight. This suggestion has not been widely considered since it was made in 1998, which may say more about power in European decision-making than the inherent quality of the proposal.
2. The preparations for the implementation of Basel 2 under the Capital Requirements Directive provide a fortunately timed opportunity for supervisors to assess the supervisory needs of cross-border institutions and in particular to determine whether they pose systemic issues to any supervisors involved and hence should belong to the third group. Many of the improvements referred to below can be addressed through this review process but it is essential to apply it to the whole institution, not just the narrowly defined banking operations.
3. The second group of institutions can be dealt with primarily through improvements to the current home-host approach to supervision that go beyond the guidelines proposed by CEBS (2006). These include:
   – an enhanced role for consolidation of supervision and the reduction in the variety of supervisory methods being applied to a cross-border institution. Although the legal form of institutions operating across borders, whether as subsidiaries or branches, is important, the trend towards a concentration of key activities within financial groups raises a particular concern that risks are managed across the group as a whole, not simply by aggregation of the parts. This implies an important role for the home country authority that acts as the lead or consolidating supervisor. Second, the number of regulators involved poses a potential burden on cross-border firms

that inhibits competition. Taken together, these two imply a closer relationship between home and host supervisors than is sometimes practised at present.[21] Views vary on how this should be applied but two key characteristics emerge:
    - an enhanced role for the home country supervisor;
    - a closer relationship among supervisors, which could be described as collegial
  - an improved exchange of *information*, to be achieved by creating a common database on which all members of the college can draw
  - treatment of on-site inspection as a collegial issue.
4. The basis for relationships among supervisors needs to be clear and justiciable. It is not clear that Memoranda of Understanding are sufficient for describing the principal-agent relationships involved. In some cases, simple agency arrangements may be the way to proceed.
5. While host (and home) supervisors can be convinced that ongoing supervision of the institution as a whole is being conducted adequately through a closer working relationship and the common information database, the treatment of what to do when institutions get into difficulty or supervisors are concerned needs to be developed. This should take a form similar to that in the United States, where there is a clear programme of Structured Early Intervention and Resolution, in particular a programme of Prompt Corrective Action.
6. In the United States, moreover, responsibility for ensuring that SEIR is applied is assigned to a specific agency, the FDIC. There is a case for setting up a similar organisation in the EU, a European Deposit Insurance Corporation that would fill this gap, and simultaneously correct some of the problems that are being experienced with deposit insurance as a result of the home-host structure.
7. The third group, systemically important institutions, poses much greater problems because the interests of the countries involved are not necessarily aligned and the losses imposed could be significant. What is needed here is not so much a different approach to supervision as a different approach to the resolution of problem institutions. While the EDIC described above could have the objective of minimising its losses in handling problems, in systemic cases there are specific national concerns that preclude a simplistic minimand.
8. The key question remaining is whether there should be a European level agency to perform such resolutions or whether the home country can provide this under a contract that enables other countries to

[21] Even though Nordea has not yet changed its legal structure, the supervisors have already had to co-operate in a detailed manner with, inter alia, joint inspections, as effectively the group's risk management needs are largely the same even in its current form.

obtain restitution for inadequate performance of the task. If this system of agreed rules for supervision, corrective action and resolution that takes into account the needs of small host countries can be put in place in other ways than by explicit intergovernmental agreement, then it might be possible to agree these arrangements case by case for the limited number of cross-border institutions. Outside groupings like the Nordic area, with its highly convergent systems and a history of working well together, there must be considerable doubts about the credibility of this ex ante commitment, which suggests that an EU level will be needed. In the meantime, any case by case solutions will need to be structured so that they can evolve into the EU level if and when that exists.

9. Host country control as practised in New Zealand and the US will work but at a cost to the institutions themselves and to the ability to integrate operations. It is an attractive option for independent small countries but does not reflect the purpose of European integration.
10. There is a temptation to avoid the hard issues and concentrate on a practical solution for supervisors to work together on the routine supervision of existing institutions. While this can indeed work until a problem emerges, it creates both an illusion of future financial stability and a moral hazard. Without workable means of co-ordination, institutions and lenders will expect that the authorities will be forced into a bailout and risks will be priced accordingly. Where institutions are large compared to the home country, this ability to bail out may be limited. Where host countries cannot compel a rescue, they may be plunged into just the financial crisis the system is intended to avoid.

