GOVERNANCE OF INTERNATIONAL BANKING

The Financial Trilemma

DIRK SCHOENMAKER

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The Financial Trilemma

Dirk Schoenmaker

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PREFACE

This book addresses the governance challenges of international banking. My audience is from academia (finance and business) and the financial regulatory authorities. International bankers may find the book helpful in grasping the long-term trends in their industry. The book combines academic insights and policy issues.

The international financial system brings benefits but is also crisis prone. Some 50 years ago, Mundell and Fleming showed that fixed exchange rates and national monetary policy cannot be combined in an open economy with international capital mobility. Their monetary trilemma stipulates that authorities have to choose two out of the three objectives. On the financial side, I argue that we face a similar trade-off. Financial stability and national policies for supervision and resolution cannot be combined in an open economy with international banks. The Great Financial Crisis has showed us that national authorities cannot handle international bank failures effectively. They are preoccupied with the domestic effects in their own jurisdiction and overlook the bigger picture of international financial stability.

While starting to work on the financial trilemma before the crisis, the full model was not published before 2011. Applying game theory, I developed a model of the financial trilemma to understand the failure to coordinate among supervisors (Schoenmaker 2011). The implication of the financial trilemma is very clear. International banks that are centrally managed and national financial authorities do not go together. Geographic overlap is needed. Either international banks become national, or national authorities find an effective way of binding cooperation in the supervision and resolution of international banks. This book provides governance solutions to foster effective cooperation. Such cooperation is needed both for the European banks and for the newly emerging global systemically important banks (G-SIBs).

The essence of global governance of the international financial system is that the current international financial institutions, such as the European Central Bank in Europe and the International Monetary Fund and the Bank for International Settlements in the world, expand their narrow mandate for monetary stability to a broad mandate for monetary and financial stability. That mirrors the domestic situation where central banks only recently have started to realize that monetary and financial stability are two sides of the same coin. In his seminal book *The Evolution of Central Banks*, Charles Goodhart (1988) reassessed the dominant monetary analysis in the 1980s and showed that the development of central banks to supervise the commercial banking system fulfills a necessary and natural function. I argue that the international financial institutions should accordingly adopt a supervisory role for the global systemic banks.

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Dirk Schoenmaker
September 2012

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ABBREVIATIONS

AIG	American International Group
BIS	Bank for International Settlements
BRICS	Brazil, Russia, India, China, and South Africa
CDO	collateralized debt obligation
CDS	credit default swap
CEO	chief executive officer
CESE	central, eastern, and southern Europe
CoCo	contingent convertible
DIP	debtor in possession
DM	Deutsche mark
EBA	European Banking Authority
EBRD	European Bank for Reconstruction and Development
EC	European Commission
ECB	European Central Bank
EDIRA	European Deposit Insurance and Resolution Authority
EEA	European Economic Area
EFR	European Financial Services Round Table
EMU	Economic and Monetary Union
ESCB	European System of Central Banks
ESM	European Stability Mechanism
ESRB	European Systemic Risk Board
EU	European Union
FDI	foreign direct investment
FDIC	Federal Deposit Insurance Corporation
FPC	Financial Policy Committee
FSA	Financial Services Authority
FSAP	Financial Sector Assessment Program
FSB	Financial Stability Board
FSOC	Financial Stability Oversight Council
FX	foreign exchange

GDP	gross domestic product
G-SIB	global systemically important bank
G7	Group of Seven
G20	Group of Twenty
IAIS	International Association of Insurance Supervisors
IIF	Institute of International Finance
IMF	International Monetary Fund
IMFC	International Monetary and Financial Committee
IOSCO	International Organisation of Securities Commissions
ISDA	International Swaps and Derivatives Association
LBHI	Lehman Brothers Holding Inc.
LTV	loan to value
M&As	mergers and acquisitions
MV	majority voting
OECD	Organisation for Economic Cooperation and Development
OTC	over the counter
PwC	PriceWaterhouseCoopers
QMV	qualified majority voting
SEC	Securities and Exchange Commission
SIB	systemically important bank
TARP	Troubled Asset Relief Program
UK	United Kingdom
US	United States
WTO	World Trade Organization

INTRODUCTION

International banks and national authorities form an unstable combination. This geographic mismatch was laid bare by the failure of Lehman Brothers, which started the Great Financial Crisis in September 2008. At that time, Lehman was the fourth largest investment bank in the United States, with major international operations, including a large London office. When frantic efforts of the US authorities to rescue Lehman faltered over the weekend of September 13–14, 2008, the US authorities made a, by now infamous, telephone call to their United Kingdom (UK) colleagues at the Financial Services Authority (FSA) on more or less the following lines: "We have not succeeded in brokering a merger for Lehman, and we will put it into bankruptcy before the opening of the markets in Asia tomorrow. As you know, the bankruptcy regime is national. Good luck with it."

The Securities and Exchange Commission (SEC), the leading US supervisor, instructed Lehman to file for bankruptcy. On September 15, 2008, at 1:45 a.m., Lehman Brothers Holding Inc. filed for protection under Chapter 11 of the US Bankruptcy Act. While the US authorities refused to support the parent holding company, they did support Lehman Brothers Inc., the US broker-dealer subsidiary, for another five days until most of its activities were sold. By contrast, the foreign subsidiaries found themselves suddenly illiquid and unable to continue their operations, as Lehman Brothers Holding Inc. managed cash resources centrally and declared bankruptcy before cash could be swept to the subsidiaries. Bankruptcy proceedings were initiated in a variety of jurisdictions, including Australia, Japan, Korea, and the UK.

Because London was Lehman's largest center of activity outside the United States, most problems showed up there. The London subsidiaries, including Lehman Brothers International Europe, its largest broker-dealer in Europe, filed for bankruptcy and turned to PriceWaterhouseCoopers (PwC) for administration. PwC was confronted with 43,000 trades that were still "live" and would need to be negotiated separately with each counterparty.

Lehman Brothers is not the first, and perhaps not the last, international casualty falling between the international cracks. In 1974, Bankhaus Herstatt, a small German bank operating on the global foreign exchange (forex) market, collapsed. On June 26, 1974, the German authorities closed the bank while being halfway in the execution of its forex transactions. Herstatt had received its part on the Deutsche mark (DM) leg of foreign exchange (FX) deals but was not able to pay on the US dollar leg. This small international bank failure led to sizable losses and prompted the establishment of the Basel Committee on Banking Supervision.

The Lehman case study, fully written out in chapter 4, highlights three central issues: (1) Global banks typically manage their key functions (including treasury) centrally at the holding company; (2) authorities only deal with the impact within their own jurisdiction; and (3) voluntary cooperation between authorities is difficult to achieve in the heat of a crisis. A superficial response to the first issue is to require banks to decentralize their key functions, so that each country subsidiary has its own liquid funds and capital and maintains its own systems. National supervisors are increasingly applying this "national" approach. The typical response to the second and third issue is to call for harmonization of supervisory and bankruptcy rules and for better cooperation between supervisory and resolution authorities, setting aside their cultural differences. The international policy community has put these harmonization and cooperation efforts high on the agenda.

In this book, I rebut these responses. Because of contagion risk, the entire banking group is cut off from the markets when the parent company or a major subsidiary is troubled. By operating under a common brand name, banks reinforce this "single banking group" perception. Next, authorities are always bound to take a national approach toward resolution for compelling legal and political considerations. Interestingly, the FSA head of banking supervision in the UK was a US national at that time, dispelling the cultural argument. Finally, ex post negotiations are likely to break down in the absence of a legally binding, treaty-based obligation to burden sharing.

Instead, I argue on fundamental grounds that the three objectives of (1) financial stability, (2) international banking, and (3) national financial policies do not go together. Policymakers can only achieve two out of these three objectives and have to give up one. I have called this the financial trilemma (Schoenmaker 2011). Assuming that financial stability is desirable, politicians face a basic choice between fostering international banking and keeping national autonomy. There is no way out.

The only solution is to rectify the geographic mismatch. This can be done either by combining international banks with an international governance approach, or by putting national banks and national governance together. The economics of global finance is the easy part. More difficult is the politics.

Citizens, and their political leaders, are increasingly losing faith in the (global) financial system after the Great Financial Crisis. Why did banks provide subprime mortgages to people who could not afford the required interest payments? How is it possible that some (large) banks turned these subprime mortgages into even riskier products, called reverse mortgage-backed securities, and sold them on to other banks without bearing the full consequences? How could that bring down the global financial system? Why should the taxpayer pick up the bill for these practices? More recently, financial markets have been "attacking" the periphery economies of the euro area. The typical economist answer that "these market forces are not speculators but are just revealing the weakness of underlying policies" does not convince ordinary citizens. Why are markets reacting in such a binary way (no risk premiums for these economies before 2010 and very large risk premiums thereafter)? What made Greece, Ireland, and Portugal different all at once in 2010?

These questions need to be answered for the public to regain trust in the financial system. Furthermore, citizens would need to develop some transnational identity on top of their national identity to make global solutions acceptable. In that light, it is helpful that citizens still cherish the benefits of global trade and production and thus appreciate the relevance of the wider global economic system. Developing this transnational feeling is the real challenge in solving the financial trilemma.

ORGANIZATION OF THE BOOK

The book is organized as follows. Chapter 1 explores the governance challenges for nation-states in a globalized financial world. The underlying problem is that markets and financial institutions are operating on a global scale, while sovereign power is defined at the national level. The international financial reform agenda is also discussed. While efforts to strengthen supervision with substantial higher capital requirements and new resolution standards are very welcome, the reforms so far fail to provide (binding) incentives for cooperation between national authorities.

Chapter 2 provides a theoretical underpinning of the financial trilemma. As internationalization of banking rises, the potential for coordination failure among national supervisors increases. Chapter 3 documents the rise of international banking, both within the major regions and between the three regional blocks. It is found that international banking is most advanced in Europe and least in Asia. The Americas take an intermediate position on the internationalization scale. The chapter also documents the degree of internationalization of the large global systemic banks. The Financial Stability Board, the newly emerged body dealing with international financial stability, has produced a list of 28 global systemically important banks (G-SIBs), which face higher regulatory requirements.

Next, chapter 4 provides case studies of some major international bank failures during the Great Financial Crisis. It appears that most of these bank failures, such as those of Lehman and Fortis, follow the theoretical model. Coordination breakdown between national authorities thus happens in practice. Chapter 5 develops some model-based solutions to the financial trilemma. International governance mechanisms for coordination include supranational approaches, where an international institution takes over from the nation-states. An alternative approach is burden sharing, under which national governments precommit to share the burden of an international bailout.

Chapter 6 discusses the political economy of international governance. The fiscal dimension is key to any international governance in global finance. The control over fiscal resources to provide the ultimate backstop for a potential international bank bailout defines the incentives for cooperation. As long as the fiscal backstop is fully national, international cooperation will remain fragile. Only when there is an international governance mechanism to pool fiscal resources can international cooperation be made to work. Effective international cooperation challenges the core of sovereign power (the power to tax and to set the budget independently). It also touches the core of citizens' identity. Are citizens only prepared to express solidarity within their nation-state? Or can we also develop a transnational identity necessary to shift resources at the broader international level?

Finally, chapter 7 lays down a framework for global governance. In the game-theoretic framework applied throughout this book, we propose a backward-solving approach. The endgame of resolution is setting the incentives for the supervisory agency. So resolution and supervision should be lifted in tandem to the regional or international level. The chapter outlines the potential for turning existing international bodies, such

as the Bank for International Settlements and the International Monetary Fund, into international institutions for financial stability. At the regional level, Europe is contemplating a fully-fledged banking union to match its monetary union. This book focuses on the governance of international banks, but similar arguments are more or less applicable to the governance of other parts of the global financial system.

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Governance of International Banking

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CHAPTER 1
Governance Challenges for Global Finance

Global banks are global in life but national in death.
Mervyn King, 2009

The global financial system facilitates global trade, the exchange of goods and services across borders. Some would even argue that international finance has outgrown the needs of international trade. The unprecedented rise of global financial markets over the last decades has brought us the Second Age of Globalization. International financial integration was high from 1870 to 1914, the First Age of Globalization. It declined sharply through the Great Depression and the Second World War. Recovering after that period, the Second Age of Globalization took off in the 1980s, as documented by Obstfeld and Taylor (2004). This second wave culminated in the Great Financial Crisis that started in 2007 and is not yet finished, as of this writing. The large international banks were found to be at the core of transmitting the shock from the US housing market collapse to the global financial and economic system. Substantial amounts of government support, in particular in the United States and Europe, were needed to steer international (and domestic) banks through the Great Financial Crisis.

The rise of large international banks is comparable to that of multinational companies, which underpin global trade. While multinational companies started with importing raw materials to, and exporting products

from, their home base, the last decades have witnessed a shift toward direct foreign investment to produce goods locally. Similarly, large banks have expanded on a global scale by establishing branches and subsidiaries abroad, often through acquisition of local banks. These banks have grown into global powerhouses with balance sheets of up to $3 trillion of assets and span the global financial system.

New international institutions, like the International Monetary Fund (IMF) and the World Trade Organization (WTO), were instrumental in restoring the global financial and trade system in the aftermath of the Great Depression and the Second World War. The central question in this book is, what institutional changes are needed to restore the stability of international banking? As the response of the international policy community, embodied in the newly emerged Group of Twenty (G20), is slowing down, national supervisors are increasingly retrenching banks on national lines in the aftermath of the Great Financial Crisis.

The costs associated with financial crises can be large. They not only affect banks and their creditors and stakeholders, they also extract a toll from taxpayers and the real economy, as witnessed during the Great Financial Crisis. A central aim of financial regulation is to internalize these negative externalities, so as to provide banks with appropriate incentives to manage—and limit—their risks and authorities with the appropriate tools to reduce the impact of a failure on the wider financial system. Regulation can achieve this central aim by reducing the incidence of distress at individual banks and by intervening in an efficient manner if insolvencies or financial crises do occur. However, this is complicated by the rise of large international banks that operate on a global scale across several jurisdictions. Most national authorities only address the spillover effects generated by a distressed bank within their national perimeter and ignore cross-border spillover effects. To summarize this point, Mervyn King, the governor of the Bank of England, has coined a famous sentence: "The collapse of Lehman Brothers showed us that global banks are global in life but national in death" (quoted in Turner 2009, 36).

Since the 1990s, national authorities have adopted several policies based on essentially voluntary cooperation embodied in nonbinding memoranda of understanding. This policy approach failed during the Great Financial Crisis. The basic reason for this coordination failure is that both the incentives and the institutional framework for cooperation have been lacking. To overcome this policy failure, this book explores mechanisms for binding cooperation in the supervision and resolution of large international banks. While that is technically feasible, the real hurdle is politics. Countries want to preserve their sovereignty and are thus not keen

to share the control over their national banks, even when they operate on a global scale.

1.1. GOVERNANCE CHALLENGES

The international monetary and financial system poses several governance challenges for nation-states. Monetary and financial stability is a public good. Can national governments still produce this public good at the national level in today's global financial markets?

Nation-States

The coordination debate starts with the nation-state as the holder of sovereign power. The modern state emerged after the Peace of Westphalia in 1648. In reaction to the numerous complications of the feudal system in the Middle Ages, political philosophers like Jean Bodin (1530–1596) stressed the necessity for sovereignty to be one and indivisible. The key element of the nation-state is that the ultimate sovereign power (state) and the cultural entity of people (nation) overlap. The nation-state has become the dominant form of state organization. In particular, the democratic nation-state has emerged, in which the people determine public policy by electing the legislature or government or both. Key symbols of a nation-state are its flag, its sword power, and its currency. The state and its currency are circular. While each state wants its own currency to foster its (monetary) independence, each currency needs a strong sovereign backstop to be credible (Goodhart 1998). The power to tax (the "deep pockets" of government) is an important aspect of this sovereign backstop.

In the Westphalian system of nation-states, the balance of international power rests with clearly defined, centrally controlled nation-states, which recognize each other's sovereignty and territory (Cooper 2003). In this system, states are equal and independent. States do not have to recognize a higher authority than their own, while their relations with other states are conducted on equal footing. The Westphalian system of states has evolved over the centuries into the global standard for the conduct between states. In his recent book, *The Globalization Paradox*, Dani Rodrik (2011) argues that the nation-state remains the only game in town when it comes to global governance.

However, Padoa-Schioppa (2010) challenged this notion and suggested that new thinking on the concept of the state is needed. The Westphalian

system of international relations between sovereign nation-states may not be as absolute in a globalized world as it has been in previous centuries. International organizations such as the IMF and the WTO are already playing an important role in the present system of global governance. This book explores the potential role of international organizations for the stability of the global financial system. A key element is the command over fiscal resources, which until recently were the exclusive domain of nation-states, to provide a backstop to the global financial system. The IMF is the first example of an international organization that can—albeit indirectly—marshal fiscal resources (from its member countries) to maintain global monetary and financial stability. Nevertheless, this command is constrained, as the IMF has an intricate governance structure involving member countries in the ultimate decision on financial support for countries in difficulties.

Monetary Trilemma

Moving to the coordination challenges in a global financial system, fixed exchange rates have been found to be unstable on the monetary side. This led to the formulation of the monetary trilemma by Mundell (1963) and Fleming (1962), which states that (1) a fixed exchange rate, (2) international capital mobility, and (3) national independence in monetary policy cannot be achieved at the same time; one policy objective has to give. The corollary is that governments face a trade-off among these objectives and have to make a choice of two objectives. Figure 1.1 depicts the monetary policy trilemma.

Mundell and Fleming provide a theoretical underpinning for the monetary trilemma. The Mundell-Fleming model of an open economy portrays

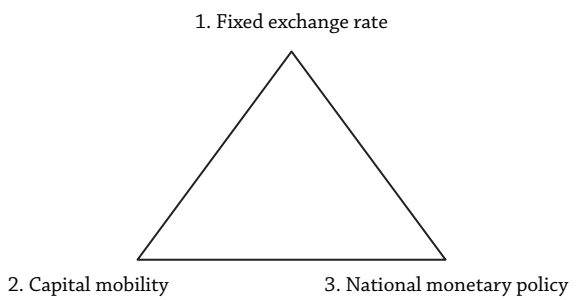

Figure 1.1
The monetary trilemma

the short-run relationship between an economy's nominal exchange rate, interest rate, and output. By contrast, the closed-economy model focuses only on the relationship between the interest rate and output. The open economy assumption is the innovation in their model. They show that the interest rate and the exchange rate cannot be set independently in an open economy model.

The intuition of the model is as follows. Assuming perfect capital mobility and a fixed exchange rate, the slightest interest rate differential causes infinite capital flows. Suppose a central bank tightens monetary policy by increasing its domestic interest rate. Portfolio holders worldwide shift their wealth to take advantage of the new higher rate. They buy domestic assets, tending to cause the exchange rate to appreciate. This forces, in turn, the central bank to intervene to hold the exchange rate constant. The central bank buys foreign money in exchange for domestic money, reversing the initial monetary tightening. This process comes to an end when the domestic interest rate is back at the foreign interest rate.

It follows that a country cannot pursue an independent monetary policy (policy objective 3) under a fixed exchange rate (policy objective 1) and perfect capital mobility (policy objective 2). Interest rates cannot move out of line with those prevailing in the world market. Any attempt at independent national monetary policy leads to capital flows and a need to intervene until interest rates are back in line with those in the world market. The following simple equation gives the relationship between the domestic interest rate i_d and the foreign interest rate i_f:

$$i_d = i_f . \tag{1.1}$$

The monetary policy trilemma is thus built on an arbitrage relationship between domestic and foreign interest rates. Any deviation from world interest rates would put pressure on the fixed exchange rate. Independent interest rate decisions are only possible when the economy is "closed" through capital controls, or the exchange rate is flexible.

The trilemma concept introduces a binding constraint for nation-states that operate in the global financial system. In this case, the constraint makes it impossible for a country to have simultaneously a fixed exchange rate, capital mobility across its borders, and an activist national monetary policy. This is general equilibrium thinking, and it implies that capital flows in global financial markets cannot be analyzed independent of foreign exchange regimes and domestic macro policy (Obstfeld and Taylor 2004).

While in "good" times pursuing the three objectives seems to be feasible, a crisis provides the real test. History has shown time and again that fixed exchange rates ultimately break down unless monetary policy is sufficiently powerful (large reserves) and only used to support the exchange rate. Moreover, underlying economic divergences, for example in productivity, may also lead to a breakdown of a fixed exchange rate. So both monetary and macro policies need to underpin the exchange rate target.

Countries have taken different approaches toward the monetary trilemma. The United States, for example, has flexible exchange rates and national monetary policy. Europe has irrevocably fixed exchange rates and given up national monetary policy within the euro area. Finally, China has a fixed exchange rate in combination with capital controls.

Financial Trilemma

On the financial stability side, Niels Thygesen (2003) and I (Schoenmaker 2005) suggested the possibility that a financial trilemma will develop as financial integration increases, both at a global level and in the European Union (EU). We raised the question, to what extent can countries manage financial stability at the national level in a financially integrated system? However, we did not provide a theoretical underpinning of the financial trilemma at the time. The lack of a rigorous underpinning is related to the lack of a clear and consensus definition of financial stability.

In a first model of the financial trilemma, I relate financial stability to the concept of externalities caused by a bank failure (Schoenmaker 2008). The key insight is that national governments do not incorporate cross-border externalities of the failure of an international bank. They only care about the domestic effects, as they are accountable to their national parliament. Moreover, some banks are too large relative to the economy for a country to save. The Great Financial Crisis has subsequently confirmed that national financial supervision and resolution (i.e., crisis management) can indeed not cope with international banks.

The handling of international banks, such as Lehman Brothers and Fortis, offers clear examples of coordination failure. The United States acted unilaterally, providing a resolution for the US broker/dealer arm of Lehman that, seen in isolation, can perhaps be said to have been orderly. But there was no cooperation offered in the resolution of the foreign Lehman subsidiaries, including the major operations in the UK. During the efforts to rescue Fortis, cooperation between the Belgian and Dutch authorities broke down despite a long-standing relationship in ongoing supervision. Fortis

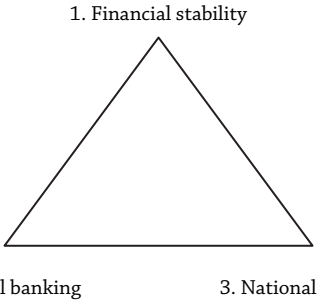

Figure 1.2
The financial trilemma
Source: Schoenmaker (2011)

was split on national lines and its disposition was subsequently resolved by the respective national authorities at a high overall cost.

These coordination problems informed a formal formulation of the financial trilemma (Schoenmaker 2011), which states that (1) a stable financial system, (2) international banking, and (3) national financial policies for supervision and resolution are incompatible. Any two of the three objectives can be combined but not all three; one has to give. Figure 1.2 illustrates the financial trilemma. The financial stability implication of international banking is that national financial policies are no longer adequate. Effective international cooperation for bank bailouts is needed. The full model is explained in chapter 2.

Until recently, much emphasis has been placed on supervisory cooperation. The Great Financial Crisis has shown that the endgame of resolution is decisive for international policy governance. There is an interesting parallel with the monetary trilemma. The stability of a fixed exchange rate is tested during a crisis. Only then does it become clear whether the authorities can weather the "attacks" from the markets (often dubbed as speculators) and maintain the exchange rate. Similarly, the stability of the financial system is tested during a banking crisis, when it becomes clear whether the national authorities can cooperate to resolve an international bank failure. So the financial trilemma suggests that international supervisory cooperation cannot be analyzed independently of the resolution regime.

1.2. INTERNATIONAL POLICY PROPOSALS

In the aftermath of the Great Financial Crisis, several international policy proposals have been put forward to repair the fault lines of the global financial system. The politicians have taken the lead in the Group

of Twenty (G20). The G20, founded in 1999, has a broader membership than the traditional Western-dominated groupings, such as the Group of Seven (G7). The new economies of China, India, Brazil, and South Africa, for example, are among the G20 members.[1]

While the G20 used to meet at the level of finance ministers and central bank governors, it has changed gear after the start of the Great Financial Crisis. Since November 2008, a biannual summit of the political leaders of the G20 countries has been added on top of the ministerial and governors' meetings. The G20 is thus pushing the international policy agenda and monitoring progress of the more technical committees, such as the Basel Committee on Banking Supervision and the Financial Stability Board (FSB).

International banking policy coordination got started after the failure of an international, albeit small, German bank, Bankhaus Herstatt, which operated on the global foreign exchange (FX) market. On June 26, 1974, Herstatt became insolvent after the German markets were closed, but before the US markets were closed. Herstatt had thus received its part on the DM leg of FX deals but was not able to pay on the US leg. This small international bank failure led to sizable losses on the global FX market and prompted the establishment of the Basel Committee on Banking Supervision in 1974 (Goodhart 2011).

In its early years, the Basel Committee worked on the supervisory coverage of international banks, in particular the relative responsibilities of the home and host supervisors. The main result of this work is the Basel Concordat setting out the principles for the supervision of foreign branches and subsidiaries, which chapter 3 discusses in more detail. At a later stage, the Basel Committee moved to setting minimum regulatory standards to promote a level playing field for international banks. A major result is the well-known 1988 Basel Capital Accord (Basel I), which developed a single risk-adjusted capital standard to be applied throughout the major banking countries of the world. The subsequent 2004/6 Revised International Capital Framework (Basel II) allows the large banks to use their internal risk management models to calculate capital requirements.

The Basel Committee of Banking Supervision is a committee set up under the auspices of the Bank for International Settlements (BIS), but it has no legal personality of its own. The Basel Committee does not possess any formal supranational supervisory authority, and its standards do not have legal force. The Basel Committee formulates and recommends broad supervisory standards, which can be seen as soft law, to be implemented in hard law by the national authorities. Nevertheless, the Basel standards have a legally significant impact, as they have become the effective standards for

banking supervision across the world. Because of its lack of legal status, the Basel Committee shies away from sanctions, in case a country does not implement and enforce the agreed standards, and crisis resolution, which involves finance ministries and politicians (Goodhart 2011). The committee regards these domains as the prerogative of sovereign states.

The IMF and the FSB have started to fill this international void. The IMF established the Financial Sector Assessment Program (FSAP) in 1999, which provides a comprehensive and in-depth analysis of a country's financial sector. As part of the FSAP, the IMF performs a detailed assessment as to what extent countries observe relevant financial sector standards and codes, including the Basel standards. It should be added that the FSAPs were originally conducted on a voluntary basis. It took the Great Financial Crisis before the United States and China were prepared to submit their financial system to an assessment by the IMF. The US and Chinese FSAPs happened in 2010 and 2011 respectively, more than ten years after the start of the program. Finally, in 2010, the IMF made financial stability assessments under the FSAP a mandatory part of IMF surveillance every five years for the 25 largest countries deemed systemically important based on the size of their financial sector and their global interconnectedness.

The FSB was established by the G7 in 1999 under the name Financial Stability Forum to promote international financial stability. Shortly after the outbreak of the Great Financial Crisis, the G20 heads of states and governments took over from the G7 and upgraded the name from Forum to Board, vested the FSB with legal personality (an association under Swiss Law), and enhanced its capacity. The G20 follows a gradual approach toward the institutionalization of the FSB. The legal personality is a first step. The G20 considers a treaty-based international organization not to be an appropriate legal form at this time (Financial Stability Board 2012a). The FSB thus falls short of full-blown international organizations, such as the IMF and the WTO. But the strong backing of the G20 political leaders has increased the powers and standing of the FSB as an international body. The mandate of the FSB includes inter alia the following tasks:

- Assess vulnerabilities affecting the global financial system
- Support contingency planning for cross-border crisis management
- Promote members' implementation of agreed standards through monitoring

But these tasks are still relatively modest, as they enable the FSB to promote, rather than to lead and command, international cooperation.

Reform Agenda

The Great Financial Crisis brought into sharp focus the massive costs associated with the bailout of complex systemically important financial institutions, which were perceived as too big to fail. The too-big-to-fail doctrine has been reinforced, if anything, by governments' handling of the financial crisis. As a result, the most significant regulatory reform proposals have focused on the question of how to curtail the too-big-to-fail problem. Namely, how can one reduce moral hazard and rein back expectations of future bailouts of the global systemically important banks (G-SIBs)?

The main reform proposals to strengthen financial stability are twofold:

1. Reduce the probability of failure by increasing capital substantially. The new Basel III capital framework increases the quality and quantity of capital, resulting in higher levels of core equity. Moreover, there is a capital surcharge for the global systemic banks. The objective is for banks to internalize the externalities of a systemic failure and thus to better protect taxpayers against any future public bailouts.
2. Reduce the impact of a systemic failure of a global systemic bank. The FSB has formulated Key Attributes of Effective Resolution Regimes for Financial Institutions. A central plank is a Recovery and Resolution Plan drawn up ex ante with the purpose of using it if a bank gets into difficulties. These plans may allow global systemic banks to fail or, at least, to be unwound in an orderly manner without imposing disproportionate costs on the taxpayer.

Both elements can reinforce each other to potentially reduce the too-big-to-fail problem. Other elements on the reform agenda are proposals to strengthen actual supervision, to move OTC derivatives to central clearing (reducing counterparty risk), to address the gaps in the rules for securitization (strengthening risk management), to strengthen regulation and oversight of the shadow banking system (extending the regulatory remit toward all financial institutions involved in credit intermediation), and to adopt macro-prudential frameworks and tools (preventing/mitigating asset price booms and procyclical micro-prudential rules). A discussion of these other elements is beyond the scope of the book.

Enhanced Capital and Liquidity Holdings

Banks were caught heavily undercapitalized at the time of the Great Financial Crisis. Some components of regulatory capital, like subordinated

debt, were not found to absorb losses. Authorities were afraid to impose losses on subordinated bondholders out of fear for further contagion in the financial system. Moreover, banks had been making large payouts to shareholders through dividends and share buybacks until early 2008, the onset of the Great Financial Crisis.

The main purpose of the Basel III capital reform is to raise the quality and level of capital (Basel Committee on Banking Supervision 2010a). There is a greater focus on common equity (that is, shareholders' equity, including reserves) to absorb losses. The common equity minimum is raised to 4.5 percent of risk-weighted assets. Together with a further 3.5 percent of Tier 1 and 2 capital, the total minimum capital amount is 8 percent. Next, a capital conservation buffer, comprising a common equity of 2.5 percent, puts a constraint on a bank's discretionary distributions, such as dividend payments or share buybacks. In addition, a countercyclical capital buffer, ranging from 0 to 2.5 percent, creates a buffer that is built up in good times and used in economic downturns. The countercyclical buffer is meant to stabilize the supply of credit in an economy.

There is an extra capital surcharge for G-SIBs. These global systemic banks must have higher loss absorbency capacity to reflect the greater risk that they pose to the global financial system. The G-SIB surcharge ranges from 1 to 2.5 percent, depending on a bank's systemic importance (Financial Stability Board 2012b). A surcharge of 3.5 percent is reserved for G-SIBs whose systemic importance increases in the future. Table 1.1 shows the surcharge for the G-SIBs. Chapter 3 explains the assessment methodology to identify G-SIBs and contains the list of current G-SIBs.

Figure 1.3 presents an overview of the new capital buffers in the Basel III framework: the capital conservation buffer, the countercyclical buffer, and the G-SIB surcharge. Furthermore, on top of these capital requirements, supervisors may add extra capital to cover for other risks following a supervisory review process (as part of the so-called pillar 2 of the Basel capital framework). The new Basel III capital rules are phased in gradually from 2013 till 2019.

Another problem with the previous Basel II capital framework was that banks underrepresented their risk-weighted assets to save on capital. Under Basel II banks were, and still are under Basel III, allowed to calculate the risk-weights of the various asset categories with their own internal models. Banks are thus tempted to downplay the riskiness of assets to reduce capital ratios. New research at the IMF reports substantial variations in the calculation of risk-weighted assets across banks and countries, which may undermine the Basel II/III capital framework (Le Leslé and Avramova 2012). To address this bias, Basel III introduces the leverage ratio, a traditional backstop to the risk-based capital requirement. The

Table 1.1. CAPITAL SURCHARGE FOR GLOBAL SYSTEMICALLY IMPORTANT BANKS

Bucket	G-SIBs in each bucket
1(1.0%)	Bank of China
	BBVA
	Banque Populaire CdE
	Groupe Crédit Agricole
	ING Bank
	Mizuho Financial Group
	Nordea
	Santander
	Société Générale
	Standard Chartered
	State Street
	Sumitomo Mitsui Financial Group
	UniCredit
	Wells Fargo & Co
2 (1.5%)	Bank of America
	Bank of New York Mellon
	Credit Suisse Group
	Goldman Sachs
	Mitsubishi UFJ Financial Group
	Morgan Stanley
	Royal Bank of Scotland
	UBS
3 (2.0%)	Barclays
	BNP Paribas
4 (2.5%)	Citigroup
	Deutsche Bank
	HSBC
	JPMorgan Chase & Co
5 (3.5%)	Empty

Note: The FSB allocates the capital surcharge according to a bank's systemic importance. The FSB applies five buckets ranging from 1 percent to 3.5 percent (Financial Stability Board 2011b).
Source: Financial Stability Board (2012b).

leverage ratio is calculated as Tier 1 Capital divided by Total Assets (so without risk-weighting) and set at 3 percent for all banks. The leverage ratio is a rough measure to ensure there is sufficient capital in the overall banking system and to limit the growth of bank balance sheets (at a given amount of available capital). Although it would be consistent to apply the G-SIB surcharge also to the leverage ratio (for example a 4 percent leverage ratio for global systemic banks), the Basel Committee has not (yet) decided to do that.

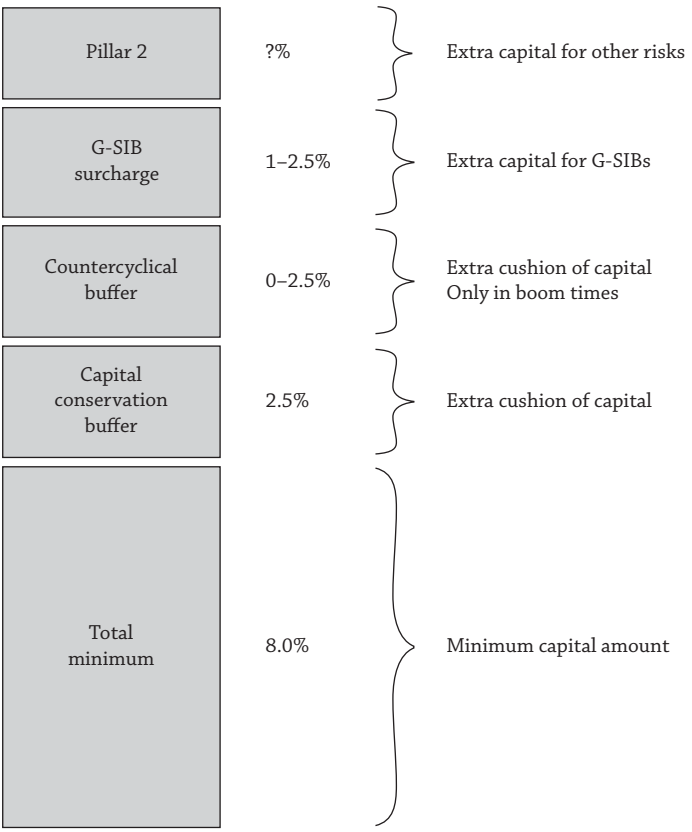

Figure 1.3
Basel III capital charges

Banks were also short of liquidity at the onset of the Great Financial Crisis. They had insufficient freely available liquid assets, as the entire system seized up. Moreover, banks relied heavily on short-term wholesale funding for their long-term assets, creating a substantial liquidity mismatch. Basel III introduces the liquidity coverage ratio, requiring banks to have sufficient high-quality liquid assets to withstand a 30-day stressed funding scenario, and the net stable funding ratio, a longer-term structural ratio designed to address liquidity mismatches. The latter ratio covers the entire balance sheet and provides incentives for banks to use stable sources of funding.

Effective Resolution

Resolution of international banks was extremely difficult during the Great Financial Crisis. Several countries lacked an effective national resolution

regime. On top of that, national resolution proceedings differed greatly, complicating an international resolution. Chapter 4 discusses some major international bank failures in detail. The big lesson of the Great Financial Crisis is that the world needs a way of resolving any financial institution—no matter what size—if it gets into trouble. The establishment of an effective resolution framework is therefore high on the policy agenda. The Financial Stability Board (2011a) has formulated the Key Attributes of Effective Resolution Regimes for Financial Institutions.

The Key Attributes require national jurisdictions to have designated resolution authorities with a broad range of powers to intervene and resolve a financial institution that is no longer viable. These intervention powers enable resolution authorities to order transfers of business and creditor-financed recapitalization ("bail-in") that allocate losses to shareholders and unsecured creditors, like bondholders, in their order of seniority. So shareholders and bondholders should absorb losses before public bailouts are considered. Some countries, such as the UK, the United States, Japan, Germany, the Netherlands, and Switzerland, have implemented special resolution regimes, as reported in chapter 6.

Next, national jurisdictions should remove impediments to cross-border cooperation and provide resolution authorities with incentives and statutory mandates to share information across borders. It should also achieve a coordinated solution that takes into account financial stability in all jurisdictions affected by a financial institution's failure. While this Key Attribute to share information and achieve a coordination solution is laudable, the FSB fails to specify the incentives for effective cooperation (see below).

Finally, the Key Attributes contain two special requirements for global systemic banks. The first is that recovery and resolution plans are put in place for all G-SIBs. These recovery and resolution plans map out the actions a bank or a supervisory/resolution authority would take in the event of another crisis. These plans provide additional confidence that the bank in question can formally "de-risk" itself to avoid a liquidity crisis, or in the worst case, be unwound in a responsible way that will help avoid sparking a systemic risk event. A particular challenge is to develop a credible group resolution plan, which is more than a string of national resolution plans.

To foster such group-wide thinking, the second requirement is to maintain crisis management groups for all G-SIBs, bringing together home and key host authorities. These groups should be underpinned by institution-specific cross-border cooperation agreements. Again, the challenge is to achieve appropriate incentives for cooperation among home and host authorities.

Incentives for Cooperation

In the slipstream of the Great Financial Crisis, international governance has significantly been stepped up. The Basel Committee on Banking Supervision responsible for setting international banking standards is now supplemented by the G20 on the political front and the FSB on the resolution front. This raises both the quality and the monitoring of standards on international banking regulation, supervision, and resolution. The enhanced monitoring of national implementation of international standards by the G20 also promotes the harmonization of national standards, reducing the scope for conflicts of interests between countries. While greater harmonization *enables* international cooperation, it may not require it.

An additional next step is needed to make cooperation actually occur. The Basel Concordat on Supervisory Coordination specifies the allocation of supervisory responsibility between home and host supervisors for international banks, but the Concordat does not incorporate mechanisms to enforce cooperation or incentives to induce cooperation within these so-called supervisory colleges. The Basel Concordat has given rise to hundreds of memoranda of understanding (MoUs) for coordinating supervisory efforts and sharing information across borders. More recently, some of these MoUs have been expanded to include crisis management, establishing (cross-border) crisis management groups. The range of signatories has also been expanded beyond supervisors to include central banks and ministries of finance (see, for example, various EU MoUs). But MoUs are signed on a voluntarily basis, following a soft law approach. The last article of a typical MoU specifies that the arrangements discussed are not legally binding and thus preserve the sovereignty of national supervisors. Claessens, Herring, and Schoenmaker (2010) note dryly that these MoUs were not used during the crisis (see also chapter 4).

International policy proposals have so far focused on a soft law approach to address the governance challenge in global banking (Brummer 2010; Alexander and Ferran 2011). Given the experiences during the crisis, it is somewhat disappointing that the new proposals to strengthen supervision and resolution continue to rely on this soft law basis for supervisory colleges and crisis management groups to facilitate—but not force—cooperation between home and host authorities.

Experience has shown that in times of stress, information-sharing agreements are likely to fray. Bad news tends to be guarded as long as possible. Baxter, Hansen, and Sommer (2004, 79) note, "Once the bank's condition degrades, supervisors think less about monitoring and more about

protecting their creditors. This creates a conflict among supervisors." An example is the reluctance of the Japanese supervisory authorities to share with the US authorities their discovery of trading losses in Daiwa's New York branch. A trader in the New York Daiwa office had lost $1.2 billion in a series of unauthorized trades over an 11-year period from 1985 to 1996. When the trader finally confessed and the home country authorities in Japan were informed, there was a two-month lag before the information was shared with the host country authorities in the United States. This is only one of many examples of home authorities showing reluctance to share information on a timely basis with host country authorities (see the case studies in chapter 4).

Bank managers are often reluctant to share bad news with their supervisors because they hope that the problem will blow over (wishful thinking) and they fear they will lose discretion for dealing with it (and, indeed, lose their jobs as well). Similarly, the primary banking supervisor is likely to be reluctant to share bad news with other supervisory authorities out of concern that the leakage of bad news could precipitate a liquidity crisis, or that the other supervisory authorities might take action that would constrain the primary supervisor's discretion in dealing with the problem or exercising forbearance. Often, the primary supervisor uses its discretion to forbear as long as there is a possibility that a bank's condition may be self-correcting, particularly if the alternative is closing the bank. A decision to close a bank is sure to be questioned, so supervisors tend to forbear until losses are so large that there can be no reasonable doubt that the institution is insolvent. Moreover, losses that spill across national borders intensify conflicts between home and host country authorities and make it difficult to achieve a cooperative resolution of an insolvent bank. Thus, international cooperation may break down precisely when it is most needed (Herring 2007).

1.3. CONCLUSION

The global financial system poses several governance challenges for nation-states. The underlying problem is that markets and financial institutions are operating on a global scale, while sovereign power is defined at the national level. Financial authorities, such as supervisors, central banks, resolution agencies, and finance ministries, derive their mandate and powers from national legislation and are thus nationally based. This scope mismatch between global financial players and national financial authorities creates major coordination challenges.

The trilemma is a powerful concept stating that only two out of three policy objectives can be achieved at the same time; one objective has to give. The monetary trilemma explains the coordination challenge in the monetary field: (1) a fixed exchange rate, (2) international capital mobility, and (3) national monetary policy are not compatible. The monetary trilemma is underpinned by a theoretical model and well established in academic journal articles, as well as in standard macroeconomic textbooks.

If we turn to financial stability, the financial trilemma explains a new coordination challenge, highlighted by the Great Financial Crisis, that (1) a stable financial system, (2) international banking, and (3) national financial policies are incompatible. The financial trilemma is new. This book aims to provide a clear and solid exposition of the financial trilemma and explore alternative solutions to the governance challenge in global banking. The next chapter lays the theoretical groundwork for the financial trilemma.

NOTE

1. The full list of G20 members includes 19 countries and the European Union: Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Mexico, Republic of Korea, Russia, Saudi Arabia, South Africa, Turkey, the United Kingdom, the United States, and the European Union.

CHAPTER 2
The Financial Trilemma: Theory

Nothing is more practical than a good theory.
Immanuel Kant

International governance is a favorite topic of academics and policymakers alike. The trilemma is a powerful tool to highlight the challenges and trade-offs in international policy coordination. Rodrik (2000) provides a lucid overview of the general working of the trilemma in an international environment. As international economic integration progresses, the policy domain of nation-states has to be exercised over a much narrower domain and global federalism with international policy coordination will increase. The alternative is to keep the nation-state fully alive at the expense of further integration.

Figure 2.1 illustrates Rodrik's international trilemma. The claim, as with the standard trilemma, is that one can have at most two of the three nodes: international economic integration, the nation-state, and mass politics. *Nation-state* refers to the territorial jurisdictional entities with independent powers of making and administering the law, while *mass politics* refers to political systems with democratic control over government policies.

A good example of the working of the international trilemma is the area of trade policy. The most obvious way to foster international trade is by instituting federalism on a global scale. Global federalism would align jurisdictions with the market and remove the "border" effects. In the United States, for example, despite the continuing existence of

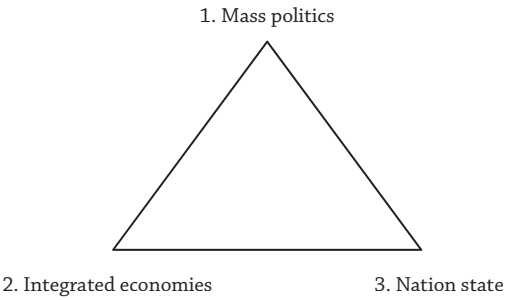

Figure 2.1
The international trilemma
Source: Rodrik (2000).

differences in regulatory and taxation practices among states, the presence of a national constitution, national government, and a federal judiciary ensures that markets are truly national. The EU, while not a fully federal system, also adopts federal policies in certain areas, such as trade, competition, and monetary policy.

Under a model of global federalism, the parts that matter economically would be organized at the global level along the lines of the US or EU system. National governments would not necessarily disappear, but their powers would be severely circumscribed by supranational legislative, executive, and judicial authorities. A world government would take care of a world market. In our example of trade policy, the WTO deals with global rules of trade between nation-states.

Rodrik (2000) stresses that global federalism is not the only way to achieve complete international economic integration. An alternative is to maintain the nation-state system largely as it is, but to ensure that national jurisdictions do not get in the way of economic transactions. The overarching goal of nation-states in this world would be to appear attractive to international markets. National jurisdictions, far from acting as an obstacle, would be geared toward facilitating international commerce. The only local public goods provided would be those that are compatible with integrated markets.

The key question for the financial trilemma is to what extent the public good of international financial stability can be produced by the nation-states. If that is not possible, do we need some kind of WTO for the financial sector at the regional level (Americas, Europe, or Asia-Pacific) or at the global level? National politics will then be exercised over a much narrower financial domain. This chapter first reviews the vast literature

on international policy coordination. The chapter then develops a simple model to understand the financial trilemma.

2.1. POLICY COORDINATION

There is a large body of literature on international policy coordination in the world of finance. Broadly speaking, three main strands can be distinguished. The first strand is to develop supranational solutions, such as an international lender of last resort (Obstfeld 2009 and 2011; Fischer 1999) or a world financial regulator (Eatwell and Taylor 2000). The internationalization of banking operations has blurred the lines of responsibility for national central banks in their role as lender of last resort. Central bank actions have effects on foreign financial markets, not least through potential effects on exchange rates. In a situation of global distress, such actions, if widely pursued by individual authorities, may further destabilize world markets. Obstfeld (2009) argues that the IMF has a key role to play as coordinated lender of last resort.

More recently, Obstfeld (2011) also highlights the fiscal dimension of liquidity support. There is always a government standing behind a central bank to guarantee its solvency. While central banks can lend without limit (that is, providing unlimited lender of last resort support), their capacity to absorb losses is limited to their capital. So the government is the capital supplier of last resort. Recent experience shows the potential for banking problems to quickly turn into big fiscal problems with externalities for financial institutions abroad. This is a problem for any globalized financial system, not just the euro area with its common currency.

Internationally coordinated lender-of-last-resort support, with a coordinated fiscal backup, requires some sort of common framework of financial supervision and enforcement. The international supervisory system must provide a strong brake to the several forms of moral hazard. Next, to be effective, supervision must be closely coordinated internationally, with the support of clear guidelines for resolving international banks and sharing the resulting costs. The euro area's failed attempt to leave national supervisory regimes in place offers a vivid example. As an ultimate consequence of cross-border externalities posed by international banks, Eatwell and Taylor (2000) make the case for a World Financial Authority. Such a global authority can internalize these cross-border externalities.

Similarly, Moshirian (2008) explains the need to build a global institutional framework to support international banking. Chapters 5 and 7 offer

several solutions for the international institutions and compare the efficiency of the various approaches. Importantly, mechanisms to limit moral hazard are also reviewed. National financial policies are thus replaced by an international approach. So the third objective of national financial policies is given up in terms of the financial trilemma.

The second strand in the literature is to segment national markets through restrictions on cross-border flows. Eichengreen (2004) argues that international financial liberalization can positively affect the efficiency of resource allocation and the rate of economic growth. But analyses of both recent and historical experiences also show an undeniable association between capital mobility and crises, especially when domestic institutions are weak and the harmonization of capital account liberalization and other policy reforms are inadequate.

By contrast to the first strand, Eichengreen (2002) indicates that official financing through the IMF—similar to financing through the central bank at the national level—is part of the problem. The IMF's financial rescues allow investors to escape without losses, in turn encouraging them to lend without due regard to the risks. This only makes the international financial system more crisis prone. So, new alternatives like an international lender of last resort would create more problems than they solve. Eichengreen proposes to put limits on cross-border flows until the institutional and policy environment has been strengthened in the problem countries. Until corporate governance and supervisory infrastructures have been sufficiently upgraded to ensure that banks and firms can manage their own risks, policy should be used to limit their external borrowing. As the strengthening of institutions proceeds, foreign direct investment should be liberalized, followed by stock and bond markets. Only then should banks be permitted to borrow offshore.

In the case of international banking, segmentation can be achieved by a network of fully self-sufficient subsidiaries. The separately capitalized subsidiaries have to operate with substantial higher levels of liquidity and capital in the absence of cross-border transfers. Cerutti and coauthors (2010) argue that centralized capital and liquidity management by internationally active banks was challenged by the Great Financial Crisis. This has sparked a debate about the desirable organizational and supervisory arrangements for international banks, in particular, the question whether restrictions should be placed on intragroup cross-border transfers imposed by the host/home country supervisors. In other words, should the foreign operations be ring-fenced?

Cerutti and coauthors (2010) provide the arguments both for and against ring-fencing. The arguments in favor of centralized international

bank structures and against ring-fencing rely on efficiency and financial stability considerations (for example, benefits of diversification across country-specific shocks). From an international bank's perspective, the ability to freely reallocate funds across its affiliates is essential for achieving the most efficient outcome. International bank structures may also yield benefits for the host country economies. De Haas and van Lelyveld (2010), for example, show that the ability of international banks to attract liquidity and raise capital allows them to operate an internal capital market within their bank. This internal capital market provides their subsidiaries with better access to capital and liquidity than what they would have been able to achieve on a stand-alone basis. This may in turn help to reduce the pressure to scale back lending during economic downturns.

But there are also arguments in favor of ring-fencing. For a host country supervisor, the decision to impose ring-fencing would typically be driven by macro-financial stability considerations, such as the need to protect the domestic banking system from negative spillovers from the rest of the group. Vice versa, the home country supervisor may wish to limit foreign exposures affecting the parent bank. It may do so by requiring local funding for foreign operations in separately capitalized and funded subsidiaries. The exposure for the parent bank is then limited to the capital invested in the foreign subsidiary, applying the concept of limited liability.

Finally, the difficulties in resolving international banking groups and the absence of agreements on burden-sharing mechanisms during the Great Financial Crisis suggest the desirability of promoting greater self-sufficiency of banking groups' affiliates. When adopting such stand-alone subsidiaries, the second objective of international banks is given up in terms of the financial trilemma.

The third strand in the literature is to restrict public intervention to attain financial stability and to strengthen national policies enforcing market discipline (Rogoff 1999). The argument is that public intervention unduly increases moral hazard. The average direct fiscal costs of government bailouts over the period 1970–2011 are about 7 percent of gross domestic product (GDP) (Laeven and Valencia 2012), which is hardly evidence in favor of the view that creating a lender of last resort and wider government support is a free lunch. Moreover, these bailouts shift risks or costs away from creditors and thus lead to an increase in capital flows. This may lead to greater risk-taking, which in turn may be followed by an even bigger wave of defaults.

In addition to the moral hazard problem, Rogoff (1999) argues that the case for having a lender of last resort is somewhat shaky. He proposes

private sector responses to dealing with bank runs, such as the development of interbank credit agreements to deal with panics. The notion that bank runs may represent realizations of multiple equilibria can be challenged. Multiple equilibria, including the equilibrium that all depositors (or investors) run together, can happen if depositors cannot distinguish between temporary liquidity problems and more fundamental solvency problems. Rogoff indicates that introducing a small amount of private information can eliminate the problem of multiple equilibria. Government policies that affect transparency and the dissemination of information can be more useful than introducing insurance through lender-of-last-resort operations.

More generally, Rogoff (1999) criticizes grand plans, such as an international lender of last resort, as they focus too much on treating the symptoms of excessive reliance on debt finance and on bank intermediation by both lenders and borrowers. Instead, Rogoff aims to level the playing field for equity finance, reducing the need for excessive debt finance. Currently, the playing field is uneven, as interest payments are deductible from corporation tax, while dividend payments are not. In an ideal world, equity financing and direct investment would play a much bigger role, and debt financing (leverage) would be accordingly smaller. Witness the relative ease with which the industrialized countries handle substantial shifts in stock market prices. With a better balance between debt and equity, risk sharing would be greatly enhanced and financial crises sharply muted.

In sum, Rogoff (1999) argues that official intervention is not always helpful in achieving financial stability. To the contrary, it may give rise to moral hazard. So, public authorities should not pursue financial stability policies through interventions. Thus the first policy objective of financial stability is given up in terms of the financial trilemma.

This book fits into the first strand of developing a global framework. I adopt this global approach for several reasons. The synergies of international banking can be kept. The alternative of stand-alone subsidiaries in each country will lead to substantially higher levels of liquidity and capital compared to well-capitalized integrated banks. This may result in higher borrowing costs for enterprises and consumers. Next, international banking may dampen the impact of financial shocks due to diversification effects, though the recent financial crisis also highlights the role of international banks in transmitting financial shocks from one country to other countries (Schoenmaker and Wagner 2011). Finally, while containing moral hazard is important, the history of financial crises shows that public intervention can be effective in swiftly resolving a financial crisis

in order to resume economic growth. The lesson I take from Rogoff is that public intervention should be accompanied by appropriate policies to limit moral hazard (see chapter 5).

My contribution is that I provide a model to analyze the efficiency of the different solutions to the financial trilemma. The basic model of the financial trilemma is developed in the remainder of this chapter. Chapter 5 considers the various solutions.

2.2. MODELING THE FINANCIAL TRILEMMA

To begin, the financial trilemma model needs to define financial stability. While we know ex post what went wrong in a crisis, financial stability is not easy to define ex ante. The trade-offs between enhancing growth and efficiency and reducing financial instability are not exactly understood. So financial stability still remains an art to balance for financial authorities. Financial stability is closely related to systemic risk, which is the risk that an event will trigger a loss of economic value or confidence in a substantial portion of the financial system. This disruption of the financial system is serious enough to have significant adverse effects on the real economy.

De Bandt and Hartmann (2002) provide an extensive discussion of the concept of systemic risk. A key element is that a considerable number of financial institutions or markets are affected by a systemic event. In a similar vein, Acharya (2009) defines a financial crisis as systemic if many banks fail together, or if one bank's failure propagates as a contagion, causing the failure of many banks (see also Allen and Gale 2000a on contagion). In Acharya's model, the joint failure of banks arises from correlation of asset returns. He finds that contagion leads to a reduction of aggregate investment in an economy.

The Basic Model

The financial trilemma is formally modeled within the strand of game-theoretic models. I build on the model of Freixas (2003) and Schoenmaker (2011) to formalize the systemic effects of bank failure. The policy instrument in this model is a contribution of funds t by the authorities (ministry of finance and/or central bank) to recapitalize a failing bank. The model considers the ex post decision whether to recapitalize or to liquidate a bank in financial distress. The choice to continue or to close the bank is a

variable x with values in the space {0,1}, whereby $x^* = 1$ indicates recapitalization and $x^* = 0$ closure.

Next, B denotes the social benefits of a recapitalization and C its costs. Among other things, the social benefits of a recapitalization may include those derived from maintaining financial stability and avoiding contagion, as discussed above. A minor, idiosyncratic bank failure (for example, Barings) would pose no systemic problem. If the direct cost of continuing the bank activity is denoted by C_C and the cost of stopping its activities by C_S, the model only deals with the difference, $C = C_C - C_S$.

Single-Country Setting

A social planner recapitalizes a failing bank whenever the total social benefits of an intervention are larger than the net costs: $B > C$. This condition is crucial. Private sector solutions are preferable in case of banking problems to reduce moral hazard. Only when the private sector cannot deal effectively with an emerging banking crisis do the authorities need to decide the appropriate action. If the externalities are limited (B is small), the bank should be closed. Only when the externalities exceed the cost of recapitalizing an ailing bank, $B > C$, should the authorities proceed with a recapitalization.

Figure 2.2 illustrates the recapitalization decision in a single-country setting. The solid diagonal represents the line where benefits and costs are equal: $B = C$. In that domestic setting, all benefits are incorporated in the decision making. When the benefits exceed the costs ($B > C$), recapitalization $x^* = 1$ is the optimal strategy. This recapitalization (recap) is visualized by area B in figure 2.2. If the benefits are smaller than the costs ($B < C$), the bank should be closed $x^* = 0$. This is area A with no recapitalization.