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Notices

Riksbank gathers agents in cash management field to form cash management advisory board

At its meeting on 9 March 2006, the Executive Board of the Riksbank decided to establish a cash management advisory board consisting of representatives from the cash management field. This advisory board, which will be headed by Riksbank Governor Stefan Ingves, will function as a forum for discussing cash management in society.

The reason behind this initiative is the need for a discussion forum to deal with questions regarding, for instance, the new cash management structure in Sweden that the Riksbank has created together with the banks. The large number of security transport robberies and the need to discuss security issues are further motives for gathering together all agents in this field.

Riksbank changes currency allocation

The Riksbank has reallocated the currency holdings in the Bank's foreign currency reserves. The purpose of the reallocation has been to reduce the effect of exchange rate fluctuations on the foreign currency reserve's annual result measured in Swedish kronor. The choice of currency allocation is based on the currencies' fluctuations and variations in relation to one another over a longer period of time. The change in the foreign currency reserve is made within the framework of the new regulations for asset management that came into force at the beginning of the year.

Extended redemption period for old banknotes

The Riksbank has decided to extend the redemption period for the older versions of the 20-krona, 100-krona and 500-krona banknotes that are no longer legal tender from 28 April to 31 December 2006. Holders of older banknotes, i.e. the 100-krona and 500-krona banknotes without a foil strip and the slightly larger 20-krona notes in a bluer tone, can thus turn to their bank or to Svensk Kassaservice to redeem the banknotes. The reason for this extension is that there are still examples of the banknotes to a value of SEK 1.5 billion in circulation.

Riksbank publishes summary description of monetary policy strategy

At its meeting on 18 May 2006, the Executive Board of the Riksbank decided to publish a document entitled "Monetary policy in Sweden", which describes the goal and strategy for the Riksbank's monetary policy. The most important aim of the document is to explain how the Riksbank, when setting its interest rate, has scope to take into consideration both developments in inflation and in the real economy (growth, unemployment, employment, etc.). It is also important to make clear that inflation may sometimes be allowed to deviate from target. A desirable monetary policy is characterised by inflation normally being close to the inflation target in a two-year time perspective while at the same time the paths for inflation and the real economy do not exhibit excessively large fluctuations.

Monetary policy calender

2002-03-18 The *repo rate* is increased by the Riksbank from 3.75 per cent to 4.0 per cent as of 20 March 2002. The *deposit rate* is accordingly adjusted to 3.25 per cent and the *lending rate* to 4.75 per cent.

04-25 The *repo rate* is increased by the Riksbank from 4.0 per cent to 4.25 per cent as of 2 May 2002. The *deposit rate* is accordingly adjusted to 3.5 per cent and the *lending rate* to 5.0 per cent.

06-28 The *reference rate* is confirmed by the Riksbank at 4,5 per cent for the period 1 July 2002 to 31 December 2002.

11-15 The *repo rate* is lowered by the Riksbank from 4.25 per cent to 4.0 per cent as of 20 November 2002. The *deposit rate* is accordingly set at 3.25 per cent and the *lending rate* to 4.75 per cent.

12-05 The *repo rate* is lowered by the Riksbank from 4.0 per cent to 3.75 per cent as of 11 December 2002. The *deposit rate* is accordingly set at 3.0 per cent and the *lending rate* to 4.5 per cent.

2003-01-01 The *reference rate* is confirmed by the Riksbank at 4.0 per cent for the period 1 January 2003 to 30 June 2003.

03-17 The Riksbank decides to lower the *repo rate* from 3.75 per cent to 3.50 per cent, to apply from 19 March 2003. Furthermore, the Riksbank decides that the *deposit* and *lending rates* shall be adjusted to 2.75 per cent and 4.25 per cent respectively.

06-05 The Riksbank decides to lower the *repo rate* from 3.50 per cent to 3.00 per cent, to apply from 11 June 2003. Furthermore, the Riksbank decides that the *deposit* and *lending rates* shall be adjusted to 2.25 per cent and 3.75 per cent respectively.

06-30 The *reference rate* is confirmed by the Riksbank at 3.0 per cent for the period 1 July 2003 to 31 December 2003.

07-04 The Riksbank decides to lower the *repo rate* from 3.0 per cent to 2.75 per cent, to apply from 9 July 2003. Furthermore, the Riksbank decides that the *deposit* and *lending rates* shall be adjusted to 2.00 per cent and 3.50 per cent respectively.

2004-01-01 The *reference rate* is confirmed by the Riksbank at 3.0 per cent for the period 1 January 2004 to 30 June 2004.

02-06 The Riksbank decides to lower the *repo rate* from 2.75 per cent to 2.50 per cent, to apply from 11 February 2004. Furthermore, the Riksbank decides that the *deposit* and *lending rates* shall be adjusted to 1.75 per cent and 3.25 per cent respectively.

03-31 The Riksbank decides to lower the *repo rate* from 2.50 per cent to 2.00 per cent, to apply from 7 April 2004. Furthermore, the Riksbank decides that the *deposit* and *lending rates* shall be adjusted to 1.25 per cent and 2.75 per cent respectively.

06-30 The *reference rate* is confirmed by the Riksbank at 2.0 per cent for the period 1 July 2004 to 31 December 2004.

2005-01-01 The *reference rate* is confirmed by the Riksbank at 2.00 per cent for the period 1 January 2005 to 30 June 2005.

06-20 The Riksbank decides to lower the *repo rate* from 2.00 per cent to 1.50 per cent, to apply from 22 June 2005. Furthermore, the Riksbank decides that the *deposit* and *lending rates* shall be adjusted to 0.75 per cent and 2.25 per cent respectively.

06-30 The *reference rate* is confirmed by the Riksbank at 1.50 per cent for the period 1 July 2005 to 31 December 2005.

2006-01-01 The *reference rate* is confirmed by the Riksbank at 1.50 per cent for the period 1 January 2006 to 30 June 2006.

01-19 The Riksbank decides to increase the *repo rate* from 1.50 per cent to 1.75 per cent, to apply from 25 January 2006. Furthermore, the Riksbank decides that the *deposit* and *lending rates* shall be adjusted to 1.00 per cent and 2.50 per cent respectively.

02-22 The Riksbank decides to increase the *repo rate* from 1.75 per cent to 2.00 per cent, to apply from 1 March 2006. Furthermore, the Riksbank decides that the *deposit* and *lending rates* shall be adjusted to 1.25 per cent and 2.75 per cent respectively.

Statistical appendix

Statistics from Sveriges Riksbank are to be found on the Internet (www.riksbank.se). Dates of publication of statistics regarding the Riksbank's assets and liabilities including foreign exchange reserves plus financial market and the balance of payments statistics are available on the website of the International Monetary Fund (IMF) (dsbb.imf.org). Dates of publication are also available on www.riksbank.se.

1 Riksbank's assets and liabilities

ASSETS. PERIOD-END STOCK FIGURES. SEK MILLION

		Gold	Lending to banks	Fixed assets	Other	Total
2004	July	17 718	10 635	153 528	2 897	184 778
	Aug	17 718	10 801	150 035	2 800	181 354
	Sept	18 095	10 269	150 885	2 718	181 967
	Oct	18 095	10 405	147 908	2 807	179 215
	Nov	18 095	11 063	150 093	2 706	181 957
	Dec	17 392	17 002	145 256	5 935	185 585
2005	Jan	16 436	11 101	145 391	5 725	178 653
	Feb	15 952	10 210	147 097	5 575	178 834
	March	16 558	12 016	148 366	5 503	182 443
	April	16 558	11 042	155 500	5 858	188 958
	May	16 558	11 286	152 090	5 966	185 900
	June	18 730	4 955	165 709	3 158	192 552
	July	18 730	5 346	166 846	3 370	194 292
	Aug	18 730	4 781	167 749	3 107	194 367
	Sept	19 845	4 937	162 401	3 245	190 428
	Oct	19 729	5 194	163 605	3 359	191 887
	Nov	19 642	5 440	164 246	3 317	192 645
	Dec	22 235	9 601	173 158	3 594	208 588
2006	Jan	22 090	4 101	164 472	3 415	194 078
	Feb	21 916	3 521	168 897	3 256	197 590
	March	24 222	3 106	164 600	3 391	195 319
	April	24 081	3 495	177 197	3 528	208 301
	May	23 983	2 500	172 542	3 518	202 543