Multicountry Setting

In a multicountry setting, the social benefits can be decomposed into the benefits in the home country, denoted by H, with fraction α_h of benefits, and in foreign countries, F. The benefits in the foreign countries sum up to fraction $\alpha_f = \sum_{j \in F} \alpha_j$. The fractions α_h and α_f sum up to 1. A cross-border bank is only recapitalized if a sufficient contribution from the different countries can be collected on a voluntary basis. This is an interpretation of improvised cooperation, as in Freixas (2003). The different countries meet to find out how much they are ready to contribute to the recapitalization,

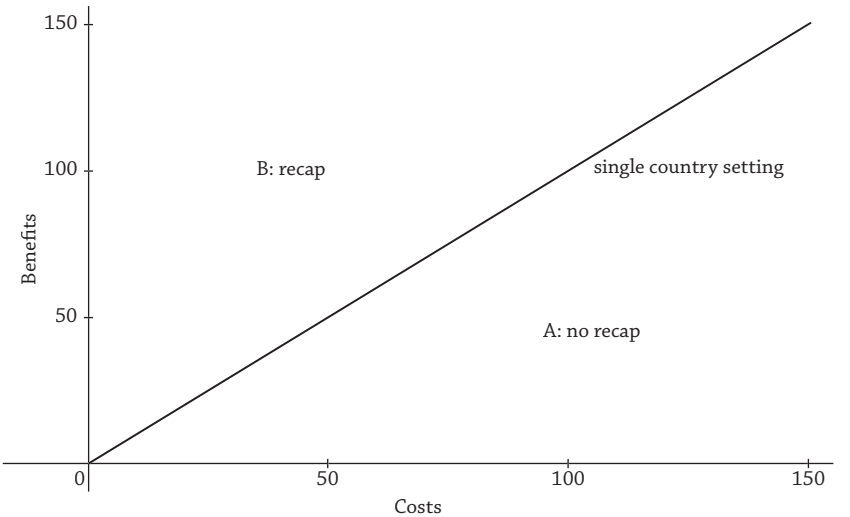

Figure 2.2
Recapitalization in a single-country setting.
The x-axis measures the costs *C*. The y-axis indicates the benefits *B*. The solid diagonal represents the line where benefits and costs are equal: $B = C$. The single country setting leads to efficient outcomes in area A (no recap as $B < C$) and area B (recap as $B > C$).

denoted by t. If the total amount they are willing to contribute is larger than the cost, the bank is recapitalized.

The optimal decision for each independent country j is to maximize:

$$x^* \cdot (\alpha_j \cdot B - t_j). \tag{2.1}$$

so that

$$x^* = \begin{cases} 1 & if\ \Sigma_j t_j - C \geq 0 \\ 0 & if\ \Sigma_j t_j - C < 0 \end{cases}. \tag{2.2}$$

The only choice variable for country j in this game is the size of its contribution t_j. Equation 2.1 shows that country j can maximize its benefits minus its contribution, by minimizing its contribution. If every country only makes a minimal contribution to the recapitalization, it is difficult to raise sufficient funds to meet the costs (equation 2.2). This game, in which every country announces its contribution, has a multiplicity of equilibria. In particular, the closure $t_j = 0$, $x^* = 0$ is an equilibrium provided that for no country j

$$\alpha_j \cdot B - C > 0. \tag{2.3}$$

Equation 2.3 indicates that no individual country is ready to finance the recapitalization by itself, as the benefits for each country are smaller than the overall cost. In that case, every country reduces its contribution basically to zero (Barrett 2007).

Prisoner's Dilemma

Before proceeding on the technicalities of the model, it may be useful to explain the strategic behavior of countries as an application of the prisoner's dilemma. We first need to specify the payoffs in our recapitalization game. Suppose that the cost of recapitalizing an ailing bank is 100, while the benefit is 120. Suppose further for simplicity that both the cost and the benefit are equally divided over the two countries A and B. With these assumptions in place, the payoffs in table 2.1 can be calculated. If both countries contribute 50, the recapitalization goes ahead, and both countries enjoy a financial stability benefit of 60. So the net payoff is plus 10 for each country (the upper-left box).

Next, if both countries refuse, the recapitalization does not take place and the countries suffer a financial crisis. The benefits of 60 are forgone for each country, but the costs of 50 are avoided. The net payoff is now minus 10 for both countries (the bottom-right box). Finally, if A contributes while B refuses, then A has to pay the full cost of 100 on its own. The financial stability benefits remain 60 for each (remember that financial stability is a public good; so regardless of a country's contribution, all countries enjoy the benefit of a stable financial system). Country A's payoff is minus 40, and country B's payoff is plus 60 (the upper-right box). In this symmetric game, the payoff in the lower-left box can be derived accordingly.

The central idea of the prisoner's dilemma is that the two players cannot coordinate. In the traditional prisoner's dilemma, the police put the two suspects in separate prison cells. So each player has to make a decision without knowing what the other will do. In our example, it is always

Table 2.1. PAYOFFS UNDER THE PRISONER'S DILEMMA

	Country B contributes (cooperation)	Country B refuses (refusal)
Country A contributes (cooperation)	Each country enjoys +10	A suffers –40 B enjoys +60
Country A refuses (refusal)	A enjoys +60 B suffers –40	Each country suffers –10

optimal for country A to refuse a contribution (in line with equation 2.3). In the case that country B contributes, A ensures its maximum reward of plus 60 by refusing. In the case that country B refuses, A again ensures its best payoff of minus 10 by refusing. So A will refuse regardless what B is doing. The game is symmetric, so country B should act the same way. Since both countries rationally decide to reduce their own contribution to the recapitalization, each country receives a lower payoff than if both were to cooperate.

Traditional game theory thus results in both players being worse off (Fratianni and Pattison 2001). This is basically the refusal option in this one-shot game (the lower-right box in table 2.1). There is room for mutual gain, but countries cannot arrive at the superior cooperation equilibrium (the upper-left box) in the absence of a binding coordination mechanism.

So the prisoner's dilemma establishes the noncooperative Nash equilibrium. If this noncooperative equilibrium is selected, the policy is inefficient because banks will almost never be recapitalized. As crisis management is a rare event (nonrepeated game) with high financial stakes, the repeated game solution to the noncooperative equilibrium of the prisoner's dilemma is not applicable.

The fact that the closure equilibrium will occur can be explained by the fact that part of the externalities fall outside the home country. In the spirit of Acharya (2009), these externalities result from forced asset sales impacting negatively on aggregate investment in a country (Shleifer and Vishny 2010). It is safe to assume that the country with the highest fraction of social benefits of a recapitalization is the home country of the ailing bank, since banks typically conduct the largest part of their business in their home country. The problem in this game-theoretic setting is that the home country may not be prepared to meet the costs of recapitalization of a failing bank in its entirety. Moving back to the model, we can now formulate the following proposition.

Proposition 2.1. In a setting of improvised cooperation, the efficiency of the recapitalization scheme depends on the size of α_h. Only when the social benefits of the home country are sufficiently large, $\alpha_h \in (C/B, 1]$, national financial policies will produce an efficient outcome.

The proof of the proposition is shown here for the advanced reader. The intuition behind the proposition is explained after the proof.

Proof of Proposition 2.1. The efficient solution is recapitalization ($x^* = 1$) if $B > C$ and closure ($x^* = 0$) if $B < C$. Using equations 2.1 and 2.2, the first-best

decision will be implemented in case $\alpha_h = 1$. In that case, all social benefits fall within the home country. There is no coordination failure.

The game becomes more interesting when the benefits are spread over more countries. Remember the assumption that the home country H is the country with the highest social benefits of a recapitalization: $\alpha_h > \alpha_j \ \forall \ j \in F$. Given this assumption, a recapitalization, $x^* = 1$, will only happen if the social benefits in the home country are larger than the total costs: $\alpha_h \cdot B - C > 0$, as indicated by equation 2.3. This is the lower boundary for a recapitalization. Rewriting this condition gives $\alpha_h > C/B$. The upper boundary is given above: $\alpha_h = 1$.

The home country thus recapitalizes ($x^* = 1$) the entire financial institution when $\alpha_h \in (C/B, 1]$. Otherwise $\alpha_h < C/B$; the closure equilibrium occurs ($x^* = 0$), even when recapitalization is the optimal strategy: $B > C$. So when a bank becomes more international ($\alpha_h \downarrow$), the scope for coordination failure increases. ■

Proposition 2.1 states that national financial policies are still efficient when the home country benefits α_h stay within the range from C/B to 1. This is a narrow range, in particular when the benefits are close to the costs $B \approx C$. This proposition clearly illustrates that when internationalization increases ($\alpha_f \uparrow$ and $\alpha_h \downarrow$), national financial policies fail to produce a stable financial system. International banks facing difficulties will be closed (no recap), even when it is optimal to recapitalize these ailing banks to maintain financial stability $B > C$. This is indicated by area C in figure 2.3, which illustrates the recapitalization decision in a multicountry setting.

The intuition behind the model is that national governments do not incorporate cross-border externalities of an international bank failure. They only care about the domestic effects. So when a national government has to resolve a bank, it only incorporates the domestic fraction of total benefits α_h in its decision making. When the internationalization of a bank increases, this domestic fraction becomes smaller, moving upward the dashed line for $\alpha_h < 1$ in figure 2.3. The home country decision thus moves from area B to area C, leading to an inefficient outcome. The home country will not do the recapitalization, although recapitalization is the optimal strategy $B > C$.

Example

An example can clarify the working of the recapitalization decision in the single-country and multicountry settings. Suppose again that the cost of recapitalizing an ailing bank is 100, while the benefit is 120. In the single-

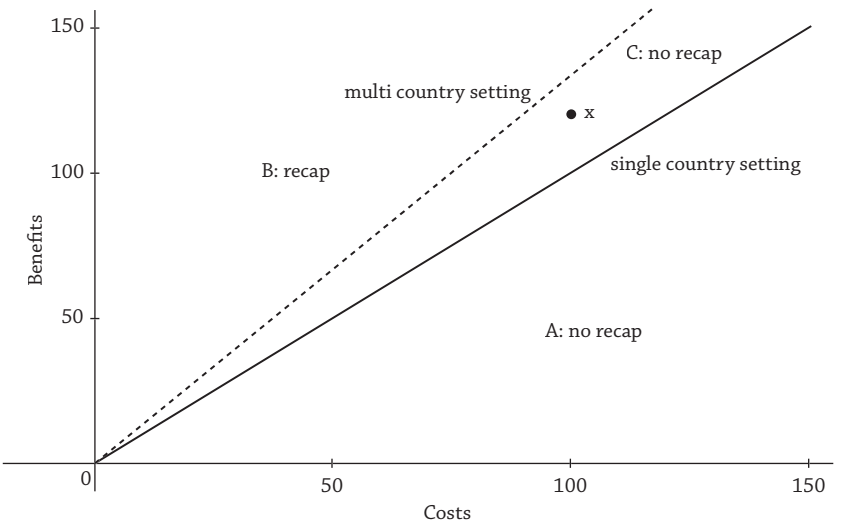

Figure 2.3
Recapitalization in a multicountry setting.
The x-axis measures the costs C. The y-axis indicates the benefits B. The solid diagonal represents the line where benefits and costs are equal: $B = C$. The dashed line measures the home country benefits: $\alpha_h \cdot B = C$. While areas A (no recap as ($B < C$) and B (recap as $B > C$) are efficient outcomes, area C indicates the inefficiency: the home country will not do the recap, although recap is the optimal strategy. In which area the home country is, depends on the size of the home country benefits α_h and the combination of benefits and costs (B, C).

country setting, the bank has 100 percent of its activities in the home country, $\alpha_h = 1$. The decision is straightforward in this case. As benefits exceed cost $B > C$, the home country recapitalizes the ailing bank, which is the efficient outcome (area B in figure 2.2).

Turning to the multicountry setting, suppose that the bank has 75 percent of its operations in the home country and 25 percent abroad. As the home country only values the domestic benefits, its valuation of benefits is 90 (= 75 percent × 120). Faced with a cost of 100, the home country decides not to recapitalize. This is point X in area C in figure 2.3. Although recapitalization is the optimal strategy ($B > C$), there is no recapitalization. In mathematical terms of Proposition 2.1, the fraction of home country benefits $\alpha_h = 0.75$ falls outside the range where recapitalization is feasible ($C/B = 0.83$, 1] for this ailing bank. Note that $C/B = 100/120 = 0.83$.

The model pinpoints the public good dimension of collective recapitalization. Without appropriate governance mechanisms for coordination, countries are not able to produce this public good. Improvised cooperation with ex post negotiations will lead to insufficient contributions from the countries to provide the funds for a recapitalization, even when

such a recapitalization is efficient. The result is an underprovision of recapitalizations.

In terms of the financial trilemma, the model shows that financial stability and national financial policies are compatible in the case of limited internationalization: $\alpha_h \in (C/B, 1]$. When more substantial internationalization ($\alpha_h < C/B$) and national financial policies are combined, financial stability can no longer be obtained. It is safe to assume that maintaining financial stability is desirable. It is thus an empirical question about the degree of internationalization at which one should give up national policies and move to international coordination. The next chapter estimates the internationalization of the largest banks across the world.

So, under "normal" assumptions about benefits and costs, a recapitalization will break down if internationalization increases and subsequently drops below the cost-benefit hurdle: $\alpha_h < C/B$. Nevertheless, in an extreme case of a severe crisis, a home country may decide to do a recapitalization on its own. How is that possible? The answer is that the financial stability benefits have to be very high relative to the cost $B \gg C$.

A case in point is the near failure of American International Group (AIG) in 2008. The domestic business of AIG was only about 40 percent (the 2007 annual report of AIG reports domestic revenues at $45 billion and foreign revenues at $65 billion). So only 40 percent of the benefits of the bailout would accrue to the United States: $\alpha_h = 0.40$. Because of this small fraction of home country benefits, the dashed line in figure 2.4 is very steep. The original lending to prevent the bankruptcy of AIG amounted to $85 billion: $C = 85$ (Congressional Oversight Panel 2010). There was huge uncertainty about the effect of a possible bankruptcy of AIG just after the Lehman collapse. According to our model, these benefits would need to exceed $215 billion ($B = 215$) to enable a fully domestically funded recapitalization (point X in figure 2.4). The feasibility range for α_h would then become: $(C/B = 85/215 = 0.40, 1]$. Of course, the authorities did not make these exact calculations at the time. But it is clear that the "perceived" financial stability benefits of the AIG rescue were very large at the time.

Finally, how does the model compare with competing approaches to analyzing international financial stability? Gaspar and Schinasi (2010) and Schinasi (2007) also apply a game-theoretic model as a tool to examine the cross-country aspects of financial integration. Specifically, they apply the economic theory of alliances. The public good of international financial stability is underprovided, as in our model. The economic theory of alliances predicts that a large, wealthy nation will bear a disproportionate share of the burden. But, as shown in our model below, the (large) wealthy nation may not be prepared to take the (full) burden under certain realistic

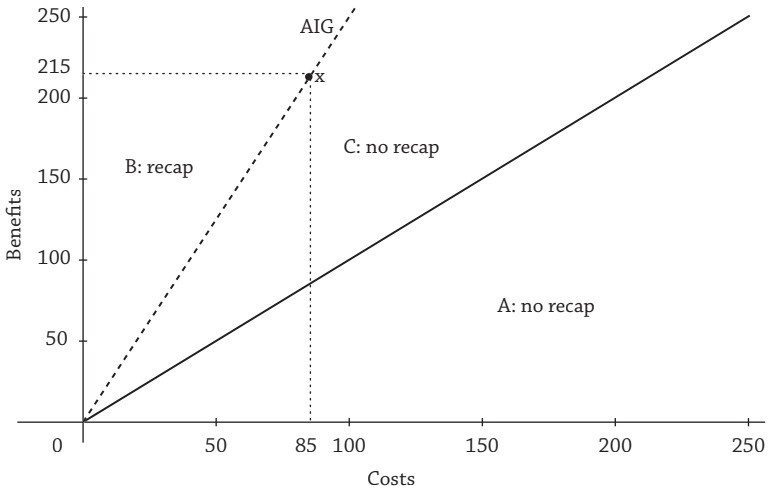

Figure 2.4
Recapitalization of AIG.
The x-axis measures the costs *C*. The y-axis indicates the benefits *B*. The solid diagonal represents the line where benefits and costs are equal: $B = C$. The dashed line measures the home country benefits at $\alpha_h = 0.4$. While areas A (no recap as ($B < C$) and B (recap as $B > C$) are efficient outcomes, area C indicates the inefficiency: the US (as home country) will not do the recap, although recap is the optimal strategy. The precise decision depends on the size of the benefits *B*. If benefits exceed 215, then a recap will happen (area B). If benefits are smaller than 215, no recap will happen (area C).

conditions. In the case of international banks, the home nation is the key player. The case studies in chapter 4 indicate that both large and smaller nations take a national approach toward resolving an ailing major international bank rather than an international approach. An example of the former is the United States with Lehman Brothers. Examples of the latter are Belgium with Fortis and Iceland with Kaupthing and Landsbanki.

2.3. CONCLUSION

The introduction to this chapter poses the question whether the public good of international financial stability can be produced by individual nation-states. Critical for the argument in this book, our model of the financial trilemma clearly shows that nation-states are not able to produce this public good. Each country plays the game of contributing to financial stability as "individually rational" in the sense that each country's payoff is as large as it would be by acting independently. Countries thus arrive at a noncooperative Nash equilibrium, in which they do not contribute

sufficient funds for recapitalizing an ailing international bank, even if such a recapitalization is efficient from a public policy perspective.

After the theoretical underpinning in this chapter, the next chapters examine the empirical foundations of the financial trilemma. Chapter 3 collects data on the internationalization of the 60 largest banks across the world. Chapter 4 presents several case studies of major international bank failures during the Great Financial Crisis.

CHAPTER 3
The Rise of International Banking

Banking has played an integral part in international economic integration throughout history. Yet the internationalisation of banking has proceeded more by fits and starts than in steady progression.

Committee on the Global Financial System, 2010

The story of international banking starts with international trade. The development of Florence as a center for international trade is closely linked to the rise of the famous banking family, the Medici, in the fifteenth and sixteenth centuries. The Medici can be seen as the first international bank facilitating international trade. Interestingly, banking and political power have been intertwined from the origin. Giovanni di Bicci de Medici, the founding member of the family fortune, was appointed as wealth manager of the pope in 1410. His son, Cosimo de Medici, expanded the family bank internationally by establishing branches in Avignon, Brugge, Geneva, and London. Also, merchant banks like Barings facilitated international trade. Barings began in offices off Cheapside in London in 1762. Starting as a wool trader, Barings gradually diversified from wool into many other commodities, providing financial services necessary for the rapid growth of international trade to North America and, later on, to Latin America. By 1790, Barings had greatly expanded its resources, both through its efforts in London and by association with leading Amsterdam bankers Hope & Co.

At a later stage during the Industrial Revolution in the eighteenth and nineteenth centuries, large banks started to expand abroad to support their national industrial champions. A good example is Deutsche Bank's

expansion into Asia and Latin America, where subsidiaries were set up in the 1890s. These subsidiaries conducted wholesale banking operations, such as trade finance and lending, in support of German business interests (Bänziger 2012). This evolution nicely illustrates that international banks have practiced the "follow the client" principle from their early days. The growth of international banks is related to the expansion of their large clients, the global multinational companies.

More recently, the globalization of financial markets has spurred the growth of international banking. Banks are necessary for the successful functioning of markets. A historical perspective shows that financial markets did not develop spontaneously. The earliest financial transactions involving loans were handled by banks, as discussed above. It was not until the Amsterdam Bourse was founded at the start of the seventeenth century that anything like a formal financial market existed (Allen and Gale 2000b). Stock markets may complement banks by spurring competition for corporate control and by offering alternative means of financing investment, thereby reducing the potentially harmful effects of excessive bank power. Indeed, banks have increasingly moved away from their traditional deposit-taking and lending role into fee-generating activities, such as the underwriting of securities and the securitization of loans, and trading activities. Banks and markets are complementary in the area of securities. While market investors provide the funding of securities, (investment) banks play a major role in firms' issuance of equity and debt by underwriting those securities. Furthermore, banks typically provide a backup credit line for firms in cases of emergency. If a firm, for example, cannot roll over its commercial paper, it draws on its line of credit with a bank. Banks are thus the liquidity provider of last resort to the private sector.

Boot and Thakor (2010) stress the joint role of markets and banks. Banks have a growing dependence on the financial markets not only as funding sources but also for securitizing various assets. Securitization is an example of the unbundling of financial services. It is a process whereby assets, like mortgages or car loans, are removed from a bank's balance sheet, so banks no longer permanently fund assets when they are securitized. Instead, the investors buying asset-backed securities provide the funding. Banks are still involved by originating and servicing the securitized loans. Origination embraces screening prospective borrowers and designing and pricing financial contracts, while servicing involves the collection and remission of payments as well as the monitoring of credits.

Up until the Great Financial Crisis, securitization was rapidly gaining in importance for the large international banks, both as sellers and buyers of the asset-backed securities. The collapse of securitization markets, which

started the financial crisis, shows the fragility of the balance between markets and banks. A full discussion of the fault lines of securitization (for example, reduced incentives for screening by the originator as he is selling the loan and the role of credit agencies) is beyond the scope of this book.

The effects of international banking on financial stability are mixed (Schoenmaker and Wagner 2011). On the upside, international banking allows diversification of risks. As countries' business cycles are not fully synchronized, banks can diversify their risks by spreading their operations over different countries. A current example is the large international Spanish banks, which are less exposed to the real estate bubble in Spain than their domestic counterparts. On the downside, international banks (in tandem with global financial markets) transmit financial shocks globally. A good example is the Great Financial Crisis, which originated on the subprime mortgage market in the United States but swiftly turned to Europe. The subprime mortgages were repackaged and turned into tradable mortgage-backed securities. By buying these mortgage-backed securities, almost all major European banks were exposed to the US subprime mortgage market.

This chapter first reviews the strategy and business models of international banks. What are the drivers for banks' international expansion? Which legal and operational structures do banks adopt for their international operations? Next, the rise of international banking is documented. International expansion has been largely in line with the overall expansion of global trade, with the exception of intra-financial system activities (related to securitization and trading) that increased ahead of the crisis and subsequently declined. Banking internationalization differs greatly across the major regions, the Americas, the Asia-Pacific, and Europe. Finally, this chapter discusses the impact of international banking on the implicit safety net subsidy. International banks are found to pay more for the funding of their foreign operations. The next chapter suggests that the higher funding costs are caused by the challenges of resolving international banks.

3.1. STRATEGY AND BUSINESS MODELS

While the internationalization of banking reflects strategic management decisions, it follows the universal drive toward economic integration across countries. Technological advances and deregulation have reinforced the global trend toward international economic integration. The question in this book is, what are the key drivers of banks' internationalization

strategy? A new study by the Committee on the Global Financial System (2010) indicates that international expansion is mainly driven by the pursuit of new business opportunities, by higher profit margins in host markets, and by incentives to following customers abroad. Surprisingly, economies of scale and scope seem to play a smaller role.

On the first driver, business opportunities, banks may seek new business opportunities abroad, as their home market matures. Well-developed and competitive banking markets push strong banks abroad to seek new business. This is aligned with the second driver of higher profit margins. Competitive home markets reduce profit margins at home, while markets abroad still offer opportunities of profitable business, provided that these foreign markets are open and stable. Some evidence on profits from international diversification is presented below. Finally, the third driver relates to the client-pull hypothesis. Banks follow their large corporate clients in their expansion abroad (Grosse and Goldberg 1991).

Turning to the business model, this specifies the product and customer combinations that a firm adopts (Cavelaars and Passenier 2012). On the banking side, the main products are commercial banking (lending, deposits, payment services), investment banking (underwriting, derivatives, trading, M&A transactions), and nonbanking (insurance, real estate, leasing). While commercial banking and nonbanking products are offered to retail clients and firms, investment banking is typically offered to mid-sized and large multinational firms and other financial institutions. In deciding on its business model, a bank must determine the range of products and services it offers, the types of customers it serves, and the geographic locations in which it chooses to be active.

For international banks, the focus of this book, the geographical reach (in which countries to operate) and approach (how to run the international business) are crucial elements of the business model. Geographical diversification can help to reduce risk or reap more benefits from a successful business model. Although Berger and Deyoung (2001) do not find that geographical diversification makes banks more efficient, geographical diversification may reduce banks' vulnerability to changes in the local economy, which may be an important explanation for the severity of banking crises. For example, Bernanke (1983) attributes the severity of the banking difficulties in the United States during the Great Depression to the fact that the US banking system was made up of small independent banks. Similarly, the current difficulties of the domestic Spanish *cajas* are rooted in their exposure to real estate in Spain. By contrast, the large international Spanish banks, Santander and BBVA, are less vulnerable to the Spanish economy because of their strong international diversification.

Garcia-Herrero and Vazquez (2007) assess the potential geographic diversification gains of banks in terms of the assets held by subsidiaries abroad, relative to those maintained by their parent banks in their home countries. They find that foreign subsidiaries are more profitable, but also riskier, in particular in emerging market countries. Taking a productivity-enhancing (or returns-enhancing) perspective, they further suggest that international diversification gains in banking, through the opening up of foreign subsidiaries, are not entirely exploited. In a different study, van Lelyveld (2012) investigates the impact of international diversification on the aggregate downside risk of banks. Is the downside risk smaller because of imperfect correlation of business cycles? Van Lelyveld (2012) finds that geographical diversification reduces risk in internationally active banks by 1.1 percent on average, with diversification effects ranging between negligible to up to 7.7 percent. But the benefits of diversification are not always used to make the bank safer. Some diversified banks use their advantage to operate with lower capital and to pursue riskier lending (Demsetz and Strahan 1997).

Integrated versus Decentralized Model

Banks follow various approaches to run their international activities. Although bank groups are very different from one another, two main models emerge: the integrated model and the decentralized model. In the integrated business model, the top management makes almost all key decisions for the whole group. IT and risk management systems as well as treasury operations are integrated. Branding is also typically done at a global scale. Large banks increasingly adopt the marketing strategy of global consumer companies, such as Coca-Cola, by developing a strong global brand. Good examples of integrated global banks are Citigroup, Deutsche Bank, and ING. In the decentralized model, there is basically a separate bank in each country. The bank holding company is then the "owner" of the separate country subsidiaries of the bank. Although top management still makes some group-wide decisions, an important difference is that the local bank boards have a significant degree of autonomy. The activities are, in principle, structured in such a way that they are not mutually dependent. HSBC and Santander are typical examples of decentralized global banks. But these banks also operate under a global brand name.

Three elements of banks' corporate structure greatly affect the scope for control of their international activities. The first element is the

organization of external funding in the form of equity and debt. The second element concerns the growing integration and centralization of key management functions, such as risk management, internal controls, treasury operations (including liquidity management and funding), compliance, and auditing. The third element concerns the legal structure of financial institutions and, in particular, the question whether a firm organizes its cross-border operations through branches or subsidiaries.

External Funding

Figures 3.1 and 3.2 illustrate the corporate structure of the two main models. The pictured models are highly stylized, as a typical large banking group has well over a thousand legal entities for tax, regulatory, and limited liability reasons. External funding in the form of equity and debt is a defining characteristic of the corporate structure (Institute of International Finance 2012). While the equity part of the external funding is always raised at the holding level, debt funding—provided by bondholders and other unsecured financiers—is raised at different levels of the banking group. In the integrated model of figure 3.1, debt funding is provided at the top level, either the bank holding company or the bank, as the main legal entity, just below the holding. The central treasury unit subsequently down-streams the external funds to the various operational units

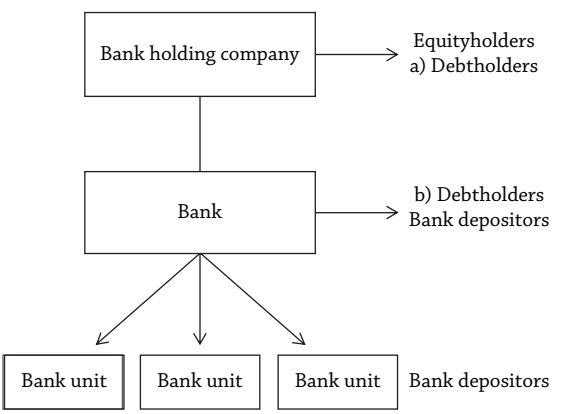

Figure 3.1
The integrated global bank.
Decision making and external funding are predominantly at the top level (holding or bank just under the holding). Equity is raised at the holding level, while debt is also raised at the top level: either at the holding (a), or the top bank (b). Bank depositors (and other bank creditors) are at the top bank as well as the bank units further down in the group (the arrows down).