LIABILITIES. PERIOD-END STOCK FIGURES. SEK MILLION

		Notes and coins in circulation	Capital liabilities	Debts to monetary policy counterparties	Debts in foreign currency	Other	Total
2004	July	102 747	65 317	37	10 883	5 794	184 778
	Aug	102 979	65 317	280	6 821	5 957	181 354
	Sept	102 670	65 317	79	8 900	5 001	181 967
	Oct	102 821	65 317	25	5 326	5 726	179 215
	Nov	103 297	65 317	101	6 557	6 685	181 957
	Dec	108 894	65 317	613	7 448	3 313	185 585
2005	Jan	104 438	65 317	36	5 817	3 045	178 653
	Feb	103 557	65 317	94	6 453	3 413	178 834
	March	104 269	65 317	640	3 021	9 196	182 443
	April	103 876	65 317	31	10 138	9 596	188 958
	May	103 760	65 317	378	6 490	9 955	185 900
	June	105 489	55 813	153	5 421	25 676	192 552
	July	106 024	55 813	205	6 730	25 520	194 292
	Aug	105 600	55 813	117	6 864	25 973	194 367
	Sept	105 884	55 813	43	5 490	23 198	190 428
	Oct	106 063	55 813	17	6 367	23 627	191 887
	Nov	106 631	55 813	37	6 398	23 766	192 645
	Dec	111 075	55 813	250	12 956	28 494	208 588
2006	Jan	105 864	55 813	772	2 797	28 832	194 078
	Feb	105 083	55 813	47	6 785	29 862	197 590
	March	104 738	55 813	45	5 899	28 824	195 319
	April	105 153	55 813	33	18 035	29 267	208 301
	Maj	105 090	53 770	141	16 824	25 718	202 543

2 Money supply

END-OF-MONTH STOCK

		SEK million			Percentage 12-month change	
		M0	M3		MO	M3
2003	Jan	90 122	1 085 994	Jan	0.4	5.3
	Feb	90 505	1 072 732	Feb	2.9	5.7
	March	91 966	1 092 435	March	2.2	5.8
	April	92 334	1 095 256	April	4.1	4.4
	May	92 346	1 097 622	May	4.0	7.0
	June	92 296	1 106 661	June	3.3	5.0
	July	91 608	1 090 284	July	3.4	5.1
	Aug	93 324	1 109 725	Aug	3.8	5.5
	Sept	92 451	1 113 021	Sept	3.2	4.9
	Oct	92 364	1 114 967	Oct	3.2	6.0
	Nov	93 070	1 107 251	Nov	2.9	3.6
	Dec	98 481	1 119 288	Dec	2.7	3.1
2004	Jan	93 087	1 109 798	Jan	3.3	2.2
	Feb	92 465	1 117 521	Feb	1.0	4.2
	March	92 399	1 116 429	March	0.5	2.2
	April	92 653	1 130 152	April	0.3	3.2
	May	93 032	1 132 356	May	0.7	3.2
	June	94 732	1 115 315	June	2.6	0.8
	July	92 962	1 115 774	July	1.5	2.3
	Aug	94 355	1 126 201	Aug	1.1	1.5
	Sept	93 992	1 147 965	Sept	1.7	3.1
	Oct	93 657	1 149 198	Oct	1.4	3.1
	Nov	95 163	1 161 091	Nov	2.2	4.9
	Dec	98 239	1 171 218	Dec	–0.2	4.6
2005	Jan	95 017	1 159 637	Jan	2.1	4.5
	Feb	94 810	1 165 401	Feb	2.5	4.3
	March	95 494	1 156 486	March	3.3	3.6
	April	94 646	1 171 692	April	2.2	3.7
	May	95 314	1 185 822	May	2.5	4.7
	June	96 426	1 220 530	June	1.8	9.4
	July	96 316	1 205 762	July	3.6	8.1
	Aug	96 670	1 196 390	Aug	2.5	6.2
	Sept	96 655	1 212 644	Sept	2.8	5.6
	Oct	97 446	1 246 357	Oct	4.0	8.5
	Nov	97 778	1 244 371	Nov	2.7	7.2
	Dec	100 479	1 286 682	Dec	2.3	9.9
2006	Jan	96 598	1 276 388	Jan	1.7	10.1
	Feb	96 004	1 267 450	Feb	1.3	8.8
	March	95 062	1 282 830	March	–0.5	10.9
	April	95 035	1 311 134	April	0.4	11.9

3 Interest rates set by the Riksbank

PER CENT

	Date of announcement	Effective from	Repo rate	Deposit rate	Lending rate	Period	Reference rate[1]
2003	03-18	03-19	3.50	2.75	4.25	2003:1hå	4.00
	06-05	06-11	3.00	2.25	3.75	2003:2hå	3.00
	07-04	07-09	2.75	2.00	3.50	2004:1hå	3.00
2004	02-06	02-11	2.50	1.75	3.25	2004:2hå	2.00
	03-31	04-07	2.00	1.25	2.75	2005:1hå	2.00
2005	06-21	06-22	1.50	0.75	2.25	2005:2hå	1.50
2006	01-20	01-25	1.75	1.00	2.50	2006:1hå	1.50
	02-23	03-01	2.00	1.25	2.75		

[1] 1 July 2002 the official discount rate was replaced by a reference rate. which is set by the Riksbank at the end of June and the end of December.

4 Capital market interest rates

EFFECTIVE ANNUALIZED RATES FOR ASKED PRICE. MONTHLY AVERAGE. PER CENT

		Bond issued by:					
		Central Government				Housing institutions	
		2 years	5 years	7 years	10 years	2 years	5 years
2005	Jan	2.62	3.16	3.58	3.84	2.79	3.20
	Feb	2.53	3.10	3.51	3.76	2.70	3.12
	March	2.55	3.20	3.61	3.86	2.73	3.22
	April	2.43	2.97	3.35	3.58	2.61	3.31
	May	2.20	2.72	3.10	3.34	2.35	3.05
	June	1.93	2.44	2.85	3.11	2.06	2.76
	July	1.88	2.40	2.81	3.06	2.01	2.71
	Aug	2.06	2.57	2.93	3.14	2.20	2.87
	Sept	2.06	2.50	2.82	2.98	2.21	2.76
	Oct	2.40	2.87	3.01	3.17	2.33	2.98
	Nov	2.60	3.08	3.22	3.39	2.51	3.20
	Dec	2.76	3.16	3.26	3.37	2.70	3.33
2006	Jan	2.76	3.12	3.21	3.33	2.68	3.30
	Feb	2.74	3.17	3.27	3.42	2.65	3.33
	March	2.81	3.30	3.40	3.55	2.70	3.46
	April	2.97	3.53	3.65	3.84	2.84	3.68
	May	2.98	3.54	3.67	3.89	2.85	3.69