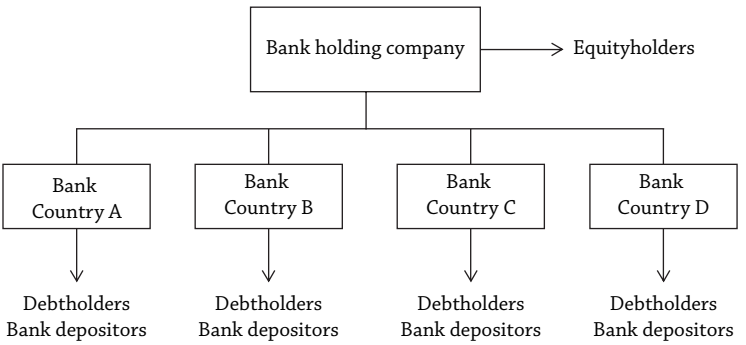

Figure 3.2
The decentralized global bank
Decision making and external funding are predominantly at the country level. While equity is raised at the holding level, debt is raised at the banks incorporated in the various countries. Bank depositors (and other bank creditors) are also at country bank level as well as the bank units further down in the countries.

within the group. By contrast, debt funding in the decentralized model of figure 3.2 is provided at the level of the country banks (that is, the main subsidiary incorporated in each country). In this multibank model, each country runs its own treasury operation.

Global banks have various business partners, which also have credit relations with these banks. These business partners comprise bank creditors (for example, retail and wholesale depositors and creditors arising from the loan or payment services) and investment business creditors (for example, derivative and trading counterparties and other investment business counterparties). In the United States, these two groups are usually separated into a commercial bank and investment bank. In Europe, these two groups are typically combined into a single universal bank. To keep it simple, this distinction is not included in the figures 3.1 and 3.2.

Integration of Risk Management Functions

One of the most notable advances in risk management is the growing emphasis on developing a firm-wide assessment of risk. These integrated approaches to risk management aim to ensure a comprehensive and systematic approach to risk-related decisions throughout the financial firm. Although it is costly to realize, Flannery (1999) argues that once firms have a centralized risk management unit in place, they should expect to reap economies of scale in risk management. Moreover, the potential capital reductions that can be achieved by applying the advanced approaches

of the Basel II and III capital adequacy framework encourage banking groups to organize their risk management more centrally. Nevertheless, these centralized systems still rely on local branches and subsidiaries for local market data.

Kuritzkes, Schuermann, and Weiner (2003) point out that internationally active financial institutions tend to have centralized risk and capital management units in place. The dominant approach is the so-called "hub and spoke" organizational model. The spokes being responsible for risk management within business lines, while the hub provides centralized oversight of risk and capital at the group level. Activities at the spoke include the credit function within a bank, or the actuarial function within an insurance subsidiary or group, each of which serves as the frontline manager for most business decision-making. Moreover, aggregation across risk factors within a business line also typically takes place in the spokes, often in a finance unit that is responsible for funding and business reporting for the subsidiary.

While the hub is dependent on risk reporting from the spokes, in many cases it is also responsible for overseeing the methodology development of an integrated economic capital framework that is subsequently implemented within the spokes. The specific roles of the hub vary, but tend to include assuming responsibility for group-level risk reporting: participating in decisions about group capital structure, funding practices, and target debt rating; liaising with regulators and rating agencies; advising on major risk transfer transactions, such as collateralized loan obligations and securitizations; and in some institutions, actively managing the balance sheet (including centralized asset management).

In the aftermath of the Great Financial Crisis, the Joint Forum (2010) finds that despite recent advances, models currently in use have not adapted to support all the functions for which they are now used. Financial institutions using these models may not fully understand the risks they face, including tail events. So far, only some financial institutions are addressing the treatment of tail events. Moreover, financial institutions face a range of practical challenges when modeling risk aggregation. These include managing the volume and quality of data and communicating results in a meaningful way.

Eisenbeis and Kaufman (2005) also note that information problems are increasingly significant as banking groups expand and consolidate many of their management and record-keeping functions to achieve cost efficiencies. In the electronic age, institutions are increasingly being managed on a consolidated or integrated basis from the home country. Furthermore, data and records are usually kept centrally at the home offices or at sites

not necessarily in the host country. The logistics and costs to host country supervisors of quickly accessing information on these arrangements, or even finding it, can be daunting, even when the foreign bank enters by way of a bank subsidiary rather than a branch.

Branches versus Subsidiaries

Another element of the corporate structure concerns the legal structure that international banks adopt; in particular, the question whether an international bank organizes its cross-border operations through branches or subsidiaries. While subsidiaries have a legal status with their own corporate charter and balance sheet, branches have no separate legal status but are part of another legal entity, often the parent bank. The legal form influences the allocation of supervisory responsibilities between the home and host authorities. Foreign subsidiaries are separately licensed and supervised by the host country. As branches do not have their own balance sheet, the host country cannot monitor the solvency position of branches. The Basel Concordat for the supervision of international banks thus assigns the supervision of solvency to the home country (Basel Committee on Banking Supervision 1983). Nevertheless, the host country still has the power to monitor the "soundness" of foreign branches operating in its jurisdiction. The EU is going one step further with the single market in banking. The Second Banking Directive allows banks to expand by establishing branches in other EU member states without additional supervision by host country authorities (home country control).

A range of bank structures exists with varying degrees of centralization. At one end of the spectrum, an integrated global bank operates through a worldwide web of branches. At the other end, a decentralized global bank has multiple subsidiaries. In practice, the shades are gray, as international banks typically have a mix of branches and subsidiaries. Citigroup, a US-based integrated global bank, maintains, for example, both a branch and subsidiary in London. The upshot is that integrated banks tend to make more use of branches, while decentralized banks have at least one main subsidiary in each country of operation.

Although organizing cross-border activities through branches lessens the intensity of host supervision (large banking groups like Deutsche Bank have to deal with at least 20 different supervisory authorities in the EU), many banks choose to operate through subsidiaries. Dermine (2006) and Cerutti, Dell'Ariccia, and Martinez Peria (2007) examine the factors

influencing international banks' legal structure. They list the following considerations:

- *Corporate tax*: a subsidiary structure is often more flexible from an international corporate tax point of view, while high corporate taxes in the host country favor branches.
- *Size and nature of business*: for large retail operations, banks are more likely to operate through a subsidiary, while banks channel wholesale operations more through branches to manage liquidity and credit risks globally. Some host country supervisors even require the subsidiary form for large foreign retail operations (see chapter 6).
- *Political risks*: in case of government intervention and other major political risks in the host country, banks are more likely to use branches in order to keep assets as much as possible in the home country.

Notwithstanding these more fundamental considerations, to a large extent, legacy explains the actual pattern. The takeover history and subsequent lack of appetite to conduct costly adjustments determine the legal structure. Next, Dermine (2006) argues that the motivation to initially keep a subsidiary in the host country is driven by factors such as protection of the original brand, trust of local management, and nationalistic feelings (reassuring countries that they keep supervisory control over their bank). This analysis reinforces the earlier observation that the corporate structure of banks is very unlikely to meet the textbook case of a single entity with branches but will instead involve a web of branches and subsidiaries. The subsidiary form is on the rise in the EU. Figure 3.3 illustrates that the share of foreign branches has declined over the last 15 years, while the share of foreign subsidiaries has increased from 38 to 66 percent. In particular, the steep increase after the start of the Great Financial Crisis in 2007 is notable.

There is anecdotal evidence that host country supervisors informally push for "subsidiarization" to reassert their control over host operations. In particular, when retail business becomes sizable, supervisors may require a subsidiary. This violates the EU single market, which provides banks with the freedom to establish cross-border branches. Nevertheless, the push for local control is consistent with the national approach under the financial trilemma. Prior to the Great Financial Crisis, New Zealand had already adopted this policy of requiring subsidiaries if and when the retail operations of Australian banks in New Zealand become large.

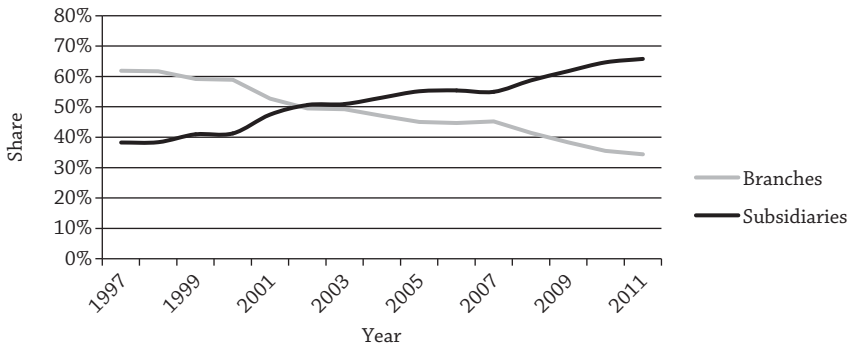

Figure 3.3
Relative share of branches and subsidiaries in Europe
The share is measured by cross-border assets in branches, respectively subsidiaries, as a percentage of overall cross-border assets in EU banks.
Source: EU Banking Structures, ECB.

In practice, factors such as reputation risk and ring-fencing are blurring the stark legal difference between branches and subsidiaries. Freshfields Bruckhaus Deringer (2003), an international law firm, examines to what extent legal firewalls (separate legal personality and limited liability of subsidiaries) can help to reduce or prevent contagion risk within a financial group. They find that legal firewalls can help to protect from direct contagion (credit exposures arising from intragroup transactions or operational risk from sharing of services) but are less effective in limiting indirect contagion (reputation risk and funding risk). This is because indirect contagion arises from perceptions and behavior of (potential) counterparties and other market participants. The strategy of most major banks of developing and maintaining a global brand reinforces contagion risk.

A good example of indirect contagion is the Drexel Burnham Lambert collapse in 1990. While the Drexel Burnham Lambert Group was experiencing difficulties in the United States, the London subsidiary was solvent. Nevertheless, the Bank of England had to intervene as facilitator because the counterparties did not want to deal directly with the London subsidiary.

The practice of ring-fencing can turn branches de facto into subsidiaries. US law, for example, requires foreign branches to maintain assets in the United States. When BCCI, an international bank nicknamed Bank of Crooks and Criminals International, went bankrupt in 1991, US supervisors ring-fenced the assets in the US branch of BCCI to first pay off US depositors. The Bank of England governor, Robin Leigh-Pemberton,

pleaded with the New York Fed president, Gerald Corrigan, to pool the BCCI assets globally. Corrigan responded that while sympathetic to pooling of assets as an economist, he had to ring-fence the US assets, as he was accountable to US Congress. This reinforces my earlier point in chapter 2 that the mandate and accountability drive supervisory action in a crisis.

Next, the US Federal Reserve Act stipulates that US banks shall not be required to repay deposits at a foreign branch if the branch cannot repay the deposit because of (civil) war or any other foreign government action. More generally, US law establishes national depositor preference, giving national depositors a preferential treatment over foreign depositors. Chapter 6 discusses the territorial approach toward bank resolution in the United States in more detail. In terms of the financial trilemma, the United States plays the noncooperative national game in case of an international banking failure.

Diverging Structures

So far, this section has illustrated the trend toward centralizing key management functions that previously belonged with the separate entities of a financial group. Centralization implies that strategic decision-making is transferred from the functional or sectoral entities of the group to the level of the group as a whole (that is, the holding level). The centralization of systems and activities (such as asset management) and key management functions results from the drive of financial groups to reap the synergy benefits. The prospect of cooperation between different entities of a financial group is an important part of the rationale for the group. This centralization and integration drive is reflected in the operational structure based on business lines. During this process, the difference between the operational structure and the legal structure of the group increases.

As a result, it becomes harder to attribute activities to the legal entities on which the division of supervisory responsibilities is based. A large divergence of the legal structure and operational structure complicates the execution of supervision, since supervision is based on statutory power to supervise legal entities, and this may not correspond to where activities actually take place. This tension between operationally integrated financial groups looking for synergies and legally constrained supervisors looking for an effective lever on key decision-makers of these financial groups poses a challenge for effective governance. Chapters 5 and 7 explore the governance options to address this tension.

3.2. EMPIRICAL EVIDENCE ON INTERNATIONAL BANKING

The financial trilemma model in chapter 2 indicates that coordination failure only becomes an issue when banks have significant cross-border operations. This section provides broad empirical evidence on international banking. The empirical literature on the internationalization of financial services is extensive (see Moshirian 2006; Goldberg 2009; and Cetorelli and Goldberg 2011, for an overview). A first line of research examines the patterns of foreign direct investment (FDI) in banking. How large are the flows into banks in (emerging) economies, and what is the impact on the banking system of these economies? Soussa (2004) reports that most of the FDI in banking in emerging economies was directed to Latin America and eastern Europe over the 1990–2003 period. The focus of this research is on the recipient (host) countries. Updating these studies, new aggregate data indicate that cross-border banking has gradually been descending since its precrisis peak in 2007. Nevertheless, cross-border banking is still persuasive with a share of over 20 percent of total bank lending in host countries across the world.

A second line of research looks at the cross-border expansion of individual banks from their home base. Internationalization can be measured by examining a specific aspect of international banking. Berger and coauthors (2003), for example, investigate the geographic reach of banks' cash management services. How many countries do banks cover? Internationalization is then measured by the number of countries in which a bank is active. A separate approach is to look at the full set of activities of banks. Extending earlier work (Schoenmaker and Oosterloo 2005; Schoenmaker and van Laecke 2007), I adopt this approach to measure banks' international operations. Detailed data on the largest banks across the world are presented. Interestingly, their cross-border activities have been going steadily, with some differences. Large European banks have the most significant international operations at 50 percent on average. Foreign operations of American banks are rising toward 30 percent, while those of Asian-Pacific banks are dropping below 15 percent. The dynamics are explored in detail below.

Aggregate Trends in International Banking

After the Asian crisis in the late 1990s, the BIS stepped up the systematic worldwide collection of international banking statistics. So the aggregate

trends can be illustrated from 1999 onward. This chapter starts with the link between banking and trade. Figure 3.4 indicates that international banking (measured as the ratio of banks' foreign claims to GDP) is both larger and growing faster than international trade (measured as the ratio of exports to GDP). Closer investigation of figure 3.4 shows that international bank lending to the nonbank sector has more or less kept pace with global trade. By contrast, international bank lending to banks increased from 10 to 20 percent from 1999 to 2007. It subsequently went back to 11 percent after the Great Financial Crisis. This confirms the narrative in the introduction to this chapter. International lending to nonbanks is supporting global trade, while international lending within the financial system (including securitization) grew fast in the run-up to the crisis, and also declined fast after the crisis. It is now back at the precrisis level of 11 percent.[1]

Next, the rate of foreign bank penetration, defined as foreign lending as a share of total lending in a country or region, is investigated. Figure 3.5 presents foreign bank penetration at the global level from 1999 to 2011. Again, the Great Financial Crisis plays a prominent role. While the share of foreign bank lending to the nonbank sector rose from 15 to 28 percent, it dropped to 21 percent in 2011. Claessens and

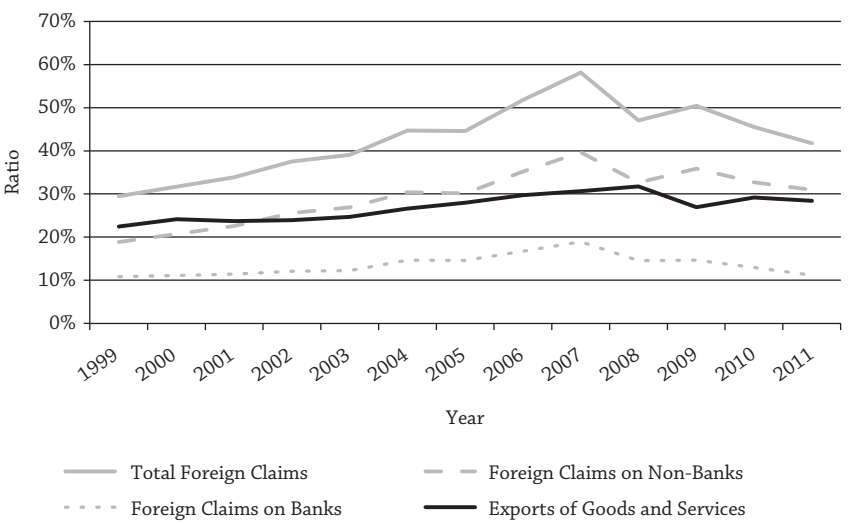

Figure 3.4
Global trade and banks' foreign claims to GDP
Global trade is measured as exports of goods and services to GDP. Total foreign claims of banks are split into foreign claims on nonbanks and on banks.
Source: World Development Indicators, World Bank; World Economic Outlook Database, IMF; Consolidated Banking Statistics, BIS.

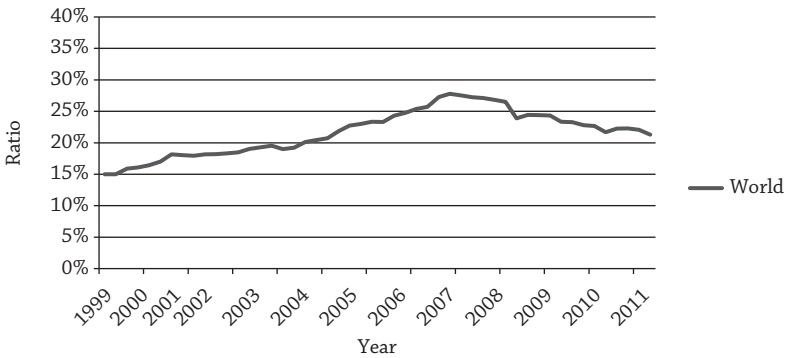

Figure 3.5
Foreign bank penetration
Lending by foreign banks, as a percentage of total bank lending to nonbanks in a given country. The data are for the world, that is, all countries aggregated.
Source: International Financial Statistics, IMF; Consolidated Banking Statistics, BIS.

van Horen (2012) also document substantial increases in foreign bank presence (defined as the number of foreign banks as a share of total banks in a country). They report that current market shares of foreign banks average 10 percent in OECD countries and 30 percent elsewhere. During the Great Financial Crisis, foreign banks reduced credit more than domestic banks, except when they dominated the host banking system.

It is interesting to examine the rate of foreign bank penetration by region. Figure 3.6 plots the regional trends.[2] Foreign bank penetration in Latin America declined after the Argentina crisis of 2001 and is now back at 30 percent. So the earlier trend in foreign banking in Latin America has been reversed. For western Europe and the United States, the shares are relatively stable at about 30 percent. By contrast, the share has expanded to nearly 90 percent in emerging Europe. The ebb in foreign bank lending to central and eastern Europe after the financial crisis was limited up until 2011. The share of foreign bank penetration in emerging Asia is far lower at 20 percent. China and Japan have very limited foreign banking within their borders with shares well below 5 percent. That shows that these large Asian countries are difficult to penetrate for foreign banks. After reviewing the overall trends in international banking from a host country perspective, the next section moves to the internationalization of banks from a home country perspective. The internationalization of banks is the main topic of the book and measured by the parameter α_f in our model in chapter 2.

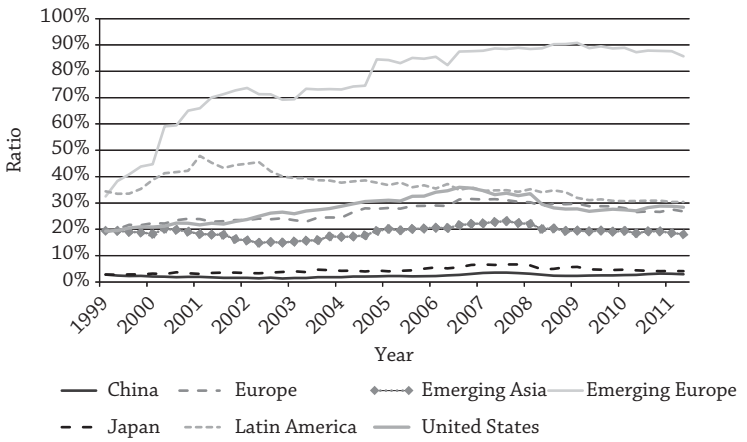

Figure 3.6
Foreign bank penetration by region
Lending by foreign banks, as a percentage of total bank lending to nonbanks in a given country or region. The data are for the major countries and regions. In the case of regions, the data for the respective countries in that region are aggregated.
Source: International Financial Statistics, IMF; Consolidated Banking Statistics, BIS.

Internationalization of the World's Largest Banks

Sullivan (1994) develops the Transnationality Index to measure the internationalization of multinationals. This Transnationality Index is calculated as an unweighted average of (1) foreign assets to total assets, (2) foreign income to total income, and (3) foreign employment to total employment. Although an index based on three indicators is more stable, our study focuses on the first indicator: foreign assets to total assets. The benefits of bailout (as modeled in chapter 2) are related to a bank's assets in several ways. The benefits can be thought of as preventing a temporary reduction of credit availability (credit crunch) through shortening of balance sheets by a forced liquidation of the loan book in a particular country. Another source of benefits is the safeguarding of financial stability of the total banking system, which might be jeopardized by a fire sale of assets or other externalities impacting negatively on aggregate investment in a country (Acharya 2009).

So this section takes the geographic segmentation of assets as a proxy for the geographic spread of the benefits. The degree of internationalization of banks is examined for the three main economic regions: the Americas, the Asia-Pacific, and Europe. It is interesting to distinguish between regional expansion (e.g., within the Americas) and global expansion of banks. The asset data are therefore broken down

into activities in the home market (*h*), the rest of the region (*r*), and the rest of the world (*w*).

Our empirical study of international banking focuses on the large banks, as these are more international than their smaller counterparts. Extending earlier work with Sander Oosterloo and Christiaan van Laecke, I select the 60 largest banks on the basis of Tier 1 capital published by *The Banker* (2012). Since the European banks comprise about 50 percent of *The Banker's* top 1,000 world banks, the dataset comprises more European than American or Asian-Pacific banks. The dataset is divided into three samples: top 15 American banks, top 15 Asian-Pacific banks, and top 30 European banks.

The purpose of the data exercise is to examine to what extent banks have significant international operations. Banks are grouped on the basis of their geographic dispersion. The first two groups are truly international banks. Global banks have less than 50 percent of business in the home country and the majority of their international business in the rest of the world. Regional banks have also less than 50 percent of their business in the home country, but the majority of their international business is in the rest of the region. The third group is a runners-up group, labeled semi-international banks. These banks have 50 to 75 percent of their business in the home country. International operations are still sizable at 25 to 50 percent. Finally, domestic banks have more than 75 percent of their business in the home country. The model in chapter 2 predicts coordination failure when the foreign operations, α_f , become large. This is relevant for the first three groups: global, regional, and semi-international banks. National financial policies may only be suitable for domestic banks.

Figure 3.7 shows the history of international banking for the three major regions. Foreign business is calculated as a weighted average for the banks in a particular region (weighted according to assets). So the line for the Americas indicates the average foreign operations of the top 15 American banks. While the aggregate international banking statistics (see figure 3.5) suggest a decline of international banking after the Great Financial Crisis, individual bank data show a different pattern. Throughout the period from 2000 to 2011, cross-border activities have been going steady with some differences. Large European banks have the most significant international operations at 50 percent on average. Foreign operations of American banks are increasing toward 30 percent, while those of Asian-Pacific banks are declining below 15 percent.

The dynamics over the 2000–2011 period are interesting in two respects: (1) ups and downs of internationalization at particular banks; and (2) entry and exit of banks in the top 15 and top 30, respectively.

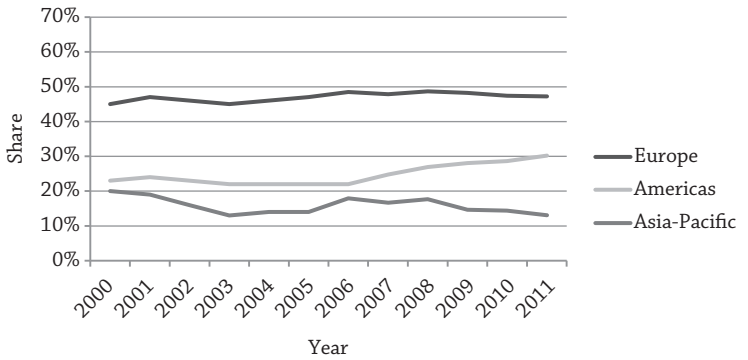

Figure 3.7
Foreign business of banks
Foreign business is measured as foreign assets as a percentage of total assets. Data are provided for American banks (see table 3.1), Asian-Pacific banks (table 3.2), and European banks (table 3.3).

Some large banks have become more international, even after the Great Financial Crisis. Within the American sample, Citigroup increased its international business from 39 percent in 2000 to 64 percent in 2011 (table 3.1 provides individual bank data for 2000, 2006, and 2011). Moreover, the two remaining investment banks, Goldman Sachs and Morgan Stanley, received a regular banking license form the Federal Reserve during the Great Financial Crisis and thus enter our sample of top 15 American banks. These investment banks are semi-international, raising the weighted average of foreign business. Finally, the four Canadian banks have a stable foreign business within the American region and less so in the rest of the world. As their home market is saturated (including a domestic ban on bank mergers), the Canadian banks achieve some limited growth abroad. In sum, the foreign business of American banks has moved upward to 30 percent.

By contrast, the Asian-Pacific region shows a completely different picture. The real contest is between the big Chinese and Japanese banks. Banks are very dependent on the economic fortunes in their home country. So Japanese banks became global powerhouses in the 1980s with the spectacular rise of the Japanese economy during this period that unfortunately culminated in the lost decade of growth in the 1990s. Similarly, the Chinese banks now occupy four places in the global top 10 of *The Banker*, partly replacing their Japanese counterparts that descended in line with the Japanese economy. Table 3.2 illustrates that the Chinese banks are even more domestically oriented than the Japanese banks. This fact explains the overall reduction in foreign business among Asian-Pacific

Table 3.1. BIGGEST 15 BANKS IN THE AMERICAS FROM 2000 TO 2011

Banking groups	2000			Banking groups	2006			Banking groups	2011		
	h	***r***	***w***		***h***	***r***	***w***		***h***	***r***	***w***
Citigroup	61	7	32	Bank of America	89	3	9	Bank of America	87	1	12
JPMorgan Chase & Co	65	3	32	Citigroup	52	20	29	JPMorgan Chase & Co	65	3	32
Bank of America	92	1	7	JPMorgan Chase & Co	74	2	24	Citigroup	36	21	43
Wells Fargo & Co	97	3	0	Wachovia Corporation	100	0	0	Wells Fargo & Co	97	1	2
Wachovia Corporation	98	1	1	Wells Fargo & Co	100	0	0	Goldman Sachs	57	5	38
MetLife	97	1	1	Royal Bank of Canada	74	17	9	Morgan Stanley	69	6	25
Washington Mutual	100	0	0	Washington Mutual	100	0	0	Itaú Unibanco Holding	80	18	2
US Bancorp	95	3	3	Scotiabank	64	16	20	Royal Bank of Canada	54	30	16
Scotiabank	61	27	13	US Bancorp	100	0	0	Banco do Brasil	92	4	4
MBNA Corp	87	2	11	Countrywide Financial Corporation	100	0	0	Banco Bradesco	93	7	0
Royal Bank of Canada	76	10	14	Toronto-Dominion Bank	69	20	10	US Bancorp	96	2	2
Bank of Montreal	63	30	8	Bank of Montreal	69	25	6	PNC Financial Services Group	99	1	0
Toronto-Dominion Bank	62	24	14	SunTrust Banks	99	1	1	Toronto-Dominion Bank	56	35	9
Countrywide Financial Corporation	100	0	0	Capital One Financial Corporation	92	2	6	Scotiabank	64	27	9
Canadian Imperial Bank of Commerce	59	33	8	National City Corporation	100	0	0	Bank of Montreal	63	32	5
Weighted average	77	8	15	Weighted average	78	8	14	Weighted average	70	11	19

Note: Top 15 banks are selected on the basis of capital strength as published in *The Banker*. Total assets are segmented over the home country, the rest of region, and the rest of world. The top 15 banks are calculated using a weighted average (weighted according to assets).
Source: Author's calculations based on annual reports.