5 Overnight and money market interest rates

MONTHLY AVERAGE. PER CENT

			Interbank	Treasury bills			Company certificates	
		Repo rate	rate	3-month	6-month	12-month	3-month	6-month
2003	Jan	3.75	3.85	3.65	3.64	3.65	3.90	3.88
	Feb	3.75	3.85	3.61	3.53	3.50	3.85	3.79
	March	3.64	3.74	3.40	3.36	3.35	3.64	3.57
	April	3.50	3.60	3.42	3.39	3.40	3.62	3.59
	May	3.50	3.60	3.26	3.14	3.13	3.43	3.37
	June	3.16	3.26	2.80	2.71	2.70	3.03	2.94
	July	2.82	2.92	2.70	2.63	2.68	2.87	2.82
	Aug	2.75	2.85	2.70	2.77	2.86	2.88	2.90
	Sept	2.75	2.85	2.71	2.73	2.91	2.88	2.92
	Oct	2.75	2.85	2.73	2.74	2.92	2.89	2.93
	Nov	2.75	2.85	2.73	2.80	2.93	2.88	2.93
	Dec	2.75	2.85	2.69	2.69	2.84	2.86	2.87
2004	Jan	2.75	2.85	2.60	2.57	2.64	2.77	2.74
	Feb	2.59	2.69	2.46	2.45	2.48	2.59	2.59
	March	2.50	2.60	2.27	2.23	2.28	2.43	2.40
	April	2.10	2.20	2.02	2.05	2.19	2.15	2.18
	May	2.00	2.10	2.00	2.11	2.24	2.15	2.23
	June	2.00	2.10	1.98	2.07	2.38	2.15	2.24
	July	2.00	2.10	1.99	2.03	2.31	2.15	2.24
	Aug	2.00	2.10	2.02	2.13	2.25	2.15	2.25
	Sept	2.00	2.10	2.00	2.13	2.27	2.15	2.26
	Oct	2.00	2.10	1.99	2.10	2.38	2.16	2.27
	Nov	2.00	2.10	1.99	2.06	2.29	2.14	2.25
	Dec	2.00	2.10	1.99	2.05	2.18	2.12	2.16
2005	Jan	2.00	2.10	2.00	2.02	2.10	2.10	2.12
	Feb	2.00	2.10	1.97	1.98	2.04	2.06	2.08
	March	2.00	2.10	1.97	1.99	2.08	2.06	2.07
	April	2.00	2.10	1.99	2.00	2.03	2.06	2.08
	May	2.00	2.10	1.90	1.86	1.86	2.02	2.01
	June	1.85	1.95	1.65	1.62	1.64	1.80	1.78
	July	1.50	1.60	1.48	1.49	1.56	1.60	1.60
	Aug	1.50	1.60	1.48	1.49	1.65	1.61	1.65
	Sept	1.50	1.60	1.47	1.52	1.71	1.62	1.67
	Oct	1.50	1.60	1.49	1.57	1.83	1.68	1.78
	Nov	1.50	1.60	1.51	1.57	1.92	1.68	1.78
	Dec	1.50	1.60	1.69	1.93	2.24	1.68	1.78
2006	Jan	1.56	1.66	1.83	1.96	2.24	1.68	1.78
	Feb	1.75	1.85	1.93	1.97	2.17	1.68	1.78
	March	2.00	2.10	1.96	2.06	2.26	1.68	1.78
	April	2.00	2.10	2.05	2.15	2.39	1.68	1.78
	May	2.00	2.10	2.11	2.17	2.41	1.68	1.78