Table 3.2. BIGGEST 15 BANKS IN THE ASIA-PACIFIC FROM 2000 TO 2011

Banking groups	2000			Banking groups	2006			Banking groups	2011		
	h	***r***	***w***		***h***	***r***	***w***		***h***	***r***	***w***
Mitsubishi Tokyo Financial Group	59	7	34	Mitsubishi UFJ Financial Group	71	5	24	Industrial Commercial Bank of China	96	2	2
Mizuho Financial Group	75	5	20	Industrial Commercial Bank of China	98	1	1	China Construction Bank Corporation	97	2	1
Bank of China	93	3	3	Bank of China	72	16	11	Mitsubishi UFJ Financial Group	72	5	23
Sumitomo Mitsui Financial Group	82	6	12	China Construction Bank	96	2	2	Bank of China	78	15	7
China Construction Bank	95	3	3	Mizuho Financial Group	67	5	28	Agricultural Bank of China	99	1	0
UFJ Holdings	76	7	17	Sumitomo Mitsui Financial Group	84	5	11	Mizuho Financial Group	87	4	9
Industrial and Commercial Bank of China	95	3	3	Norinchukin Bank	78	5	17	Sumitomo Mitsui Financial Group	84	5	11
Norinchukin Bank	76	8	16	National Australia Bank	67	11	22	Norinchukin Bank	82	4	14
Agricultural Bank of China	100	0	0	Resona Holdings	90	5	5	Bank of Communications	95	3	2
National Australia Bank	51	10	38	ANZ Banking Group	67	26	7	National Australia Bank	76	8	16
Resona Holdings	95	3	3	Commonwealth Bank Group	81	13	6	Commonwealth Bank Group	91	7	2
ANZ Banking Group	65	23	12	Kookmin Bank	100	0	0	ANZ Banking Group	76	11	13
Commonwealth Banking Group	85	12	3	Agricultural Bank of China	100	0	0	China Citic Bank	96	4	0
Sumitomo Trust & Banking	100	0	0	Woori Financial Group	100	0	0	Westpac Banking Corporation	93	6	1
Kookmin Bank	100	0	0	Bank of Communications	93	3	3	Sumitomo Mitsui Trust Bank	89	4	7
Weighted average	80	6	15	Weighted average	82	5	13	Weighted average	87	5	8

Note: Top 15 banks are selected on the basis of capital strength as published in *The Banker*. Total assets are segmented over the home country, the rest of region, and the rest of world. The top 15 banks are calculated using a weighted average (weighted according to assets).
Source: Author's calculations based on annual reports.

banks from 2000 to 2011. The smaller Australian banks have some steady foreign business, in particular in neighboring New Zealand.

Finally, foreign business in Europe remained high at about 50 percent throughout the 2000–2011 period. Big banks, like HSBC, Deutsche Bank, Credit Suisse, and UBS, have kept their international orientation until today. The foreign activities of Barclays increased from 24 percent in 2000 to 66 percent in 2011 (see table 3.3). It has thus moved from being a domestic bank to being a truly global bank. Barclays Capital, its investment bank arm, has played a major role in Barclays' internationalization. The other large UK bank, Royal Bank of Scotland (RBS), seemed to follow a similar pattern, but was caught by the financial crisis. As part of the government rescue package, RBS had to downsize its international operations. Its foreign business is now 38 percent, down from its peak in 2007–2008 at 46 percent.

Fortis, a midsized bank operating on a regional scale in Europe, is a good example showing that a failure of an international bank does not automatically reduce international banking. During the crisis, the Belgian bank was split on national lines (see chapter 4). The domestic Belgian part of Fortis was bought by BNP Paribas, which added to the foreign business of BNP Paribas. The foreign Dutch part was acquired by ABN AMRO and thus turned into a domestic business.

An overall conclusion is that most large banks have kept a strong international orientation after the Great Financial Crisis. Some have even become larger through facilitated mergers and takeovers in order to rescue ailing competitors. But other banks have been forced to deleverage deeply, in particular their international business, in response to state aid. Consequently, there are some significant shifts. A good example is the United States. European banks, in particular German and Dutch banks, have been gradually retreating from the United States, thereby making room for others to step in (Schildbach and Wenzel 2012). Banks from Canada, China, and Japan have expanded their US business (in line with the general shift of economic power from the West to the East). The overall presence of foreign banks in the United States has remained stable around 23 percent.

Moving to the current situation, tables 3.4, 3.5 and 3.6 document the international activities of the 60 largest banks across the world in 2011. Europe houses most international banks, with six global banks (three from the UK, two from Switzerland, and one from Germany) and seven regional banks from various European countries (reflecting financial integration within the EU). All these banks have the majority of their business abroad. Furthermore, Europe has eight semi-international banks, with sizable business abroad (between 25 and 50 percent).

Table 3.3. BIGGEST 30 BANKS IN EUROPE FROM 2000 TO 2011

Banking groups	2000			Banking groups	2006			Banking groups	2011		
	h	***r***	***w***		***h***	***r***	***w***		***h***	***r***	***w***
HSBC	33	6	61	HSBC	24	11	65	HSBC	35	11	54
Crédit Agricole	61	19	20	Crédit Agricole	64	20	16	BNP Paribas	49	34	17
Royal Bank of Scotland	76	7	17	Royal Bank of Scotland	69	8	23	Royal Bank of Scotland	62	8	30
Halifax Bank of Scotland	94	3	3	Banco Santander	31	35	35	Crédit Agricole	81	11	8
BNP Paribas	48	21	31	BNP Paribas	52	30	18	Banco Santander	27	41	32
Banco Santander	28	10	62	Barclays	49	13	37	Barclays	34	27	39
Barclays	76	7	17	Halifax Bank of Scotland	86	7	7	Lloyds Banking Group	90	7	3
Rabobank Group	80	7	13	UniCredit	29	68	3	Deutsche Bank	34	32	34
ING Bank	36	19	45	Rabobank Group	73	15	12	UniCredit	42	56	2
UBS	35	30	35	ING Bank	40	41	19	Banque Populaire CdE	71	14	15
ABN Amro Group	34	33	33	UBS	24	24	51	ING Bank	40	38	22
Deutsche Bank	41	29	30	Deutsche Bank	27	36	36	Rabobank Group	74	9	17
Groupe Caisse d'Espargne	n.a.	n.a.	n.a.	ABN Amro Group	32	34	34	Société Générale	79	12	9
Société Générale	68	11	21	Crédit Mutuel	93	5	1	Intesa Sanpaolo	82	14	4
Crédit Mutuel	100	0	0	Société Générale	58	31	11	BBVA	56	9	35
Lloyds TSB	84	8	8	Credit Suisse Group	28	25	46	UBS	36	20	44
Credit Suisse Group	29	32	39	BBVA	53	1	45	Credit Suisse Group	21	26	53

(Continued)

Table 3.3. CONTINUED

Banking groups	2000			Banking groups	2006			Banking groups	2011		
	h	***r***	***w***		***h***	***r***	***w***		***h***	***r***	***w***
HypoVereinsbank	62	34	3	Lloyds TSB	99	0	0	Standard Chartered	15	4	81
Banca Intesa	66	19	15	Groupe Caisse d'Espargne	81	2	17	Crédit Mutuel	86	10	4
BBVA	31	2	67	Groupe Banques Populaires	81	8	11	Commerzbank	51	32	17
Fortis Group	45	27	28	Fortis Group	56	38	7	Nordea Group	21	74	5
Groupe Banques Populaires	98	1	1	Commerzbank	74	20	6	CaixaBank	98	2	0
UniCredit	74	8	18	Nordea Group	27	73	0	Danske Bank	40	60	0
Dexia	52	48	0	Dexia	53	33	15	KBC Group	64	21	15
Sanpaolo IMI	82	12	6	Danske Bank	59	36	5	ABN Amro Group	80	12	8
Nordea Group	22	76	2	Banca Intesa	79	11	10	Allied Irish Banks	81	18	1
Commerzbank	77	13	10	Dresdner Bank	65	25	10	DNB Group	73	17	10
KBC Group	45	36	19	la Caixa	100	0	0	Landesbank Baden-Württemberg	72	20	8
Bayerische Landesbank	63	18	19	Sanpaolo IMI	86	11	3	Bayerische Landesbank	77	12	11
Caja de Ahorros de Barcelona	98	2	0	KBC Group	50	29	22	Erste Group	41	55	4
Weighted average	55	20	25	Weighted average	52	23	25	Weighted average	53	23	24

Note: Top 30 banks are selected on the basis of capital strength as published in *The Banker*. Total assets are segmented over the home country, the rest of region, and the rest of world. The top 30 banks are calculated using a weighted average (weighted according to assets).
Source: Author's calculations based on annual reports.

Table 3.4. BIGGEST 15 BANKS IN THE AMERICAS IN 2011

Banking groups	Capital strength	Total assets	Home country	Rest of region	Rest of world
	in US$ billions	in US$ billions	as % of total assets	as % of total assets	as % of total assets
Global banks					
Citigroup (US)	132	1,874	36%	21%	43%
Semi-international banks					
JPMorgan Chase & Co (US)	150	2,266	65%	3%	32%
Goldman Sachs (US)	63	924	57%	5%	38%
Morgan Stanley (US)	52	750	69%	6%	25%
Royal Bank of Canada (Canada)	36	755	54%	30%	16%
Toronto-Dominion Bank (Canada)	29	689	56%	35%	9%
Scotiabank (Canada)	29	578	64%	27%	9%
Bank of Montreal (Canada)	25	503	63%	32%	5%
Domestic banks					
Bank of America (US)	159	2,137	87%	1%	12%
Wells Fargo & Co (US)	114	1,314	97%	1%	2%
Itaú Unibanco Holding (Brazil)	38	436	80%	18%	2%
Banco do Brasil (Brazil)	32	516	92%	4%	4%
Banco Bradesco (Brazil)	31	385	93%	7%	0%
US Bancorp (US)	29	340	96%	2%	2%
PNC Financial Services Group (US)	29	271	99%	1%	0%
Top 15 American banks	63	916	70%	11%	19%

Note: Top 15 banks are selected on the basis of capital strength as published in *The Banker* (2012). Total assets are segmented over the home country, the rest of region, and the rest of world. The top 15 banks are calculated using a weighted average (weighted according to assets).
Source: Author's calculations based on annual reports.

These (semi-)international banks have two faces. On the one hand, they play an important role in the domestic economy and are thus systemic in the home country (except for Standard Chartered, which has minor operations in the UK). Given the close connections between the national authorities and these big banks, these banks are sometimes dubbed national champions (Boot 1999). On the other hand, a large part of their activities is abroad. As the national authorities do not take cross-border

Table 3.5. BIGGEST 15 BANKS IN THE ASIA-PACIFIC IN 2011

Banking groups	Capital strength	Total assets	Home country	Rest of region	Rest of world
	in US$ billions	in US$ billions	as % of total assets	as % of total assets	as % of total assets
Semi-international banks					
Mitsubishi UFJ Financial Group (Japan)	117	2,664	72%	5%	23%
Domestic banks					
Industrial Commercial Bank of China (China)	140	2,456	96%	2%	2%
China Construction Bank Corporation (China)	119	1,949	97%	2%	1%
Bank of China (China)	111	1,878	78%	15%	7%
Agricultural Bank of China (China)	96	1,853	99%	1%	0%
Mizuho Financial Group (Japan)	78	2,013	87%	4%	9%
Sumitomo Mitsui Financial Group (Japan)	76	1,741	84%	5%	11%
Norinchukin Bank (Japan)	54	880	82%	4%	14%
Bank of Communications (China)	42	732	95%	3%	2%
National Australia Bank (Australia)	32	737	76%	8%	16%
Commonwealth Bank Group (Australia)	30	717	91%	7%	2%
ANZ Banking Group (Australia)	30	582	76%	11%	13%
China Citic Bank (China)	27	439	96%	4%	0%
Westpac Banking Corporation (Australia)	27	656	93%	6%	1%
Sumitomo Mitsui Trust Bank (Japan)	26	400	89%	4%	7%
Top 15 Asian-Pacific banks	67	1,313	87%	5%	8%

Note: Top 15 banks are selected on the basis of capital strength as published in *The Banker* (2012). Total assets are segmented over the home country, the rest of region, and the rest of world. The top 15 banks are calculated using a weighted average (weighted according to assets).
Source: Author's calculations based on annual reports.

Table 3.6. BIGGEST 30 BANKS IN EUROPE IN 2011

Banking groups	Capital strength	Total assets	Home country	Rest of region	Rest of world
	in US$ billions	in US$ billions	as % of total assets	as % of total assets	as % of total assets
Global banks					
1. HSBC (UK)	140	2,556	35%	11%	54%
2. Barclays (UK)	78	2,417	34%	27%	39%
3. Deutsche Bank (Germany)	64	2,800	34%	32%	34%
4. UBS (Switzerland)	41	1,508	36%	20%	44%
5. Credit Suisse Group (Switzerland)	39	1,115	21%	26%	53%
6. Standard Chartered (UK)	37	599	15%	4%	81%
Regional banks					
1. BNP Paribas (France)	92	2,543	49%	34%	17%
2. Banco Santander (Spain)	80	1,619	27%	41%	32%
3. UniCredit (Italy)	56	1,199	42%	56%	2%
4. ING Bank (Netherlands)	50	1,244	40%	38%	22%
5. Nordea Group (Sweden)	29	927	21%	74%	5%
6. Danske Bank (Denmark)	25	596	40%	60%	0%
7. Erste Group (Austria)	15	272	41%	55%	4%
Semi-international banks					
1. Royal Bank of Scotland (UK)	88	2,330	62%	8%	30%
2. Banque Populaire CdE (France)	53	1,473	71%	14%	15%
3. Rabobank Group (Netherlands)	49	947	74%	9%	17%
4. BBVA (Spain)	44	773	56%	9%	35%
5. Commerzbank (Germany)	34	856	51%	32%	17%
6. KBC Group (Belgium)	20	369	64%	21%	15%

(Continued)

Table 3.6. CONTINUED

Banking groups	Capital strength	Total assets	Home country	Rest of region	Rest of world
	in US$ billions	in US$ billions	as % of total assets	as % of total assets	as % of total assets
7. DNB Group (Norway)	18	355	73%	17%	10%
8. Landesbank Baden-Württemberg (Germany)	18	483	72%	20%	8%
Domestic banks					
1. Crédit Agricole (France)	80	2,432	81%	11%	8%
2. Lloyds Banking Group (UK)	68	1,501	90%	7%	3%
3. Société Générale (France)	49	1,529	79%	12%	9%
4. Intesa Sanpaolo (Italy)	48	827	82%	14%	4%
5. Credit Mutuel (France)	36	783	86%	10%	4%
6. CaixaBank (Spain)	26	365	98%	2%	0%
7. ABN Amro Group (Netherlands)	20	524	80%	12%	8%
8. Allied Irish Banks (Ireland)	20	177	81%	18%	1%
9. Bayerische Landesbank (Germany)	18	400	77%	12%	11%
Top 30 European banks	48	1.184	53%	23%	24%

Note: Top 30 banks are selected on the basis of capital strength as published in *The Banker* (2012). Total assets are segmented over the home country, the rest of region, and the rest of world. The top 30 banks are calculated using a weighted average (weighted according to assets).
Source: Author's calculations based on annual reports.

externalities into account, this may lead to coordination failure in case of a bailout. So while international coordination may be needed most for these banks, the national authorities are also likely to cling to their national champions.

The American region contains one global bank. Citigroup is a truly international bank, with retail and wholesale operations across

the world. Citi operates in all regions with major operations in the Americas, the Asia-Pacific, and Europe. Next, there are no regional banks in the Americas. But there are seven semi-international banks. Three of these are internationally operating investment banks (about 30 percent of their business in the rest of the world), with a strong home base in the United States. The other four are Canadian banks with a regional orientation. These Canadian banks have about 30 percent of their business in the rest of the region (United States, Mexico, and Latin America). The remaining banks in the American sample are domestic.

Finally, the Asian-Pacific banks are very domestic. There is only one semi-international bank, Mitsubishi UFJ Financial Group. The foreign operations of this Japanese bank are about 28 percent. All other Japanese and Chinese banks are domestically oriented. Furthermore, the Australian banks have some business abroad (mainly New Zealand) but are still regarded as domestic in our ranking.

In sum, there are seven truly global banks and a further seven regional banks (within the EU). For these banks with more than 50 percent of their business abroad, coordination failure is a real issue. International cooperation may be useful for the global banks, while European coordination may be needed for the regional banks in Europe. There are no strong regional patterns in the Americas and the Asia-Pacific. Next, there are some 16 semi-international banks with sizable international activities, ranging from 25 to 50 percent.

Global Systemic Banks

The FSB has published a list of so-called global systemically important banks (G-SIBs). As discussed in chapter 1, the FSB is designing a policy framework to address the externalities that these global systemic banks pose to the financial system. Central elements of this policy framework are a capital surcharge and the adoption of resolution plans for these banks. This section reviews the list of 28 global systemic banks, which was first published in 2011 (Financial Stability Board 2011b) and updated in 2012 (Financial Stability Board 2012b). The FSB aims to update and publish this initial list annually in November. Table 3.7 reports the global systemic banks on the updated 2012 list.

The Basel Committee on Banking Supervision (2011) has developed a methodology to assess the global systemic importance of banks, based on the impact that a failure of a bank can have on the global financial

Table 3.7. GLOBAL SYSTEMICALLY IMPORTANT BANKS

Banking groups	Total assets	World assets rank	Home country	Rest of region	Rest of world
	in US$ billion		as % of total assets	as % of total assets	as % of total assets
Global banks					
1. Deutsche Bank (Germany)	2,800	1	34%	32%	34%
2. HSBC (UK)	2,556	3	35%	11%	54%
3. Barclays (UK)	2,417	7	34%	27%	39%
4. Citigroup (US)	1,874	14	36%	21%	43%
5. UBS (Switzerland)	1,508	19	36%	20%	44%
6. Credit Suisse Group (Switzerland)	1,115	25	21%	26%	53%
7. Standard Chartered (UK)	599	41	15%	4%	81%
Regional banks					
1. BNP Paribas (France)	2,543	4	49%	34%	17%
2. Banco Santander (Spain)	1,619	17	27%	41%	32%
3. ING Bank (Netherlands)	1,244	23	40%	38%	22%
4. UniCredit (Italy)	1,199	24	42%	56%	2%
5. Nordea Group (Sweden)	927	27	21%	74%	5%
Semi-international banks					
1. Mitsubishi UFJ Financial Group (Japan)	2,664	2	72%	5%	23%
2. Royal Bank of Scotland (UK)	2,330	8	62%	8%	30%
3. JPMorgan Chase & Co (US)	2,266	9	65%	3%	32%
4. Banque Populaire CdE (France)	1,473	21	71%	14%	15%
5. Goldman Sachs (US)	924	28	57%	5%	38%
6. BBVA (Spain)	773	33	56%	9%	35%
7. Morgan Stanley (US)	750	35	69%	6%	25%
8. State Street (US)	216	86	72%	3%	25%
Domestic banks					
1. Crédit Agricole (France)	2,432	6	81%	11%	8%

Table 3.7. CONTINUED

Banking groups	Total assets	World assets rank	Home country	Rest of region	Rest of world
	in US$ billion		as % of total assets	as % of total assets	as % of total assets
2. Bank of America (US)	2,137	10	87%	1%	12%
3. Mizuho Financial Group (Japan)	2,013	11	87%	4%	9%
4. Bank of China (China)	1,878	13	78%	15%	7%
5. Sumitomo Mitsui Financial Group (Japan)	1,741	16	84%	5%	11%
6. Société Générale (France)	1,529	18	79%	12%	9%
7. Wells Fargo & Co (US)	1,314	22	97%	1%	2%
8. Bank of New York Mellon (US)	326	76	82%	4%	15%
Total G-SIBS	1,613		57%	18%	25%

Note: The second column presents the assets rank on the basis of the top 1,000 world banks, as published in *The Banker* (2012). Total assets are segmented over the home country, the rest of region, and the rest of world. Total of G-SIBs is calculated as a weighted average (weighted according to assets).
Source: The list of G-SIBs is from the FSB (2012b). Assets are taken from *The Banker* (2012). Segmentation of assets is calculated by the author based on annual reports.

system. The methodology selects five indicators reflecting a bank's systemic importance:

1. *Size*: measured by total assets
2. *Global activity*: measured by international claims (assets) and liabilities
3. *Interconnectedness*: measured by the amount of assets and liabilities within the financial system and the dependence on wholesale funding
4. *Substitutability* (referring to the lack of readily available substitutes for the services a bank provides): measured by assets under custody, payments cleared and settled through payment systems, and underwriting in debt and equity markets
5. *Complexity*: measured by OTC derivatives and trading book

The five indicators each get an equal weight of 20 percent. The first step in the assessment process is a mechanical application of the indicator-based

measurement approach. The next step allows for supervisory judgment. The Basel Committee on Banking Supervision thus develops recommendations using their judgment. The FSB and the national authorities make final decisions. There is therefore some scope for national authorities to negotiate the inclusion or exclusion of some of their national champions in the final list.

Tables 3.4 to 3.6 provide data on the size and global activities of the world's largest banks. The global activities can be measured by the combined share of assets in the rest of the region and the rest of the world. The size is reported under total assets in table 3.7. *The Banker* (2012) publishes the assets ranking of the top 1,000 world banks. The second column in table 3.7 shows the world assets ranking.

All seven global banks are on the G-SIB list of table 3.7. Next, all large regional banks from Europe are included in the G-SIB list. Only two midsized regional banks, Danske Bank ($596 billion in assets with a world asset rank of 42) and Erste Group ($272 billion in assets with a world assets rank of 81), are not on the list. In the global and regional banks groups, the very large banks (banks with foreign operations over 50 percent and total assets over $1.8 trillion) get the highest capital surcharges at 2 to 2.5 percent (see table 1.1). These high capital surcharges reflect the global systemic importance of these large banks (Deutsche Bank, HSBC, Barclays, Citigroup, and BNP Paribas).

Moving to the runners-up, most of the major semi-international banks are included. The only Asian bank in this category, Mitsubishi UFJ from Japan, is listed. In the American region, the United States has included all its major investment banks: JPMorgan Chase, Goldman Sachs, and Morgan Stanley. The big surprise is the omission of the Canadian banks. Although these banks are midsized (world assets' rankings range from 35 to 50) and not overly complex, they have a sizable geographic reach with about 40 percent of foreign activities, especially in the American region. The Canadian authorities could have listed one or two of their largest banks, such as the Royal Bank of Canada with $755 billion in assets and the Toronto-Dominion Bank with $689 billion in assets. But the Canadian banks are relatively straightforward, without major derivatives or trading operations.

The major semi-international banks in Europe, such as Royal Bank of Scotland, and Banque Populaire, are included. A large bank, Rabobank, is not listed, since this bank has a strong home orientation (74 percent) and has limited wholesale activities only to support its corporate clients. In the 2012 update, the FSB has removed Commerzbank from the list, because of its declining global systemic importance. The other European

regional banks (KBC from Belgium, DNB from Norway, and Landesbank Baden-Württemburg from Germany) are relatively small banks and therefore not included in the G-SIB list.

Most large domestic banks with assets over $1 trillion are included because of their sheer size. These banks have typically 10 to 20 percent of foreign business. Only Wells Fargo is a borderline case. While it has only 3 percent of foreign assets, it is still included in the G-SIB list. By contrast, the Chinese authorities have included the Bank of China with 22 percent of assets abroad, though mainly in Hong Kong. The other three large Chinese banks are not included, as their foreign assets are well below 5 percent. Their global impact is thus very limited. Moving to Europe, the FSB has removed Lloyds Banking Group in the 2012 update, because of its declining global systemic importance.

Finally, two small specialist banks, Bank of New York Mellon and State Street, are on the list. These two asset management banks offer inter alia custody and trust services, scoring high on the substitutability factor. Their custody services are crucial to the global financial system and difficult to substitute for during times of crisis.

In sum, all major internationally active banks (banks with foreign operations over 25 percent and total assets over $1 trillion) are included in the G-SIB list. That is a good achievement of the FSB. There are some bordering cases, such as the Canadian banks, but these midsized banks may have a limited global impact.

3.3. FINANCIAL SAFETY NET

What is the impact of banking internationalization on the funding costs of banks? While national banks rely on the national safety net from the national central bank and treasury, it is not clear on which safety net international banks can rely. The financial trilemma, developed in the previous chapter, suggests that a national safety net is not stable for international banks, as national authorities do not incorporate cross-border externalities in their decision making. Bertay, Dermirguc-Kunt, and Huizinga (2011) find evidence that an international bank's cost of funds raised through a foreign subsidiary is substantially higher than the cost of funds for a purely domestic bank. These results are consistent with limited incentives for national authorities to bail out an international bank. They conclude that the operation of the financial safety net appears to be a barrier to cross-border banking.

Elaborating on this novel study, Bertay, Dermirguc-Kunt, and Huizinga (2011) investigate a sample of 898 banks in 83 countries during the period from 1999 to 2009. Their internationalization index is limited to foreign subsidiaries and not to foreign branches, as information on foreign branches is not available. The size of internationalization is thus, to some extent, undermeasured. Nevertheless, it measures the funding costs of separate foreign subsidiaries. The internationalization index is set up as the liabilities of the foreign subsidiaries divided by total (consolidated) liabilities of an international bank. Foreign liabilities are therefore calculated as a percentage share of total liabilities. With these liabilities shares, Bertay, Dermirguc-Kunt, and Huizinga (2011) take a different approach to measuring cross-border business from that used in the previous section of this chapter, which looks at asset shares. A liability-based approach is more appropriate when measuring the funding costs of banks.

In the sample of 898 banks, the majority of funding is raised in the respective home country, with a mean value of only 1.9 percent for the share of foreign liabilities. Two-thirds of the sample banks raise their funding purely domestically, while one-third have foreign liabilities. This distinction allows the authors to contrast the funding costs of domestic and foreign liabilities. It is important to isolate the market disciplining effect due to the lack of an international safety net from other effects. The authors control for bank asset risk as potentially affected by international regulatory arbitrage and by international risk diversification.

The results of Bertay, Dermirguc-Kunt, and Huizinga (2011) are very stark, though they should be interpreted with some care, as it is a first study on this topic. Their findings suggest that an international bank's cost of funds raised through a foreign subsidiary is between 1.5 and 2.4 percent higher than the cost of funds for a purely domestic bank. This is a sizable difference, given an overall average cost of funds of 3.3 percent in their sample. These results suggest that bank liability holders of international banks expect to suffer relatively higher losses on their holdings. Bank liability holders only suffer losses following bank distress if they are not made whole by the financial safety net. International bank liability holders thus appear to rely relatively little on the safety net. Bertay, Dermirguc-Kunt, and Huizinga (2011) put forward that these results reflect that national financial safety net managers are less likely to contribute to the bailout of an international bank, or that the recovery and resolution process as applied to an international bank is expected to be relatively inefficient. The next chapter examines the efficiency of the resolution of international banks during the Great Financial Crisis.

3.4. CONCLUSION

The business models of international banks can be very different. The two polar cases are the globally integrated banks operating through a worldwide web of branches, and the decentralized global banks with various country subsidiaries. The difference between the two business models is clearly relevant. But by using a common brand name, decentralized banks are regarded as integrated groups by market investors. Moreover, decentralized banks also perform some key functions, such as the development of their risk management model, at the central level.

Aggregate international banking trends indicate that global banking is related to global trade, but there is an important nuance. While foreign bank lending to nonbanks has more or less kept pace with international trade, foreign bank lending to banks was rising until 2007 and then subsequently declined. This reflects the boom and bust in securitization markets.

The geographical segmentation of the 60 largest banks across the world shows that about half of these banks have significant foreign operations, defined as having 25 percent or more of their assets abroad. In terms of the financial trilemma model, coordination failure among national governments may happen for these internationally operating banks. New empirical evidence indicates that the funding cost of the foreign operations is substantially higher, suggesting that investors do not rely on the national safety net. The next chapter presents several case studies of major international bank failures.

NOTES

1. The Committee on the Global Financial System (2010) documents long-term international banking trends in an excellent overview study.
2. Please note that weighted averages are applied to show the economic importance of foreign banking in a region. Some studies (for example, Committee on the Global Financial System 2010) find different results based on unweighted averages.

CHAPTER 4
Failing the Financial Trilemma

Large, internationally-engaged banks had to be rescued by their home country's government despite the rescue being in the interest of many nations.

Daniel Gros, 2012

The Great Financial Crisis highlighted the lack of an effective crisis management framework for international banks. While approaches differed from country to country, broadly speaking, authorities applied national resolution tools focused at the level of the entity within their territory rather than at the level of the international bank.

This country-by-country approach undermined confidence in the international financial system and enlarged competitive distortions while increasing bailout costs borne by taxpayers and legal uncertainty (Claessens, Herring, and Schoenmaker 2010). The events surrounding the failures of Fortis, Lehman, and the Icelandic banks during the Great Financial Crisis illustrate how much damage the absence of an adequate cross-border resolution framework can do to the stability of the global banking system. By contrast, authorities reached a cooperative solution in the bailout of Dexia and the continuation of western bank operations in central and eastern Europe.

This chapter first analyses the potential for diverging national interests. These conflicts of interests hinder an effective coordinated approach between nation-states. The chapter then reviews the lessons from several case studies of international bank failures during the recent financial crisis. It appears that the financial trilemma is at work. The objective of

financial stability suffers when a national approach is applied to international bank failures.

4.1. POTENTIAL FOR CONFLICTS OF INTERESTS

The financial trilemma predicts an undersupply of recapitalizations for international banks, if and when national financial policies are applied. This undersupply depends on the overlap of national interests. When national interests diverge, there may be no motivation for cooperation. When national interests converge, there is a possibility of a joint solution for a failing international bank. Herring (2007) suggests that one key issue determining the overlap of national interests is whether the bank is systemically important in either or both of the countries involved.

When the banks have asymmetric positions, coordination problems are likely to arise. But coordination failures can also occur when the systemic relevance, and thus the potential level of externalities, is large in both the home and the host countries. This is because other interests may still conflict, therefore leading to overall coordination failures. In addition to the asymmetry in systemic relevance, Herring (2007) lists three further asymmetries between home and host countries that may create conflicts of interests.

The first is an asymmetry of resources. Supervisory authorities (as well as central banks, deposit insurance funds, and fiscal authorities) may differ in terms of staff skills and financial resources. This means that even if the fundamental conflicts of interest could be set aside, the home country supervisory authority may not be able to rely on the host country supervisory authority (or vice versa) simply because it may lack the capacity to provide effective oversight.

Second, there may be an asymmetry in the accounting, legal, and institutional infrastructures. Weaknesses in accounting standards and in the quality of external audits may impede the efforts of supervisors in a country, just as informed, institutional creditors and an aggressive and responsible financial press may aid them in another country. The legal infrastructure matters as well; inefficient or corrupt judicial procedures may undermine even the highest-quality supervisory efforts. In short, differences between countries in these attributes create asymmetries in responses.

Third, there may be a differential impact of national resolution regimes, which can vary greatly. Triggers for filing for bankruptcy vary across countries. The question of which entity files for bankruptcy, and when and where, may have a profound influence on the allocation of losses. In

addition, ring-fencing of assets may make creditors in one jurisdiction better off than they would be in a coordinated resolution. This may be perceived as unfair and generate a race for assets that can disrupt markets and make national responses hard to coordinate. The larger the difference in rules, the greater the scope for coordination failures.

The key issue in overcoming these asymmetries in national interests is whether the bank is systemically important in either or both countries. The various possibilities are arrayed in table 4.1, where the columns indicate whether the parent bank is of systemic importance to the home country. The rows indicate whether the host country entity can be considered to be of systemic significance to the host country.

In case (*d*), conflicts of interest are not likely to be a problem. In this case, the local entity is not of systemic importance in the host country. Therefore, apart from issues that might raise concerns about the reputation of the host country's financial system, its supervisors will lack an incentive to take an active role in supervision. Moreover, the bank is not sufficiently large to be systemically important in its home country. As a result, both the home and host country supervisors are likely to exercise relatively light oversight. And if a troubled entity does not pose a systemic risk in either the home or host country, the situation is not likely to pose a serious threat to the international financial system.

The most difficult situations are likely to arise when supervisory responsibility for managing the resolution process and meeting its cost are misaligned. From the home country's perspective, the worst case is (*c*), where a foreign office is not regarded as systemically important by the host country but is a significant part of a systemically important bank in the home country. Regardless of whether the foreign entity is a branch or a subsidiary, the home country may believe that it needs to have primary supervisory oversight of this foreign entity. The Basel Concordat on Supervisory Coordination not only provides it with the right, but also the

Table 4.1. ALTERNATIVE PATTERNS OF ASYMMETRIES

	Home country/parent bank	
Host country entity	Systemic	Nonsystemic
Systemic	(*a*) Potential for coordination	(*b*) Conflicts of interest and potential for coordination problems
Nonsystemic	(*c*) Conflicts of interest and potential for coordination problems	(*d*) Not a big problem

Source: Herring (2007).

responsibility to do so in the case of a branch. The situation is a bit more ambiguous with respect to a subsidiary, because both the home and host country can claim to be the primary supervisor.

Case (*b*) represents the nightmare scenario for host country supervisory authorities. In this case, the foreign entity is assumed to have a large enough role in the local market to be systemically important, while, at the same time, the parent banking group is not systemic in its home country. In this case, the home country lacks an incentive to exercise strong, consolidated supervision, creating risk for systemic stability in the host country. This kind of situation is increasingly prevalent in central and eastern Europe, Latin America, Africa, and to some extent in emerging Asia. The situation becomes a bit more tractable when the foreign office is systemically important to the host country and also large enough to be economically significant to the parent bank. Although the parent bank is not considered to be of systemic importance, the fact that the foreign entity is a significant part of the banking group may elicit more attention from the home country supervisor (see the case study on western banks in eastern Europe below).

Case (*a*) may lead home and host countries to coordinate supervision because the entity is assumed to be both systemically important in the host country and of economic significance to a systemically important bank in the home country. As a result, both the home and the host country will have an incentive to supervise the entity intensively. Although this may result in some conflicts, it is unlikely to result in large gaps in supervisory attention. Nonetheless, cooperation and joint actions may, but not necessarily, occur in all cases. As shown below, there are examples of diverging national interests, such as the handling of Lehman Brothers by US authorities and the 49 other countries around the world in which Lehman operated. There have also been examples of largely converging national interests, such as the handling of Dexia by Belgian and French authorities.

The Fortis case illustrates the way in which other factors can play a role in creating coordination problems. Belgian and Dutch authorities have had a long tradition of cooperation, but Fortis was systemically important in both Belgium and the Netherlands. The Belgian authorities wanted to rescue Fortis as a whole, keeping the home base in Brussels, while the Dutch authorities wanted to return ABN AMRO, which had just been acquired by Fortis, to Dutch control by divesting it from Fortis. In other cases, cooperation has occurred even when interests were asymmetric; for example, as in the cases of foreign banks in emerging markets that were large for the local markets, but small by home market standards.

4.2. CASE STUDIES OF INTERNATIONAL BANK FAILURES

This section reviews several major cross-border bank failures to examine (1) the causes of the failures; (2) the typology of systemic relevance in the home and host countries; (3) the reasons for international cooperation, or the lack of it; and, (4) the impact on global financial stability. The case studies are classified in line with table 4.1, which indicates systemic relevance in home and host country. I compiled these case studies jointly with Stijn Claessens of the International Monetary Fund and Richard Herring of the Wharton School for the Twelfth Geneva Report on the World Economy (Claessens, Herring, and Schoenmaker 2010).

1. Lehman Brothers

Causes

In 2008, Lehman Brothers was the fourth largest investment bank in the United States.[1] It was more than twice as large—and twice as complex—as Bear Stearns, which had agreed to a subsidized, shotgun merger with JPMorgan Chase in March 2008 after it became unable to meet calls for additional collateral. The Lehman Brothers Group consisted of 2,985 legal entities in 50 countries, and many of these entities were subject to host country national regulation as well as supervision by the US Securities and Exchange Commission (SEC).

In 2006, Lehman had made a deliberate decision to embark on an aggressive growth strategy and to take on greater risk by substantially increasing its leverage and making concentrated bets on commercial real estate, leveraged lending, and private-equity-like investments. These undertakings were far riskier than many of its traditional lines of business, because instead of simply brokering transactions, the firm would be holding substantial amounts of risk on its balance sheet. And these risks were financed largely by short-term repurchase agreements often totaling hundreds of billions of dollars per day. By adopting a short-term funding structure, Lehman had, in essence, taken on the risk profile of a commercial bank without the benefit of the bank safety net.

In 2008, just after the demise of Bear Stearns, Lehman announced its first loss since going public in 1994, but the firm was able to raise $6 billion in new capital. Secretary of the Treasury Paulson, in a private communication to the CEO of Lehman, warned that this was not enough and that if Lehman were to announce a loss in the third quarter without having

a buyer or a definitive survival plan in place; its existence was in jeopardy (Valukas 2010, vol. 1, p. 5). However, the Treasury Department did nothing to prepare for such an eventuality by seeking statutory power to intervene—even though it knew it lacked such power.

Lehman Brothers did not succeed in finding a merger partner or in developing a survival plan. Instead, it resorted to window-dressing its monthly and quarterly reports by arbitraging accounting requirements, and it overstated its liquidity by including "comfort deposits" that it held with its clearing banks in order to continue clearing operations with them.

Over the weekend of September 13–14, 2008, US authorities met with CEOs of leading financial institutions from around the world to try to broker a merger for Lehman, or at least raise a fund to subsidize a merger for the troubled firm (as had been done for Long Term Capital Management in 1998). At one point on Sunday afternoon, federal officials believed they had struck a deal with Barclays Capital Management, a deal that would be subsidized by many of Barclays' competitors, but the UK's Financial Services Authority (FSA) refused to waive the shareholder approval required in the UK. Thus, with no buyer and, as the authorities claimed, no way of funding Lehman, the head of the SEC instructed Lehman's board to file for bankruptcy before the opening of markets in Asia, when it would be unable to meet its cash obligations. On September 15, 2009, at 1:45 a.m., Lehman Brothers Holding Inc. (LBHI) filed for protection under Chapter 11 of the Bankruptcy Act, becoming the largest bankruptcy in US history.

Typology

The action that the US authorities took could be interpreted as implying that the collapse of Lehman was not systemically important. But the intensive negotiations they arranged over the weekend suggest otherwise. Moreover, they claimed to have simply lacked the statutory authority to do anything else.

Cooperation

The US authorities refused to support LBHI, the parent company. However, they did support Lehman Brothers Inc., the US broker-dealer subsidiary, for another five days until it could enter the Securities Investor Protection Act trusteeship on September 19, when its prime brokerage

activities, asset management business, and a substantial portion of its client's assets and obligations, were sold to Barclays Capital Inc. and others. This removed one of the chief systemic concerns in the United States. The other concern, Lehman's leading role in the opaque over-the-counter derivatives market, turned out not to be a problem. Most derivatives were promptly closed out and netted under ISDA swap agreements. Although counterparties were not necessarily happy with the prices they received, there were no knock-on effects attributable to the unwinding of the derivatives book.

The only domestic impact that could be labeled systemic was due to a "moral hazard" play by managers of the $62 billion Primary Fund, a wholesale money market fund that was forced to "break the buck" because of its outsized holdings of Lehman's commercial paper. News that one of the oldest money market mutual funds had seen the net asset value of its shares fall below a dollar started a run on other money market mutual funds, which led to dumping corporate commercial paper on the market to meet the demand for withdrawals. The collapse of prices in the secondary market caused the primary market for commercial paper to shut down. Commercial paper is the primary mode of finance for many of the United States' corporates, and so the Treasury hastily provided insurance for money market mutual funds.

Apart from the unanticipated spillover to the wholesale money market and knock-on effect on the commercial paper market, the United States had shown that the economy could function without Lehman Brothers.

This relatively orderly outcome was in stark contrast to the chaos created abroad. The immediacy of the impact was, in large part, due to the highly integrated structure of the Lehman Group. Like many other global financial firms, Lehman managed all of the substantial cash resources centrally at the holding company. Since LBHI declared bankruptcy before cash could be swept out again to the subsidiaries, these subsidiaries found themselves suddenly illiquid and unable to continue operation. Bankruptcy proceedings were initiated in a variety of jurisdictions including Australia, Japan, Korea, and the UK. Because London was Lehman's largest center of activity outside the United States, many of the problems showed up most vividly there.

The London subsidiaries, including Lehman Brothers International Europe, its largest broker/dealer in Europe, filed for bankruptcy and turned to PriceWaterhouseCoopers (PwC) for administration. Because there is no provision under British law for debtor in possession (DIP) financing, the administrators had to struggle to find money to maintain basic functions, including even the employee cafeteria. PwC was confronted with 43,000

trades that were still "live" and would need to be negotiated separately with each counterparty.

The integration of the group was such that a trade performed by one affiliate could be booked in another, without the client necessarily being aware that the location of the asset had shifted. Record keeping fell into disarray when LBHI filed for bankruptcy. At the time of filing, Lehman maintained a patchwork of over 2,600 software system applications, many of which were outdated or arcane. These systems were highly interdependent, but difficult to decipher and not well documented. Moreover, most systems covering trading, valuation, financial accounting, and other activities had been transferred to Barclays in the sale, and Barclays had integrated its own proprietary and confidential data into some of the systems. Thus, many non-US affiliates experienced enormous difficulties even in determining what their balance sheets were and who owed what to whom.

Although arrangements were ultimately negotiated with Barclays for access to some essential information, it was almost impossible to salvage much going-concern value out of the rest of the group. In London, where much of the prime brokerage business had shifted, it was permissible to mingle client funds with the firm's own funds, so several hedge funds suddenly became illiquid. The fragmented data system impeded the salvaging of going-concern value from the remainder of the Lehman Group because different parts of a line of business lodged in different subsidiaries in various parts of the world had no way of reintegrating their line of business, even if that business had been viable. It is clear that significant value was destroyed by the lack of cooperation in the resolution of the Lehman Group, which may continue for a decade.

Impact

The systemic impact of the bankruptcy of Lehman Brothers is difficult to sort out because it occurred amid a number of different shocks to the system. It took place, for example, just after Fannie Mae and Freddie Mac entered conservatorship, protecting all creditors and counterparties, but causing losses to both common and preferred shareholders. And Lehman fell just before the bailout of AIG two days later. The Dow Jones Industrial Average fell 150 points the day Lehman declared bankruptcy, but a considerable part of this may have been due to the apparent change in the rules of regulatory intervention. The explanation offered by federal officials as to why they protected creditors and counterparties of Bear Stearns, but

not those of Lehman Brothers, was not convincing. The run on money market funds and, subsequently, the collapse of the commercial paper market was a direct result of the collapse of the value of Lehman commercial paper.

Conclusions

In many ways, the Lehman bankruptcy was unnecessarily disruptive. The firm was badly supervised and regulated and benefited from widespread expectations that its creditors and counterparties would be protected if worse came to worst. The United States acted unilaterally, providing an orderly resolution for the US broker/dealer arm of Lehman through a merger with Barclays Capital, but there was no cooperation offered in the resolution of the Lehman subsidiaries in 49 other countries, including most notably, in the major operations in the UK.

2. AIG

Causes

In its heyday, the American International Group (AIG) grew into a giant financial conglomerate with an unparalleled global footprint.[2] It operated in more than 130 countries around the world and had more than 110,000 employees. The holding company, rated AAA at the beginning of the decade, had more than 4,000 subsidiaries that were entangled in a complex web of cross-ownership. Although the largest share of AIG's revenue came from its property and casualty insurance, it also owned businesses that were involved in a broad range of other lines of insurance, as well as international banking, consumer lending, and asset management. It also had what it called a financial products division—AIG Financial Products.

Although AIG Financial Products never contributed more than 3 percent of AIG's total revenue (Geneva Association 2010, 17), it subjected the group to enormous risks that were highly leveraged and often unhedged. Many of these transactions were conducted through a subsidiary located in London, but AIG Financial Products evaded oversight by the British FSA because AIG had purchased a US thrift institution that made it subject to consolidated supervision by the US Office of Thrift Supervision, which was deemed an "equivalent regulator," even though many regarded it as completely ineffectual.

As of September 2008, the notional value of AIG Financial Products' derivatives portfolio, which was concentrated largely in US housing market and corporate collateralized debt obligations and collateralized loan obligations, was $2.7 trillion. Of this total, $440 billion consisted of credit default swaps guaranteed by the parent holding company. As part of the contract to sell credit default swaps, AIG was required to maintain its credit rating. If it were to be downgraded, it was obliged to add new collateral to compensate for the increased risk that it might not be able to pay out claims on a timely basis. This proved to be AIG's undoing.

AIG's share price fell steadily from $70 in August 2007 to $20 in August 2008 because it was obliged to post additional collateral as the group suffered downgrades from the ratings agencies, and the securities it had borrowed against had declined in value. Despite the clear warnings of impending danger from the stock market, however, AIG did not come to the attention of the authorities until September 2008. This was partly because it had positioned itself to avoid competent oversight and partly because the United States lacks a national insurance supervisor who might have taken an interest in the group. Moreover, US financial authorities were overwhelmed with the problems of Fannie Mae, Freddie Mac, and Lehman Brothers and were simply not prepared to deal with the collapse of another financial giant so soon.

AIG's management information systems were so decrepit that senior executives did not realize the full magnitude of its problems. When they finally approached the New York Fed and the Treasury Department for assistance, they asked for only a fraction of the $183 billion they ultimately received. In the wake of the turmoil following the bankruptcy of Lehman Brothers, the Treasury and the Fed believed that it was essential to bail out AIG in order to avert a worldwide financial crisis.

The conjunction of the Lehman Brothers and AIG crises—just two days apart—made it clear that the authorities lacked the tools to resolve a faltering nonbank. They had only two unpalatable alternatives: send the firm to bankruptcy court and hope that spillovers could be contained or provide an extraordinary bailout. In the case of AIG, they took the latter course, and the US government soon owned 79.9 percent of the group.

Typology

US officials clearly believed that the failure of AIG would have dire systemic implications for both the United States and the rest of the world. Because the insurance units were all separately regulated and effectively

ring-fenced, their concern appeared to be centered on the derivatives book. It is impossible to know whether the bankruptcy of AIG Financial Products would have caused other failures, but it is interesting to note that none of the 30 largest counterparties of Lehman Brothers failed after its bankruptcy.

Cooperation

The United States neither sought nor received cooperation from any foreign governments, in part because they had not foreseen the crisis and had so little time to arrange some sort of solution. The authorities were extraordinarily reluctant to disclose how the money paid to AIG was used, but finally, under enormous pressure from Congress and the Troubled Asset Relief Program (TARP) oversight board, AIG revealed that $62 billion was paid to 16 counterparties. The largest payment, $16.5 billion, was made to Société Générale. In fact, only 25 percent of the largest counterparties were headquartered in the United States. The US Congress was outraged that the Fed had not bargained for a reduced settlement, but once the threat of bankruptcy was removed, the Fed stressed that it had very little leverage. This illustrates that improvised international cooperation is difficult to arrange, as the model in chapter 2 predicts.

Impact

This extraordinary intervention calmed the markets but left participants confused about the apparently ad hoc nature of US policy. Many questioned what difference between Lehman Brothers on the one hand and AIG and Bear Stearns on the other had led to such different regulatory responses and outcomes. If the authorities were trying to reduce moral hazard by sending Lehman Brothers to the bankruptcy court, they completely undercut that message by bailing out AIG two days later. Nevertheless, the bailout of AIG may have prevented further deterioration in financial markets.

Conclusions

Federal Reserve Board chairman Ben Bernanke, who is famously even-tempered, expressed public outrage that he had been forced to bail out AIG and that taxpayer funds had been used to pay retention bonuses to some of the

very traders who had brought the company to the brink of collapse. Both Bernanke and Treasury secretary Hank Paulson, urged Congress to provide them with new tools that would allow them to resolve nonbank systemically important financial institutions without causing chaos or generating enormous cost to taxpayers. Although two bills in Congress attempted to deal with the problem of resolving nonbank systemically important financial institutions, neither dared to propose a national insurance charter that would provide effective oversight for insurance firms.

3. Fortis

Causes

Fortis was a financial conglomerate incorporated in Belgium, listed on both Euronext Amsterdam and Euronext Brussels, with substantial banking and insurance activities in Belgium, the Netherlands, and Luxembourg.[3] In May 2007, Fortis joined with the Royal Bank of Scotland and Bank Santander in a complex transaction to acquire ABN AMRO for €71 billion. After outbidding Barclays Bank in this hostile takeover battle, the trio planned to divide ABN AMRO's activities among them. Fortis was to acquire the domestic Dutch business of ABN AMRO and its private banking and asset management operations for a price of €24 billion, at a time when the market capitalization of Fortis was around €40 billion. The deal, together with a €13 billion equity issue, was approved by Fortis's shareholders in August 2007. In addition to the acquisition of ABN AMRO, Fortis was weak; it appeared to have a €40 billion portfolio of collateralized debt obligations and reverse mortgage-backed securities based on US mortgages.

But difficulties began to surface by June 2008, when Fortis announced a new equity issue and canceled its dividend payment. Both steps were in contradiction to earlier promises, and this led to a sharp drop in the Fortis share price. Liquidity became a serious concern amid growing uncertainty in the market as to whether Fortis would be able to execute its plans for ABN AMRO.

Typology

Fortis was systemically important in three countries—Belgium, the Netherlands, and Luxembourg—because of its large presence in each country, as well as its role as a clearing member at several exchanges.

Cooperation

The coordinating supervisor was the Belgian Commission for Banking, Finance and Assurance, which remained lead supervisor of Fortis, despite the importance of the growth in Dutch activities after the acquisition of ABN AMRO. Fortis's weakness proved fatal after the Lehman failure and subsequent market meltdown. By September 24, 2008, interbank lending to Fortis had collapsed, and significant deposit withdrawals were starting to take place. The crisis was managed by each of the three nations acting separately most of the time. When Fortis was initially recapitalized, the Belgian, Dutch, and Luxembourg governments provided capital injections of €4.7, €4.0, and €2.5 billion to Belgium's Fortis Bank, Fortis Bank Netherlands, and Fortis Bank Luxembourg, respectively—but not to the Fortis Group as a whole. However, this agreement failed to calm the markets, obliging the National Bank of Belgium, as home central bank, to keep providing massive emergency liquidity assistance to Fortis in the next days.

A second round of negotiations then followed, and on October 3 the Dutch government bought the Dutch business of Fortis and its ABN AMRO business for a combined total of €16.8 billion. In addition, the Dutch government took over the €50 billion funding of Fortis Bank Netherlands from Fortis Bank Belgium. While the Dutch parts of Fortis were essentially nationalized by the Dutch government, the solvent Belgian/Luxembourg banking parts were sold (75 percent stake) to BNP Paribas. In December 2008, the Brussels Court suspended the sale to BNP and decided on the sales to the Dutch government and the Belgian government. The subsequent sale to BNP had to be submitted for shareholder approval in order for these sales to be valid under Belgian law.

After renegotiating the sale, shareholder approval was obtained for the BNP deal. The decision of the Brussels Court was later overturned by the Belgium Court of Appeals, which decided that no shareholder approval was needed.

Impact

The Fortis rescue and dismemberment served to foster stability in the Belgian and Dutch banking systems. Nevertheless, the lack of full supervisory cooperation increased uncertainty about large cross-border banks in Europe and increased the cost of the rescue operation.

Conclusions

The cooperation between Belgian and Dutch authorities started as expected, albeit not covering the entire group. The governments were willing to engage in burden sharing for the parts of Fortis within their respective countries, but not for the rest of the holding company. Later on, domestic objectives got the upper hand, with the Dutch focused on returning ABN AMRO to Dutch control, and cooperation broke down despite a long-standing relationship in ongoing supervision. The case also showed the problem that supervisors face if they do not have effective resolution powers overriding shareholders' rights.

4. Dexia

Causes

Dexia was created through a merger of Crédit Communal de Belgique and Crédit Local de France.[4] The holding company of the Dexia group was based in Belgium. The French subsidiary, Crédit Local de France, had bought a monoline insurer in the United States, Financial Security Assurance. Dexia also had also a significant presence in Luxembourg.

Dexia's main business had been financing local authorities. During 2008, Dexia experienced difficulties in financing long-term assets with short-term funds, and there were also problems with structured products in its US subsidiary, Financial Security Assurance. When Financial Security Assurance faced liquidity problems, the Belgian parent provided liquidity funding in line with Dexia's policy of centralized liquidity management.

Typology

Dexia was systemically important in Belgium. By contrast, it was not systemically important in France and Luxembourg, but it was the major bank for local authorities in France and Luxembourg, which made it politically important.

Cooperation

Dexia's vulnerabilities appeared after the Lehman failure and subsequent market meltdown. On September 30, 2008, Dexia increased its capital by

€6.4 billion. A group of Belgian public and private sector investors and a group of French public and private sector investors each invested €3 billion. The Luxembourg government invested €376 million. A week later on October 9, 2008, Belgium, France, and Luxembourg reached an agreement on a joint guarantee mechanism for its new financing. The burden sharing was done on a voluntary basis and based on the proportions of share ownership held by the public authorities and institutional investors in each of the three countries. The burden was shared as follows: 60.5 percent by Belgium, 36.5 percent by France, and 3 percent by Luxembourg. On November 14, 2008, the Belgian and French governments gave additional guarantees for the sale of the US subsidiary, Financial Security Assurance (jointly because France was the owner and Belgium had provided liquidity). The guarantee was to cover possible losses up to $4.5 billion, with 62 percent of the guarantee from Belgium and 38 percent from France. This $4.5 billion tranche was the first tranche loss for the portfolio, amounting to $16.2 billion.

Impact

The bailout of Dexia fostered banking stability in the three countries and prevented pressure on the financing of local authorities. It also fostered the wider stability of the European banking system.

Conclusions

The Belgian, French, and Luxembourg authorities cooperated effectively in providing joint support to Dexia. The shared exposure of Belgium and France to the US subsidiary provided an effective incentive for cooperation. The burden sharing was done on a voluntary basis by the three countries.

5. Icelandic Banks

Causes

Iceland experienced a deep financial crisis when its three major banks all collapsed in the same week in October 2008.[5] After the Icelandic banking system was deregulated and privatized in the 1990s and early 2000s,

banking quickly became a large part of the economy. This occurred in a country where neither the government nor the private sector had sufficient understanding of risk management processes, nor was there familiarity with the scope of banking supervision needed when banking becomes a large part of an economy. Over the course of the next few years, the banking system grew to about 10 times the size of the economy, and then it began suffering mounting liquidity problems.

Four factors combined to make the Icelandic banking system more fragile than its counterparts abroad. First, unlike many other nations with an outsized banking system, such as Switzerland, the Netherlands, and the UK, the institutional experience of running a modern banking system in Iceland spanned less than a decade, not centuries. Second, the banks had invested significant portions of their funds in their own shares and in each other's shares. This shared capital, financed by the banks themselves, did not provide protection against losses as it was intended to do. Third, there were widespread accusations of political favoritism when the banks were privatized; their senior management and boards were typically composed of Icelandic citizens with little or no experience in international banking. Finally, given the size of the country and the tight political connections between the private sector and the political superstructure, supervision was weak. These factors were complicated by the fact that because of its European Economic Area (EEA) membership, Iceland essentially has the same banking regulations as other EEA/EU countries. Iceland, therefore, is more an example of the failure of supervision than the failure of regulation.

The reasons for the failure of the Icelandic banks are in many ways similar to the difficulties experienced by many financial institutions globally. These reasons include the seemingly unlimited access to cheap capital, excessive risk-taking, and lax standards of risk management. The crucial difference in Iceland is scale. In many countries with troubled banks, the problems have been confined to a segment of their banking system, and the aggregate assets of the banks have been much smaller relative to GDP. In those countries, the government has had adequate resources to contain the fallout from individual bank failures. This was not the case in Iceland, and many of its banks were "too big to save."

A unique feature of the Icelandic financial system was the high level of Internet savings accounts that Icelandic banks had in the UK, and later in the Netherlands and other European countries. The banks had originally relied on the wholesale market to fund themselves, but when this became more difficult, they decided to attract deposits by offering high-interest deposits in Europe. Kaupthing and Landsbanki, the two largest banks in

Iceland, both pursued this strategy. Kaupthing, with its Kaupthing Edge, chose to hold these accounts in a subsidiary so they were supervised by the host countries with the exception of Kaupthing Edge in Germany. By contrast, Landsbanki offered its Icesave accounts through local branches of the Icelandic bank, meaning they were primarily regulated, supervised, and insured in Iceland. Icesave started in the UK, and its deposits there grew to over £4 billion. Later, Landsbanki sought funds in other jurisdictions, most notably in the Netherlands, where it raised €1.7 billion. Under the EU's Second Banking Directive, the host country supervisors had no powers to supervise the solvency of these branches.