6 Treasury bill and selected international rates

MONTHLY AVERAGE. PER CENT

		3-month deposits				6-month deposits			
		USD	EUR	GBP	SSVX[1]	USD	EUR	GBP	SSVX[1]
2003	Jan	1.27	2.76	3.88	3.65	1.29	2.69	3.87	3.64
	Feb	1.25	2.63	3.65	3.61	1.25	2.51	3.59	3.53
	March	1.19	2.47	3.56	3.40	1.17	2.39	3.50	3.36
	April	1.22	2.48	3.54	3.42	1.20	2.41	3.48	3.39
	May	1.20	2.35	3.53	3.26	1.16	2.25	3.49	3.14
	June	1.03	2.09	3.55	2.80	1.00	2.02	3.48	2.71
	July	1.04	2.08	3.38	2.70	1.05	2.04	3.37	2.63
	Aug	1.05	2.09	3.43	2.70	1.11	2.12	3.52	2.77
	Sept	1.06	2.09	3.60	2.71	1.10	2.12	3.70	2.73
	Oct	1.08	2.09	3.72	2.73	1.12	2.12	3.87	2.74
	Nov	1.08	2.10	3.88	2.73	1.17	2.17	4.07	2.80
	Dec	1.08	2.09	3.93	2.69	1.15	2.13	4.08	2.69
2004	Jan	1.04	2.03	3.96	2.60	1.10	2.06	4.11	2.57
	Feb	1.03	2.02	4.08	2.46	1.09	2.03	4.19	2.45
	March	1.02	1.97	4.21	2.27	1.07	1.95	4.34	2.23
	April	1.06	1.99	4.30	2.02	1.19	2.01	4.45	2.05
	May	1.16	2.03	4.44	2.00	1.44	2.08	4.63	2.11
	June	1.41	2.06	4.69	1.98	1.72	2.13	4.91	2.07
	July	1.54	2.06	4.77	1.99	1.80	2.13	4.93	2.03
	Aug	1.66	2.06	4.86	2.02	1.87	2.11	4.98	2.13
	Sept	1.85	2.06	4.84	2.00	2.01	2.14	4.93	2.13
	Oct	2.01	2.10	4.80	1.99	2.15	2.13	4.85	2.10
	Nov	2.24	2.12	4.77	1.99	2.42	2.16	4.81	2.06
	Dec	2.44	2.12	4.76	1.99	2.65	2.16	4.78	2.05
2005	Jan	2.60	2.10	4.75	2.00	2.85	2.15	4.77	2.02
	Feb	2.76	2.09	4.79	1.97	2.98	2.13	4.84	1.98
	March	2.95	2.09	4.87	1.97	3.21	2.14	4.95	1.99
	April	3.07	2.08	4.83	1.99	3.31	2.11	4.88	2.00
	May	3.19	2.07	4.78	1.90	3.42	2.08	4.78	1.86
	June	3.36	2.05	4.72	1.65	3.54	2.05	4.69	1.62
	July	3.56	2.08	4.56	1.48	3.78	2.09	4.47	1.49
	Aug	3.74	2.09	4.50	1.50	3.96	2.10	4.49	1.49
	Sept	3.84	2.09	4.50	1.47	3.98	2.11	4.47	1.52
	Oct	4.11	2.14	4.49	1.49	4.29	2.21	4.48	1.57
	Nov	4.29	2.31	4.53	1.51	4.49	2.44	4.54	1.57
	Dec	4.43	2.42	4.56	1.69	4.61	2.54	4.53	1.93
2006	Jan	4.57	2.45	4.50	1.83	4.69	2.60	4.49	1.96
	Feb	4.69	2.54	4.49	1.93	4.86	2.67	4.48	1.97
	March	4.86	2.68	4.50	1.96	4.99	2.82	4.53	2.06
	April	5.01	2.75	4.54	2.05	5.14	2.90	4.58	2.15
	May	5.12	2.84	4.61	2.11	5.22	3.00	4.70	2.17

[1] Treasury bills.