Typology

The three Icelandic banks were clearly systemic in their home country, but not so in the host countries.

Cooperation

As concerns about the Icelandic banks increased in September 2008, the Icelandic government purchased a 75 percent stake for €600 million in Glitnir Bank, the smallest of the country's three large banks. But the partial nationalization of Glitnir served to undermine confidence in the Icelandic banking system and the Icelandic state. The government and the banks had repeatedly claimed that all three main banks were liquid and solvent. The failure of Glitnir undermined confidence in the other two banks and in the government's ability to assess the condition of its banks.

The immediate effect was to cause credit lines to be withdrawn from the two remaining banks. There was also a run on Landsbanki's Icesave branches in the UK and the Netherlands. Both Kaupthing and Landsbanki had significant operations in the UK, and UK and Icelandic authorities had been in discussion on how to solve the difficulties facing these two banks. The UK authorities used a clause in its antiterrorist laws to freeze the assets of Landsbanki in the UK, which then triggered the bankruptcy of the remaining Icelandic bank, Kaupthing. Discussions were also held with other supervisors from EU countries in which Kaupthing was operating (Basel Committee on Banking Supervision 2010b).

In 2008, the Icelandic government had prepared emergency legislation granting it widespread powers to maintain the domestic operations of the banks. This legislation, which was passed by the Icelandic Parliament on

October 6, 2008, created "new banks" from the ruins of the old ones to hold domestic deposits and loans. Meanwhile, the foreign operations were left in "old banks," which were put in administration and were on their way to formal bankruptcy. This has created legal issues having to do with equal treatment of domestic and foreign deposit holders. This has undermined the EU Deposit Insurance Directive, which requires equal treatment of domestic and foreign depositors of a bank, including its branches, but not its subsidiaries. After passing the legislation in early October, the Icelandic Financial Supervisory Authority took control of Landsbanki and Kaupthing, leaving the foreign supervisors and depositors in the cold. The Icelandic Financial Supervisory Authority also put Glitnir Bank into receivership after Iceland abandoned its decision to buy a stake in the bank.

Impact

The collapse of the three banks had a major impact on the Icelandic economy. But given the relatively limited size of these Icelandic banks, there was no impact on banking stability in Europe or beyond. Depositors in Iceland got preferential treatment, however, which rankled European supervisors.

Conclusions

The Icelandic crisis reveals how limitations on national resources and supervisory capacity can diminish the effective home country supervision and resolution. Effective cooperation between home and host country supervisors was absent. Notwithstanding EU legislation, Iceland only protected its domestic depositors.

6. Central and Eastern European Banking System

Causes

When the global financial crisis swept the world in 2008, many countries in emerging Europe proved vulnerable because of their high levels of private debt to foreign banks.[6] The debt to foreign and domestic banks was often denominated in foreign currencies. Policymakers in

the region became increasingly concerned that foreign-owned banks, despite their declared long-term interest in the region, would seek to cut their losses and run. The banks themselves were also getting worried. Uncertainty about what competitors were going to do exacerbated the pressure on individual banks to scale back lending to the region or even withdraw, setting up a classic collective action problem. Under these circumstances, bank behavior was clearly key to macroeconomic stability.

Typology

A number of western European banks had major subsidiaries that were of systemic importance in central and eastern Europe. Most of the western European banks were also of systemic importance in their home countries.

Cooperation

In the face of these risks, the European Bank for Reconstruction and Development (EBRD), the IMF, the European Commission, and other international financial institutions initiated a process aimed at addressing the collective action problem, starting in Vienna in January 2009. In a series of meetings, the international financial institutions and policymakers from home and host countries met with some systemically important EU-based parent banks with subsidiary banks in central and eastern Europe. The meetings were held with 15 systemically important European banks with major subsidiaries in central and eastern Europe and their home and host country supervisors, fiscal authorities, and central banks from Austria, Belgium, France, Germany, Greece, Italy, and Sweden, as well as Bosnia Herzegovina, Hungary, Latvia, Serbia, and Romania.

The European Bank Coordination Initiative has played a major role in averting a systemic crisis in the region. This initiative, which combined appropriate host government policies, massive international support, and parent bank engagement, has helped stabilize the economies in the region. Continued parent bank support has accompanied balance-of-payments support from the IMF, the European Union, and other multilateral financial institutions. This support, totaling some €52 billion, has gone to Hungary, Latvia, Romania, Serbia, and Bosnia-Herzegovina.

It took the form of parent banks recapitalizing subsidiaries when necessary while broadly maintaining exposures to countries. Meanwhile, these banks have benefited from the stabilization of the macroeconomic environment.

Impact

The coordinated response has fostered stability of the European banking system, both in western Europe (where the parent banks are located) and in central and eastern Europe (where major subsidiaries are located).

Conclusions

The setting offered a typical coordination problem with high stakes. By setting all parties together, including relevant western and eastern European governments and banks as well as several multilateral financial institutions, a win-win situation could be created. The financial support of the multilateral financial institutions worked as an effective lubricant to get the deal done.

4.3. CONCLUSION

These six cases illustrate a wide range of causes, consequences, and outcomes. In each case resolution was, out of necessity, improvised. In some cases, the improvisation succeeded in limiting spillovers, but at substantial cost to taxpayers. In other cases, the resolution process protected domestic interests without regard to spillover effects in the rest of the world. The results are summarized in table 4.2.

It seems clear that cooperation was most likely to occur when the likely spillover effects were limited to a few countries that had a tradition of cooperation or a regional mechanism for brokering a cooperative solution. There were no cases in which countries appeared willing to agree to share the costs of a bailout ex ante.

In times of crisis, clarity about crisis management arrangements and predictability of official actions is crucial. The confusion following the Lehman "resolution" (markets expected a bailout similar to the previous investment bank failure of Bear Stearns, but got a bankruptcy) meant uncertainty among market participants about the rules of the game. The

Table 4.2. SUMMARY OF SIX CASE STUDIES

Case	Systemic in home country	Systemic abroad	Coordination	Short-term impact on financial stability
Lehman Brothers (US and UK)	Yes	Yes	No	Substantial instability
AIG (US)	Yes	Yes	Unilateral bailout of units in 130 countries by US government	May have prevented further deterioration in financial markets
Fortis (Belgium, Luxembourg, Netherlands)	Yes	Yes	Partly, improvised cooperation, "make do" solution. Bailout on basis of national entities, not for the Group as a whole	Enhanced stability in Belgian and Dutch banking system, but raised questions about how other international banks might be handled
Dexia (Belgium, France, Luxembourg)	Yes	No	Yes, joint solution based on proportions of shares held by governments and institutional investors in three countries	Enhanced stability
Icelandic banks (Iceland)	Yes	No	No. Iceland protected only Icelandic depositors.	Instability largely limited to Iceland (some unrest with retail depositors in foreign countries)
Central and Eastern European banking systems	Mixed	Yes	Yes, joint solution based on European Bank Coordination ("Vienna") Initiative	Enhanced stability in both Eastern & Western Europe

Source: Claessens, Herring, and Schoenmaker (2010).

"improvised" cooperation in the case of Fortis raised questions about how other international banks might be handled. These and other cases show that international crisis management arrangements for international banks and the rules or principles to guide officials in such situations are

not very clear. Market participants need to make assumptions about how officials are likely to behave, however. If they behave in an unexpected way, market participants are likely to flee to safe, liquid assets until they are confident once again about the rules of crisis management.

Another illustration of the lack of clarity is the case of liquidity support for foreign banks' operations. More than a decade ago, I raised the question as to which agency would provide liquidity support to Deutsche Bank's branch in London (about one-fifth of Deutsche's balance sheet is in London) if the branch experienced liquidity problems because of its London wholesale business (Schoenmaker 1997). Who would act as lender of last resort? Possibilities were (1) the Bank of England on its own risk, (2) the Bank of England on behalf (and at the risk) of the Bundesbank, and (3) the Bundesbank. To date, the answer to this question is not clear, at least not to outsiders and to markets. It is imperative that resolution plans and burden-sharing arrangements, discussed in the next chapter, specify these and other divisions of responsibilities between authorities clearly.

NOTES

1. Sources for this case study: Basel Committee on Banking Supervision (2010b); Summe (2010); and Valukas (2010).
2. Source for this case study: Geneva Association (2010).
3. Sources for this case study: Dewatripont and Rochet (2009) and Basel Committee on Banking Supervision (2010b).
4. Sources for this case study: Van de Woestyne and van Caloen (2009) and Basel Committee on Banking Supervision (2010b).
5. Sources for this case study: Basel Committee on Banking Supervision (2010b); Danielsson and Zoega (2009); and Special Investigation Commission (2010).
6. Sources for this case study: International Monetary Fund (2009a; 2009b).

CHAPTER 5
Solving the Financial Trilemma

A newly prominent field of international economics has emerged during the last decade. It consists of programmes . . . undertaken jointly by countries and involving costs that have to be allocated among them. . . . While there has been no coherent evaluation of these cost-sharing schemes, some consensus on criteria does seem to be developing—criteria that are analogous to principles of international taxation or, perhaps more accurately, of intergovernmental taxation.

Thomas Schelling, 1955

The previous chapter clearly illustrates that the combination of international banks and national financial supervisory and resolution policies leads to a breakdown of financial stability. That combination is not sustainable. Figure 5.1 illustrates this disequilibrium in the financial trilemma setting. The diagonal projects the objective of a stable financial system. The x-axis projects the objective of governance (national versus international financial policies) and the y-axis depicts the objective of banking integration (national versus international banks). Point A indicates the current situation with international banks (high banking integration) and national governance, which is unstable in crisis times. Governments that pursue financial stability thus face a choice between fostering international banking and keeping national policies. If international banking is chosen, governments need to embrace international governance (point B). By contrast, if national governance is chosen, governments have to go back to national banking (point C).

This chapter first explores several governance mechanisms to overcome the coordination failure among national governments. In that case, international banking can be preserved. A first-best solution to internalize the

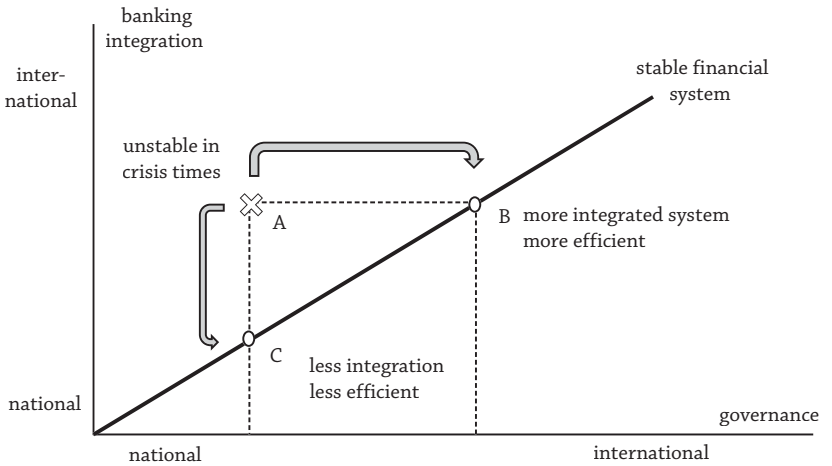

Figure 5.1
Banking integration versus governance
This figure shows the different trade-offs of the financial trilemma. The diagonal represents the first objective of financial stability; the y-axis the second objective of international banking; and the x-axis the third objective of national governance.
Source: Adapted from Nava (2012).

externalities of a cross-border banking failure is to move from a national to a supranational mandate for financial stability policies. An international authority with such a supranational mandate requires access to fiscal resources to fund a possible bank rescue (Goodhart and Schoenmaker 2009; Obstfeld 2011; and Moshirian 2012). As a supranational body does not have direct fiscal powers, it would charge the participating countries. Supranational decisions on financial stability are a strong inroad into national sovereignty and therefore politically very controversial (Pauly 2009).

A second-best solution is to move to binding rules for coordination among national governments. An ex ante burden-sharing mechanism provides for such binding rules for fiscal coordination. An international institution may still be needed to facilitate and implement coordinated actions, but the national governments take the decisions within their ex ante agreed framework.

Coordination failure only becomes a real problem when the intensity of international banking exceeds some basic level (say, 20 to 30 percent cross-border banking). International banking is most pervasive at the global level with the emergence of truly global banks and at the regional level with pan-European banks in Europe (see chapter 3). The coordination failure is currently most urgently felt in Europe. At the same time,

there is more prospect of coordination in the short to medium term within Europe, as part of the institutional framework for cooperation is already available.

So the focus of this more analytical chapter is on the design of coordination mechanisms within the EU. However, the results are mutatis mutandis also applicable at the global level. To keep the global spirit of the book, the next chapter discusses the political economy of international governance, both at the global and the European levels. How can we get agreement on such binding international structures? A game-theoretic approach is applied to answer that question. The feasibility of international arrangements may seem remote to some, but I provide a real-life example of legally binding burden sharing in the case of a nuclear accident in chapter 6.

Moving back to the analytics of this chapter, in joint work with Siegmann we run simulations to compare the efficiency of the various mechanisms in the European context. These simulations are reported in the second section of this chapter. The results indicate that the coordination mechanisms substantially improve the efficiency of resolution in comparison to the current national approach. The estimated improvements range from 50 percent for burden sharing with majority voting (MV) to 65 percent for supranational approaches (Schoenmaker and Siegmann 2012).

International crisis management arrangements may raise expectations of a bailout by banks. By partly off-loading the downside risk to the government, banks may take on more risk. This is the well-known moral hazard problem. The third section of this chapter addresses the moral hazard effects of a regional or international safety net. An important measure is higher capital requirements for these international banks. Another measure is the imposition of so-called living wills. Living wills (or resolution plans) may allow systemically important banks to fail or, at least, to be unwound in an orderly manner without imposing disproportionate costs on the taxpayer. The idea is to put in place, ex ante, conditions that would allow a wider range of options other than having the whole bank rescued.

The final section of this chapter explores the possibility of maintaining national supervisory and resolution policies. In that case, authorities basically choose for national banks reversing international banking. Cross-border banks are then run as a string of stand-alone subsidiaries. Each of these national subsidiaries has to hold its own liquid funds and capital, which are not interchangeable within the banking group. A first study (Cerutti and coauthors 2010) indicates that the extra capital needs

are substantially higher for stand-alone subsidiaries, as excess capital and profits cannot be transferred within the banking group.

5.1. INTERNATIONAL COORDINATION

Extending the basic model of chapter 2, this section analyses the various solutions to the financial trilemma. I briefly recall the variables of the basic model. The policy instrument is a contribution of funds t_j by the authorities from country j to recapitalize a failing bank i. The choice variable x is to continue via recapitalization $x^* = 1$ or to close the bank $x^* = 0$. B denotes the social benefits of a recapitalization and C its costs. When the benefits exceed the costs, that is, $B > C$, recapitalization ($x^* = 1$) is the optimal strategy in the single-country setting.

To analyze the solutions in the European setting, the countries are grouped in the following way: the home country is denoted by H, all European countries denoted by E, and all countries in the world denoted by W. The social benefits can then be split into the social benefits in the home country α_h, the rest of Europe $\alpha_e = \sum_{j \in E \setminus \{H\}} \alpha_j$ (that is, all European countries except the home country), and the rest of the world $\alpha_w = \sum_{j \in W \setminus \{E\}} \alpha_j$ (that is, all countries across the world except for Europe). These fractions sum up to 1: $\alpha_h + \alpha_e + \alpha_w = 1$.

Supranational Approach

A first-best solution is a supranational approach to financial stability. This approach is similar to the supranational approach to monetary stability with the establishment of the ECB. As discussed in chapter 1, the monetary trilemma indicates a choice of two of the three objectives: (1) fixed exchange rate; (2) international capital mobility; and (3) national monetary policy. By transferring monetary policy to the ECB, countries have given up their national monetary policy.

Under a supranational mandate for financial stability, the decision to recapitalize or to liquidate a bank with problems is taken by a supranational body (Eatwell and Taylor 2000). As a supranational body does not have direct fiscal powers, it must charge the participating countries. Schelling (1955) labels this approach intergovernmental taxation. The supranational body would typically apply some general criteria (such as relative GDP share or relative size of banking sector) to share the burden among the participating countries.

Next, the supranational body would be responsible for the entire geographic area (for example, Europe in our setting) and make a decision at the aggregate level. National interests are then disregarded. This approach is akin to the functioning of the European System of Central Banks (ESCB) in Europe or the Federal Reserve System in the United States. When the Governing Council of the ESCB votes on the interest rate for the euro area, the members, including the governors of the national central banks, are required to base their vote on the inflation outlook of the euro area and not that of their own country (Cristadoro and coauthors 2005). Similarly, the members of the Open Market Committee of the Federal Reserve vote on the inflation outlook of the United States and not the inflation expectations in the respective Fed districts.

The optimal decision for the supranational body is to maximize

$$x^* \cdot ((\alpha_h + \alpha_e) \cdot B - C) \tag{5.1}$$

so that

$$x^* = \begin{cases} 1 & if \ (\alpha_h + \alpha_e) \cdot B - C \geq 0 \\ 0 & if \ (\alpha_h + \alpha_e) \cdot B - C < 0 \end{cases}. \tag{5.2}$$

Equation 5.1 shows that the supranational body can maximize its welfare by choosing a recapitalization $(x^* = 1)$ if benefits in Europe, $(\alpha_h + \alpha_e) \cdot B$, exceed the cost C. Otherwise, there is no recapitalization $(x^* = 0)$. This leads to the following proposition.

Proposition 5.1. (1) A supranational approach in Europe improves the efficiency of a national-based recapitalization policy for positive values of α_e; (2) the efficiency of the recapitalization scheme depends on the combined size of α_h and α_e. Only when the social benefits within the European countries are sufficiently large, $(\alpha_h + \alpha_e) \in (C/B, 1]$, will a supranational approach produce an efficient outcome.

The proof of the proposition is shown here for the advanced reader. The intuition behind the proposition is explained after the proof.

Proof of Proposition 5.1. The efficient solution is recapitalization $(x^* = 1)$ if $B > C$ and closure $(x^* = 0)$ if $B < C$. If we use equations 5.1 and 5.2, a recapitalization $(x^* = 1)$ will only happen if the social benefits in Europe as a whole are larger than the total costs: $(\alpha_h + \alpha_e) \cdot B - C > 0$. This is the lower boundary

for a recapitalization. Rewriting this condition gives $(\alpha_h + \alpha_e) > C/B$. The upper boundary is: $(\alpha_h + \alpha_e) = 1$. The supranational body thus recapitalizes ($x^* = 1$) the entire bank when $(\alpha_h + \alpha_e) \in (C/B, 1]$. Otherwise $(\alpha_h + \alpha_e) < C/B$, and the closure equilibrium occurs ($x^* = 0$), even when recapitalization is the optimal strategy: $B > C$.

The next step is to show that the supranational policy improves on the national policy with improvised cooperation. In mathematical terms, the supranational approach *SN* is more efficient than the improvised cooperation *IC*: $x^*_{SN} \geq x^*_{IC}$. To prove this, it can be shown that for at least one combination of benefits and costs (B, C), the supranational approach is doing better, while both approaches are equal in other cases.

An easy way of showing that is looking at the feasible range for recapitalization: $(C/B, 1]$. The cut-off point for the supranational approach is higher $(\alpha_h + \alpha_e)$ than for improvised coordination α_h. So, there is an intermediate range of the benefits where the supranational approach is above the lower threshold of recapitalization C/B (where recapitalization is feasible), while the improvised approach is under that threshold (no recapitalization). In short, supranational is doing better than improvised $x^*_{SN} > x^*_{IC}$ when $(\alpha_h + \alpha_e) > C/B > \alpha_h$.

The second part of the proof is that both approaches are equal in all other cases $x^*_{SN} = x^*_{IC}$. That is true when there is a recapitalization $\alpha_h > C/B$ (within the feasibility range of recapitalization $(C/B, 1]$) or no recapitalization $(\alpha_h + \alpha_e) < C/B$ (outside the feasibility range of recapitalization) under both approaches. ■

Proposition 5.1 demonstrates that a supranational approach by a European body is useful when banks' cross-border business within Europe α_e is positive. The intuition follows from comparing Propositions 2.1 and 5.1. In the improvised coordination of chapter 2, only the benefits in the home country α_h are incorporated in the decision making. In the supranational approach, the combined benefits of the home country α_h and the rest of Europe α_e are incorporated by the European body. So all externalities within Europe of a bank failure are taken into account in the decision making: $(\alpha_h + \alpha_e) \in (C/B, 1]$. Only truly international banks with sizable business outside Europe ($\alpha_w >> 0$) pose a problem leading to socially insufficient recapitalizations.

Figure 5.2 illustrates the improvement of the efficiency of the recapitalization decision under the supranational approach. As explained in chapter 2, the inefficient area is area C: an international bank in difficulties is closed (no recap), even when it is optimal to recapitalize this ailing bank to maintain financial stability ($B > C$). Remember that areas A (no recap as $B < C$) and B (recap as $B > C$) represent efficient outcomes. The dashed lines in figure 5.2 reflect the size of the benefits incorporated in the decision

making. The home country line reflects the average home country benefits for European banks: $\alpha_h = 0.53$. The supranational line presents the European benefits: $\alpha_h + \alpha_e = 0.76$. These numbers are taken from the bottom line of table 3.6 in chapter 3. Area C is the area between the dashed line and the solid diagonal, while area B is the area above the dashed line. The key point is that the inefficient range of area C under the supranational line is clearly smaller than under the home country line. That illustrates the improvement over the home country approach.

Example

An example can clarify the working of the recapitalization decision under the two regimes. Suppose that the cost of recapitalizing an ailing bank is 100, while the benefits are 150 (point X in figure 5.2). In the improvised cooperation case, only the home country benefits are taken into account: 80 (= 53 percent × 150). Faced with a cost of 100, the home country decides not

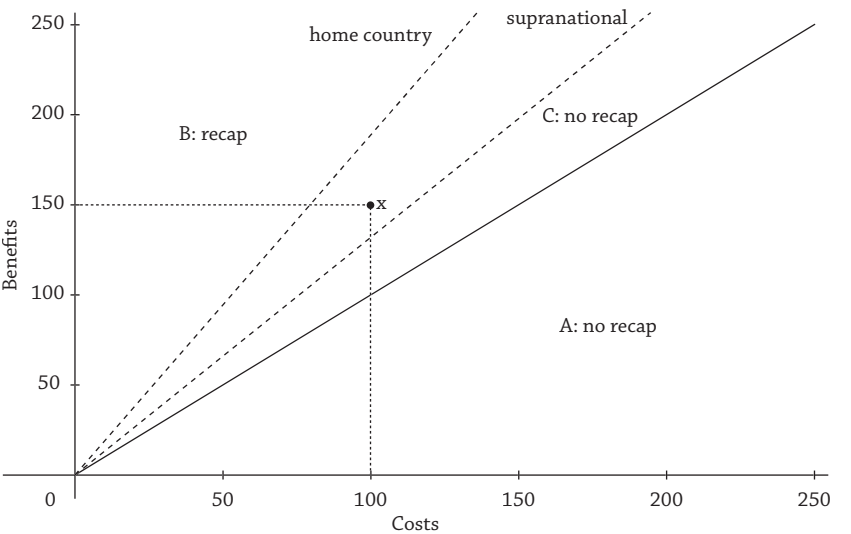

Figure 5.2
Recapitalization under a supranational approach
The x-axis measures the costs *C*. The y-axis indicates the benefits *B*. The solid diagonal represents the line where benefits and costs are equal: *B* = *C*. In the improvised cooperation of Chapter 2, the left dashed line $\alpha_h = 0.53$ is applicable. In the supranational approach, the right dashed line $\alpha_h + \alpha_e = 0.76$ is applicable. While areas A (no recap as (*B* < *C*) and B (recap as *B* > *C*) are efficient outcomes, area C indicates the inefficiency: the home country and the European body, respectively, will not do the recap, although recap is the optimal strategy. Area C is smaller under the supranational line than under the home country line.

to recapitalize. This is in area C under the home country line in figure 5.2. Although recapitalization is the optimal strategy ($B > C$), there is no recapitalization. Turning to the supranational approach, the European benefits are 114 (= 76 percent × 150). This 76 percent of European benefits includes the benefits in the home country (53 percent) and other European countries (23 percent). As these benefits now exceed cost, the European body recapitalizes the ailing bank, which is the efficient outcome. This is in area B above the supranational line in figure 5.2.

It may be useful to recast our example in terms of the prisoner's dilemma. Table 5.1 sketches the payoffs of our example. Country A is the home country and country B stands for all other countries in the rest of Europe. If both countries refuse to contribute, there is no recapitalization. Country A has then a negative payoff of minus 9.8 (53 percent of forgone benefits at minus 79.5 and 53/76 of the saved cost at plus 69.7). Accordingly, country B gets minus 4.2 (23 percent of forgone benefits at minus 34.5 and 23/76 of the saved cost at plus 30.3). This is the bottom-right box of no cooperation and thus no recapitalization.

If A contributes while B refuses, then A has to pay the full cost of 100 on its own. Country A's payoff is minus 20.5 (53 percent of the benefits at plus 79.5 minus the full cost of 100), while country B's payoff is plus 34.5 (23 percent of the benefits at plus 34.5 and no cost). This is the upper-right box. The payoff in the lower-left box can be derived accordingly: country A plus 79.5 (only benefits at 79.5 and no costs) and country B minus 65.5 (23 percent of the benefits at plus 34.5 minus the full cost of 100).

Finally, the cooperative solution has a positive payoff of 14 (76 percent of benefits in Europe at plus 114 minus the full cost at 100). This is the upper-left box. This net benefit is a joint payoff for both countries. In whatever way the countries divide this net benefit, both countries maximize their individual payoff by refusing. For example, A has to choose between a maximum of plus 14 (cooperation) and a payoff of plus 79.5 (refusal), in case B contributes. So A will refuse. Next A has to choose between minus 20.5 (cooperation) and

Table 5.1. SUPRANATIONAL PAYOFFS UNDER THE PRISONER'S DILEMMA

	Country B contributes (cooperation)	Country B refuses (refusal)
Country A contributes (cooperation)	Countries jointly enjoy +14	A suffers –20.5 B enjoys +34.5
Country A refuses (refusal)	A enjoys +79.5 B suffers –65.5	A suffers –9.8 B suffers –4.2

minus 9.8 (refusal), in case B refuses. Again, A will refuse. The same game can be played for country B, which will also choose to refuse.

So the dominant strategy under improvised cooperation (nonbinding cooperation) is for both countries to refuse, leading to the noncooperative equilibrium with a total payoff of minus 14. The supranational body can implement the cooperative solution with a payoff of plus 14. The outcome of this exercise illustrates two points. First, the supranational body is an effective mechanism to achieve cooperation. Second, the coordination game is a non-zero-sum game. It is not only about redistribution between countries, but also about achieving the better equilibrium with a higher overall payoff.

In mathematical terms of Propositions 2.1 and 5.1, the fraction of home country benefits $\alpha_h = 0.53$ falls outside the range from C/B to 1, where recapitalization is feasible for this ailing bank. Note that $C/B = 100/150 = 0.67$ in this example. By contrast, the fraction of European benefits, $\alpha_h + \alpha_e = 0.76$, falls inside this range.

At the global level, the supranational approach by a world body is fully efficient, as all benefits $(\alpha_h + \alpha_e + \alpha_w = 1)$ are incorporated in the decision making. The World Financial Authority promoted by John Eatwell and Lance Taylor (2000) implements the efficient solution. This brings us back in the single-country setting, where one country implements the efficient solution with a recapitalization whenever benefits exceed cost $B > C$.

Burden Sharing

A second-best solution to the coordination failure is to create binding rules among governments. The idea is that countries tie their hands in peacetime. When the crisis hits, the preagreed rules are followed. Economists call this precommitment. In joint work with Charles Goodhart, we explore ex ante mechanisms for burden sharing to overcome the coordination failure (Goodhart and Schoenmaker 2009). We propose legally binding burden-sharing rules. Pooled resources may be helpful to ensure countries back up their commitment. If a banking crisis happens, countries only have to decide to recapitalize or to liquidate ailing bank(s). Strategic behavior about the size of their contribution is ruled out, as countries have precommitted to their share in the burden. Binding burden-sharing rules can thus improve on the improvised cooperation of chapter 2. While the supranational body in the previous section would apply *general* burden sharing based on some general criteria to share the costs, this section examines *specific* burden sharing based on the specific circumstances of the bank failure.