7 Krona exchange rate: TCW index and selected exchange rates

MONTHLY AVERAGE

			SEK				
		TCW index	EUR	GBP	USD	JPY	CHF
2003	Jan	130.9609	9.1775	13.9590	8.6386	0.0727	6.2767
	Feb	129.7272	9.1499	13.6813	8.4930	0.0711	6.2358
	March	130.3167	9.2221	13.5031	8.5298	0.0720	6.2777
	April	128.9566	9.1585	13.2756	8.4370	0.0704	6.1248
	May	127.1076	9.1541	12.8520	7.9229	0.0676	6.0426
	June	126.3154	9.1149	12.9638	7.8108	0.0660	5.9211
	July	127.6987	9.1945	13.1295	8.0807	0.0681	5.9417
	Aug	128.9600	9.2350	13.2074	8.2825	0.0697	5.9957
	Sept	126.7679	9.0693	13.0143	8.0861	0.0703	5.8616
	Oct	125.3358	9.0099	12.9077	7.6966	0.0703	5.8195
	Nov	125.2370	8.9908	12.9783	7.6831	0.0703	5.7642
	Dec	124.3958	9.0169	12.8514	7.3632	0.0682	5.8001
2004	Jan	125.3707	9.1373	13.1985	7.2493	0.0681	5.8343
	Feb	125.9654	9.1814	13.5574	7.2599	0.0682	5.8367
	March	127.6783	9.2305	13.7500	7.5243	0.0694	5.8922
	April	127.6519	9.1711	13.7941	7.6501	0.0711	5.9008
	May	126.7383	9.1312	13.5751	7.6061	0.0679	5.9248
	June	127.0144	9.1422	13.7711	7.5332	0.0688	6.0193
	July	127.3590	9.1954	13.8041	7.4931	0.0685	6.0222
	Aug	127.3415	9.1912	13.7313	7.5444	0.0683	5.9753
	Sept	125.7140	9.0954	13.3500	7.4484	0.0677	5.8943
	Oct	124.8272	9.0610	13.1085	7.2557	0.0666	5.8730
	Nov	123.3656	9.0036	12.8863	6.9390	0.0662	5.9155
	Dec	122.4392	8.9786	12.9405	6.7030	0.0646	5.8495
2005	Jan	123.7464	9.0538	12.9620	6.8996	0.0668	5.8527
	Feb	124.4271	9.0839	13.1666	6.9778	0.0665	5.8614
	March	124.2160	9.0860	13.1189	6.8755	0.0654	5.8669
	April	125.8007	9.1650	13.4189	7.0796	0.0660	5.9230
	May	126.6878	9.1942	13.4357	7.2482	0.0679	5.9511
	June	129.1463	9.2585	13.8466	7.6079	0.0700	6.0170
	July	130.9115	9.4284	13.7113	7.8281	0.0699	6.0507
	Aug	129.3670	9.3426	13.6266	7.6002	0.0687	6.0158
	Sept	129.6486	9.3367	13.7798	7.6215	0.0686	6.0279
	Oct	131.0017	9.4231	13.8250	7.8368	0.0683	6.0845
	Nov	133.2427	9.5663	14.0761	8.1082	0.0685	6.1906
	Dec	131.1811	9.4372	13.8967	7.9524	0.0671	6.0984
2006	Jan	128.9783	9.3180	13.5773	7.6951	0.0667	6.0131
	Feb	129.6175	9.3405	13.6678	7.8190	0.0664	5.9948
	March	130.2104	9.3984	13.6374	7.8174	0.0667	5.9910
	April	128.8187	9.3330	13.4364	7.6064	0.0650	5.9248
	May	128.5258	9.3362	13.6658	7.3124	0.0655	5.9987

Note. The base for the TCW index is 18 November 1992. TCW (Total Competitiveness Weights) is a way of measuring the value of the krona against a basket of other currencies. TCW is based on average aggregate flows of processed goods for 21 countries. The weights include exports, imports and "third country" effects.

8 Nominal effective TCW exchange rate

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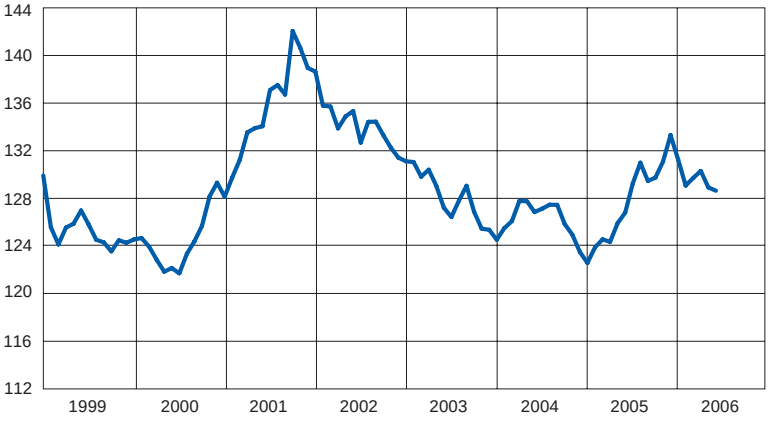

Note: TCW (Total Competitiveness Weights) is a way of measuring the value of the Swedish krona against a basket of other currencies. TCW is based on average aggregate flows of processed goods for 21 countries. The weight includes imports, exports as well as "third country" effects.

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