In the Goodhart-Schoenmaker model of burden sharing, the European countries E share the burden according to a prespecified key denoted by k with $\Sigma_{j \in E} k_j = 1$, while countries outside Europe $W \setminus \{E\}$ do not participate in the scheme. The contribution t is for the European countries and non-European countries respectively:

$$t_j = \begin{cases} k_j \cdot C & \text{if } j \in E \\ 0 & \text{otherwise} \end{cases} \tag{5.3}$$

The European countries maximize:

$$x^* \cdot (\alpha_j \cdot B - k_j \cdot C) \quad \forall j \in E \tag{5.4}$$

Equation 5.3 indicates that the contribution of a European country is based on its country key k_j multiplied by the cost C. Again, each European country maximizes its benefits minus the cost, according to equation 5.4. The decision making by the national governments depends on the voting procedure denoted by $\bar{v}$ (Barberà and Jackson 2006). I model here two common procedures: majority voting and unanimity. In the case of majority voting, 50 percent or more of the weighted votes has to be in favor: $\bar{v} = 0.5$. More advanced majority-voting procedures, such as qualified majority voting, can be modeled in a similar way. In the case of unanimity, all participating countries have to vote in favor: $\bar{v} = 1$. A veto of any of the participating countries is sufficient to get a negative decision. The weights of the votes are determined by the burden-sharing key k_j.

Now it becomes more difficult and technical. The challenge is to find a sufficiently large group of European countries that vote in favor. In terms of the model, a group of countries G is formed from the European countries $j \in E$ that vote in favor. A country j votes in favor when the benefits exceed the cost for that country: $\alpha_j \cdot B > k_j \cdot C$. The next step is to add up the votes of the countries that are in favor. This is the group of countries indicated by G. The total votes in favor are then $k_G = \sum_{j \in G} k_j$. The voting decision is

$$x^* = \begin{cases} 1 & \text{if } k_G \geq \bar{v} \\ 0 & \text{otherwise} \end{cases}. \tag{5.5}$$

So, it is important that sufficient countries vote in favor $k_G \geq \bar{v}$. This leads to the following proposition.

Proposition 5.2. When the burden-sharing key provides some minimal reflection of the benefits $k_j < \frac{\alpha_j}{\alpha_h}$ for sufficient countries G such that $k_G \geq \bar{v}$, burden sharing in Europe improves the efficiency of a national-based recapitalization policy for positive values of α_e.

Again, the proof is shown here for the advanced reader. The intuition is explained thereafter.

Proof of Proposition 5.2. In the improvised case (equation 2.3), the recapitalization only happens when $\alpha_h > C/B$. Under burden sharing (equation 5.4), a group of countries G is formed from the European countries $j \in E$ that vote in favor, $\alpha_j \cdot B > k_j \cdot C$. The challenge is to find a sufficiently large group of countries G that vote in favor under the voting rule, so that $k_G \geq \bar{v}$.

In mathematical terms, we have to prove that burden sharing BS is more efficient than improvised cooperation IC, as $x^*_{BS} \geq x^*_{IC}$. To prove this, it can be shown that for at least one combination of benefits and costs (B, C), burden sharing does better, while both approaches are equal in other cases. The easy part is when the approaches are equal. That happens when both approaches are in the feasibility range for a recapitalization $(C/B, 1]$. In mathematical terms, $x^*_{BS} = x^*_{IC}$ when $\alpha_h > C/B$ and $\frac{\alpha_j}{k_j} > C/B \quad \forall j \in G$.

Burden sharing can do better $x^*_{BS} = x^*_{IC}$, when burden sharing is within the feasibility range and improvised cooperation is outside the feasibility range: $\alpha_h < C/B < \frac{\alpha_j}{k_j} \quad \forall j \in G$. So there should be sufficient countries $j \in G$ for which $\frac{\alpha_j}{k_j} > \alpha_h$ holds. This condition is not very strict, as the countries in the burden sharing (including the home country) can divide their benefit by their share in the burden. Given that $k_j < 1$, the hurdle for the countries to vote in favor is lower than for the home country on its own under improvised cooperation.

In the case of majority voting x^*_{BSm}, the condition $\frac{\alpha_j}{k_j} > \alpha_h$ is only needed for some countries, such that $k_G \geq 0.5$. In the case of unanimous voting x^*_{BSu}, the condition $\frac{\alpha_j}{k_j} > \alpha_h$ is needed for all countries to achieve $k_G = 1$. ■

Proposition 5.2 indicates that burden sharing can improve on improvised cooperation. The scope for improvement depends critically on the degree to which the burden-sharing key k_j provides a "fair" reflection of the benefits α_j. This is represented by the technical term $k_j < \frac{\alpha_j}{\alpha_h}$, which should hold at least for these countries that vote in favor $\forall j \in G$. The inequality can be rewritten as $\frac{\alpha_j}{k_j} > \frac{\alpha_h}{1}$. If this criterion is met, burden sharing can produce a more efficient outcome. The intuition behind this criterion is that countries now only pay their precommitted part of the cost (dividing

by k_j), while in improvised cooperation the home country pays the full cost (dividing by 1).

In other words, each country compares its benefits $\alpha_j \cdot B$ to its precommitted share in the cost $k_j \cdot C$ under burden sharing. A country votes in favor when its benefits exceed its share in the cost $\alpha_j \cdot B > k_j \cdot C$ (see equation 5.4). This can be rewritten as $\frac{\alpha_j}{k_j} > C/B$. This condition is less stringent than in the case of improvised cooperation. There, the home country compares its benefits $\alpha_h \cdot B$ to the total cost C (see equation 2.3), as the home country has to finance the full recapitalization on its own (countries do not work together in the improvised setting). The home country votes in favor of recapitalization, whenever its benefits exceed the total cost $\alpha_h \cdot B > C$. This can be rewritten as $\alpha_h > C/B$. So when the burden-sharing key k_j represents some minimum reflection of the benefits, burden sharing easily improves on the home country approach: $\frac{\alpha_j}{k_j} > \alpha_h$.

Example

An example can clarify these equations. Suppose again that the cost of recapitalizing an ailing bank is 100, while the benefits are now 140 (point X in figure 5.3). Suppose further that the benefits are distributed as follows: 60 percent in the home country H ($\alpha_h = 0.60$), 25 percent in another European country M ($\alpha_e = 0.25$), and 15 percent in a country N outside Europe ($\alpha_w = 0.15$). The burden-sharing key is specified as follows: 75 percent in the home country H ($k_h = 0.75$) and 25 percent in the European country M ($k_e = 0.25$).

In the improvised cooperation case, only the home country benefits are taken into account: 84 (= 60 percent × 140). Faced with a cost of 100, the home country decides not to recapitalize. This is in area C under the home country line in figure 5.3. Turning to burden sharing, the individual country decisions need to be checked: the decision for the home country H is positive: benefits of 84 (= 60 percent × 140) versus cost of 75 (= 75 percent × 100). For the European country M, the decision is also positive: benefits of 35 (= 25 percent × 140) versus cost of 25 (= 25 percent × 100). Both countries thus vote in favor, so that $k_G = 1$. The recapitalization goes ahead (area B above the burden-sharing line in figure 5.3).

Again, we recast our example in terms of the prisoner's dilemma. Table 5.2 shows the payoffs. If both countries refuse to contribute, there is no recapitalization. Country H has then a negative payoff of minus 9 (60 percent of forgone benefits at minus 84 and 75 percent of the saved cost at plus 75).

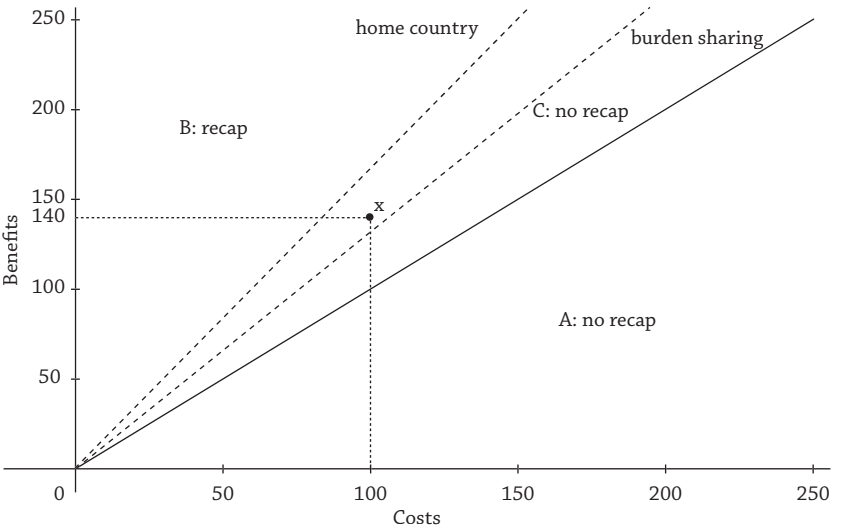

Figure 5.3
Recapitalization under burden sharing
The x-axis measures the costs *C*. The y-axis indicates the benefits *B*. The solid diagonal represents the line where benefits and costs are equal: $B = C$. In the improvised cooperation of Chapter 2, the left dashed line $\alpha_h = 0.53$ is applicable. Under burden sharing, the right dashed line moves downward. How much depends on the 'fairness' of the burden sharing key k_j. While areas A (no recap as $(B < C)$ and B (recap as $B > C$) are efficient outcomes, area C indicates the inefficiency: the home country and the European countries, respectively, will not do the recap, although recap is the optimal strategy. Area C is smaller under the burden sharing line.

Table 5.2. BURDEN-SHARING PAYOFFS UNDER THE PRISONER'S DILEMMA

	Country M contributes (cooperation)	Country M refuses (refusal)
Country H contributes (cooperation)	H enjoys +9 M enjoys +10	H suffers –16 M enjoys +35
Country H refuses (refusal)	H enjoys +84 M suffers –65	H suffers –9 M suffers –10

Accordingly, country *M* receives minus 10 (25 percent of forgone benefits at minus 35 and 25 percent of the saved cost at plus 25). This is the bottom-right box of no cooperation.[1]

If the home country contributes while country *M* refuses, then *H* has to pay the full cost of 100. *H*'s payoff is minus 16 (60 percent of the benefits at plus 84 minus the full cost of 100), while country *M*'s payoff is plus 35 (25 percent of the benefits at plus 35 and no cost). This is the upper-right box.

The payoff in the lower-left box can be derived accordingly: country *H* plus 84 (only benefits at 84 and no costs) and country *M* minus 65 (25 percent of the benefits at plus 35 minus the full cost of 100).

Finally, the cooperative solution has a positive payoff for the home country of 9 (60 percent of benefits at plus 84 minus its share in the cost at 75) and for country *M* of 10 (25 percent of benefits at plus 35 minus its share in the cost at 25). This is the upper-left box. Under improvised cooperation (that is, nonbinding cooperation), the optimal strategy for both countries is to refuse, with a total negative payoff of 19. The derivation of this strategy is similar to the supranational example above and is left to the reader. By contrast, the burden-sharing mechanism specifies the contributions of all participating countries. So each country knows in advance what the other countries will contribute. The burden-sharing works as a coordination device to achieve the cooperative solution with a payoff of plus 19.

The example works as the burden-sharing key is a fair reflection of the benefits. But if the key is not aligned with the benefits, the voting breaks down. Suppose that the key is divided as follows: 45 percent in the home country *H* ($k_h = 0.45$) and 55 percent in the European country *M* ($k_e = 0.55$). The home country still votes in favor (benefits of 84 versus cost of 45), but the European country *M* votes against (benefits of 35 versus cost of 55). The voting weight of the home country does not suffice $k_G = 0.45$. So, there is no recapitalization.

Another extreme example for the key is the following: 95 percent in the home country *H* ($k_h = 0.95$) and 5 percent in the European country *M* ($k_e = 0.05$). Now, only the European country *M* votes in favor, which is insufficient to get a majority ($k_G = 0.05$). Under a reasonable key, $0.5 < k_h < 0.84$ and $0 < k_e < 0.35$, the burden sharing improves on the efficiency of recapitalization for this particular setting of benefits (140) and cost (100).

Moving to the global level, one only has to expand the burden-sharing key from the European level *E* to the global level *W*. The key *k* then becomes $\sum_{j \in W} k_j = 1$. As the burden is shared over more countries, the burden per country becomes smaller in the case that there are benefits outside Europe ($\alpha_w > 0$). With a smaller share in the burden ($k_j \downarrow$) countries vote more often in favor ($\alpha_j \cdot B > k_j \cdot C$), thus improving the efficiency of the burden-sharing arrangement.

5.2. COMPARING COORDINATION MECHANISMS

How would the various coordination mechanisms perform during a crisis? Chapter 4 clearly illustrates that the current home country approach

without coordination easily leads to a breakdown of financial stability. The supranational and burden-sharing approaches have not (yet) been implemented for banks. In joint work with Arjen Siegmann, we ran simulations with the top 30 European banks to find out how the mechanisms would work in practice (Schoenmaker and Siegmann 2012).

We took the top 30 European banks as ranked by *The Banker* (2012). Chapter 3 documents the geographical segmentation of these banks at home, the rest of Europe, and the rest of world. To analyze the burden sharing among individual European countries, we provide a further breakdown of the country-specific location of assets across Europe. These "asset shares" are used for the burden-sharing key. As explained in section 5.1, the asset shares in the burden-sharing key determine the voting weights. They also approximate the "subjective" benefits for the countries. In the simulation setup, the country-specific benefits depend on the political climate of a country, in particular the political attitude toward the banking sector. This subjectivity is incorporated via the application of a disturbance term to the asset shares.

To illustrate the simulations, we show the results for three very different banks: Deutsche Bank from Germany, Nordea from Sweden, and Intesa Sanpaolo from Italy. Table 5.3 shows that Deutsche is a global bank with 32 percent of its assets in other European countries and 34 percent in the rest of the world. Nordea is a truly regional bank with the vast majority (89 percent) of its assets in Scandinavia. Finally, Intesa Sanpaolo is a domestic bank with 82 percent of its assets in Italy.

The efficiency of the various mechanisms can now be compared. The efficient benchmark is that a recapitalization takes places when the benefits relative to the cost exceed 1: $B/C > 1$. The benefits relative to the costs are labeled the *relative benefits*. Figure 5.4 gives the recapitalization or bailout probabilities as a function of the relative benefits for the three banks. The dashed line provides the efficient benchmark at 1. The line with diamonds represents the supranational solution, where all European benefits are taken into account. The solid line is the majority voting (MV) rule, whereby the votes of participating countries are 0.5 or higher. The dashed line is qualified majority voting (QMV), with the voting threshold now at 0.74. The asset-weighted votes need to comprise a 74 percent majority over all countries that are involved in a bank. Under the current voting arrangements of the Lisbon Treaty, a qualified majority is reached with 255 out of 345 votes. The dotted line is unanimity, whereby all countries with bank assets need to agree to the bailout. Finally, the line with crosses is the probability of a home country bailout whereby the home country assumes all costs of the bailout.

Table 5.3. GEOGRAPHICAL SPREAD OF ACTIVITIES OF SOME EUROPEAN BANKS (2011 FIGURES)

Global bank: Deutsche Bank		Regional bank: Nordea	
Countries	Geographical distribution of assets	Countries	Geographical distribution of assets
Germany	34%	Sweden	21%
		Rest of Europe	74%
Rest of Europe	32%	• Denmark	45%
• UK	19%	• Finland	11%
• Other Europe	13%	• Norway	12%
		• Other Europe	6%
Rest of the world	34%	Rest of the world	5%
Total	100%	Total	100%

Domestic bank: Intesa Sanpaolo	
Countries	Geographical distribution of assets
Italy	82%
Rest of Europe	14%
Rest of the world	4%
Total	100%

Source: 2011 annual reports (see also table 3.6).

Panel A of figure 5.4 has the bailout probabilities for Deutsche Bank. With 34 percent of assets outside Europe, the supranational bailout probability jumps to 1 at 1.5. After the supranational approach, the majority voting rule gives the highest bailout probabilities, followed by the QMV and unanimity rule. Home country bailout probability only slowly increases at 2.2, which follows from the global reach of Deutsche Bank.

Panel B has the bailout probabilities for Nordea. With 5 percent of assets outside Europe, the supranational bailout probability jumps to 1 at 1.06. And with assets geographically spread over four countries, the home country bailout probability is zero for every relative benefit within the range from 0.8 to 2.3. Under burden sharing, the bailout probabilities rise toward the supranational outcome, with the highest bailout probabilities for majority voting, followed by QMV and unanimity.

Panel C has the outcome for Intesa Sanpaolo, a bank with very few activities outside its home country, Italy. The outcomes are therefore predictable.

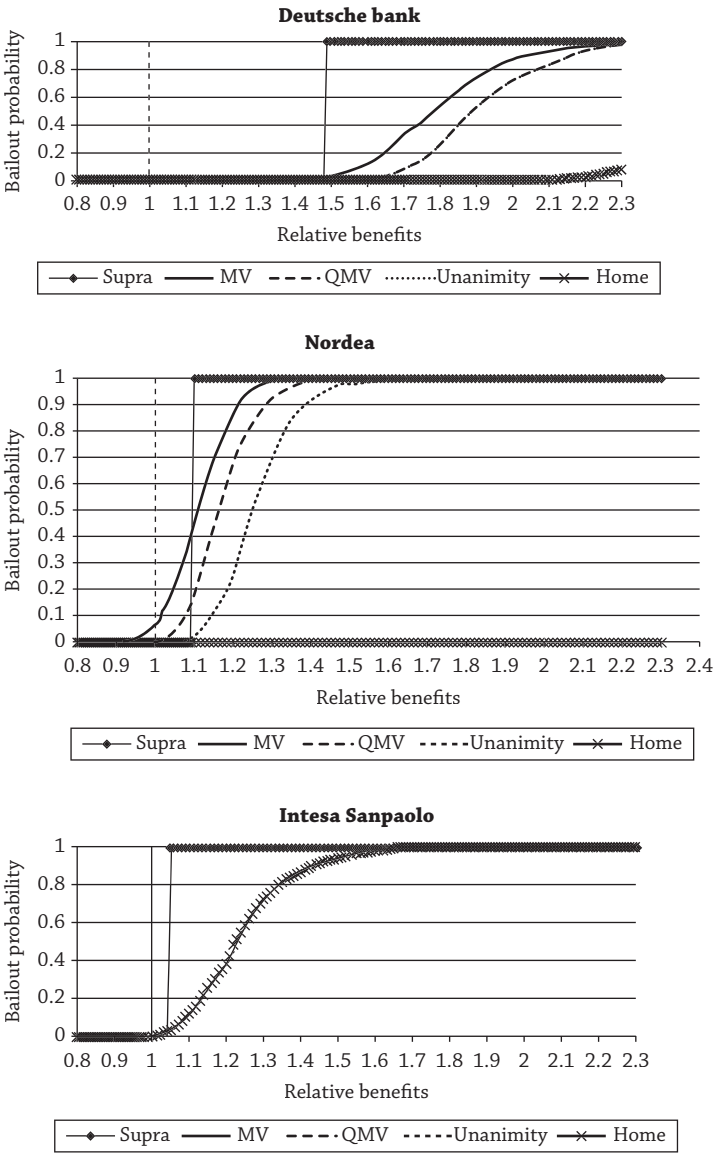

Figure 5.4
Bailout probabilities for selected banks
This Figure shows the bailout probabilities as a function of the relative benefits, defined by B/C, based on 500 simulations for the subjective benefits per country. The dashed vertical line is at $B/C = 1$, the value at which bailout of the bank is economically efficient from a global perspective. The line with diamonds represents the supranational solution, where all European benefits are taken into account. The solid line is the majority voting rule, whereby the votes of participating countries are 0.5 or higher. The dashed line is qualified majority voting, which is majority voting with a threshold of 0.74. The dotted line is unanimity, whereby all countries with bank assets need to agree to the bailout. The line with crosses is the probability of a home country bailout whereby the home country assumes all costs of the bailout.
Source: Schoenmaker and Siegmann (2012).

Table 5.4. AVERAGE RELATIVE BENEFITS PER BANKING GROUP

	Supra	MV	QMV	Unanimity	Home
Global banks	2.69	3.28	3.33	3.51	4.25
Pan-European banks	1.22	1.31	1.37	1.50	2.88
Domestic banks	1.14	1.24	1.25	1.33	1.42
Total group of banks	1.47	1.67	1.69	1.80	2.33

Note: This table shows the average relative benefit per banking group as well as for the total group of the top 30 European banks. The average relative benefit is calculated for the supranational approach, majority voting (MV), qualified majority voting (QMV), unanimity voting, and home country rule. The coefficient for the efficient benchmark is 1 (that is $B/C > 1$.
Source: Schoenmaker and Siegmann (2012).

The supranational bailout probability is 1 at 1.05. The threshold is not exactly at 1 since this bank has 4 percent of assets outside Europe. The burden-sharing rules (MV, QMV, and unanimity) and the home country rule all lie on the same line, because the home country is the only party involved in a bailout. Given the subjectivity in valuing bailout benefits, the bailout probability is nonzero for a range of values of the relative benefits below 1.05. When the relative benefit rises, the bailout probability moves up to 1, which is reached at 1.65.

Table 5.4 summarizes the results for each group of banks. The efficient benchmark for the required benefits is 1. At that point benefits are equal to the cost ($B/C > 1$). For the supranational approach, the required benefits are on average 2.69 for global banks, 1.22 for pan-European banks, and 1.14 for domestic banks. This is a direct result of the geographic dispersion, which is largest for global banks and smallest for domestic banks. On the total average for all 30 banks (bottom row in table 5.4), the difference between majority and qualified majority voting is just 0.02 of relative benefits, which is small compared to the average level of 1.67 for majority voting. The difference with unanimity is a bit larger (0.11), while the home country rule needs an average level of benefits of 2.33 for a bailout. This confirms the intuition from figure 5.4. Majority and qualified majority voting lead to similar outcomes, and unanimity is less efficient but still far better than a home country solution. Chapter 4 already indicated the inefficiency of the home country solution during the Great Financial Crisis. The simulations in this section confirm this earlier finding.

In efficiency terms, the supranational solution makes an efficiency improvement of 65 percent compared to the home rule (the home rule is at a distance of 1.33 from the efficient benchmark of 1 and the supranational setting is only 0.47 from 1); note that (1.33–0.47)/1.33=0.65=65%. The (Q)MV rule makes an improvement of about 50 percent on the home

country approach (the home rule is at a distance of 1.33 from 1 and the majority voting is 0.67 from 1); note that (1.33–0.67)/1.33=0.50=50%. These figures indicate that the coordination mechanisms explored can help solving the financial trilemma.

5.3. CONTAINING MORAL HAZARD

International crisis management arrangements may raise expectations by banks of a bailout. By partly off-loading the downside risk to the government, banks may take on more risk. This is the well-known moral hazard problem. Some would argue that crisis management arrangements for lender of last resort and solvency support should not be specified in advance to counter moral hazard (Rogoff 1999; Jeanne and Zettelmeyer 2001). First, recapitalization should only be considered in case the social benefits exceed the costs. Otherwise the international bank should be closed. Next, constructive ambiguity (i.e., a mixed game strategy) regarding the decision to recapitalize or not can be useful to contain moral hazard (Freixas 1999). Banks (and their liability holders) can then not fully rely on a bailout, reducing expectations.

But the model in chapter 2 demonstrates that additional ambiguity over burden sharing would lead to fewer recapitalizations than socially optimal. The goal is to attain the same clarity at the international level as we currently have at the national level. At the national level, the ministry of finance bears the financial risk of support operations, if any, and therefore decides on these operations. Clarity at the international level about how to share the costs among ministries of finance in the case of the failure of an international bank does not increase moral hazard above the national level in the case of the failure of a domestic bank. In earlier work with Charles Goodhart, we propose full transparency on crisis management arrangements—the "how" question—but constructive ambiguity on the application of these arrangements—the "whether" question (Goodhart and Schoenmaker 2009).

Nevertheless, moral hazard should be contained as much as possible. A key principle is that supervision and the safety net are organized within the same geographic domain. As any safety net (in the form of lender of last resort, deposit insurance, or recapitalization) creates moral hazard, the supervisor should monitor and mitigate excessive risk taking. But how do we ensure a proper level of supervisory efforts?

Standard principal-agent theory is helpful here. To create the right incentives for the appropriate level of supervisory effort, the full "cost"

of moral hazard should be taken into account. Economists call this as an incentive compatible scheme (Dewatripont and Tirole 1994). The principal (in this case the safety net provider) should give the right assignment to the agent (in this case the supervisor). For domestic banks, the ministry of finance acts as the principal for the supervisory agent. For international banks, the international institution for crisis management (the joint aggregation of ministries of finance) is the principal for the international supervisory agent (working in tandem with the national supervisors). Potential institutional arrangements at the global and the European levels are discussed in chapter 7.

Next, higher capital is instrumental to reduce excessive risk-taking by large, complex banks. The extra capital charge for global systemic banks serves exactly that purpose. As discussed in chapter 1, the capital surcharge for global systemic banks ranges from 1 to 2.5 percent (see table 1.1). While Basel III increases the capital charge for these global systemic banks, the leverage ratio operating as a backstop is not raised. To be consistent, the leverage ratio should be raised from 3 to 4 percent for global systemic banks. Moreover, I propose that the higher capital charges (both for the capital ratio and the leverage ratio) should apply to all banks that would fall under an international coordination mechanism. In that way, the incentives for excessive risk-taking could be curtailed.

Finally, resolution plans are helpful to constrain moral hazard. Resolution plans may allow systemically important banks to fail or, at least, to be unwound in an orderly manner without imposing disproportionate costs on the taxpayer. As discussed in chapter 1, the objective is to put in place, ex ante, conditions that would allow a wider range of options than having the whole bank rescued. An element of resolution plans is to simplify the legal structure. Supervisors have the power to enforce restructuring. This is in particular important for the large and complex global banks, which typically have a myriad of legal entities. Supervisors can thus use resolution plans to enforce a transparent and coherent structure for international banks.

As the resolution plan should cover the whole bank, it is necessary to have one overall resolution plan (that is, the 'single point of entry' approach) rather than a string of national resolution plans lumped together (that is, the 'multiple point of entry' approach). Yet there is currently no internationally agreed framework dealing with bank resolution on a cross-border basis, and the powers of resolution authorities over other entities of the same banking group in the event of a bank's insolvency are often unclear or very limited. Richard Herring (2010) argues that there is an overriding public interest, which includes concerns for the protection of confidence

in the fairness of the financial system, in favor of giving supervisors the option of extending the insolvency proceedings to domestic and foreign subsidiaries of a failing parent company. The development of a standard insolvency model for systemically important financial institutions would facilitate that process (Avgouleas, Goodhart, and Schoenmaker 2013). Such a standard insolvency model also provides a powerful incentive for the group to simplify its corporate structure. Once the standard insolvency regime is triggered, all claims against the banking group in difficulties should go through this regime.

Paul Tucker (2012), the deputy governor of the Bank of England and chair of the FSB's Resolution Steering Group, proposes to explore how to execute "top-down" resolution of complex banking groups, following the single point of entry approach. Bail-in debt issued by the holding company or the top-level banking entity (see the section on corporate structures in chapter 3) can be employed in such a top-down group resolution. Bail-in debt is a new concept. Bonds are a form of debt and, as such, they rank higher than equity. This gives them a better claim to get their money back when a bank fails since the owners—equity holders—have an obligation to repay their creditors. Following the financial crisis, when governments provided substantial support for banks, most bondholders were left untouched—even those holding subordinated, or junior, debt, which is theoretically designed to bear losses in times of stress. To correct this, the proposal is to make bondholders share the burden in future by making them forfeit part of their investment to "bail in" a bank before taxpayers are called up on to bail it out.

This work on a top-down approach is very promising, as it stresses group resolution. It may also act as a countervailing power to national supervisors, which seem to lean toward more bottom-up national resolution plans, following the multiple point of entry approach, (dealing only with the externalities in their own regulatory perimeter) rather than jointly developing a group resolution plan. In joint work with Avgouleas and Goodhart, we propose to incorporate a burden-sharing mechanism for central banks (liquidity support) and ministries of finance (capital support) in the resolution plan (Avgouleas, Goodhart, and Schoenmaker 2013). Clarity on potential sources of resolution funding via burden sharing fosters the incentives for joint supervision, as indicated above.

In a consultation document, the Financial Stability Board (2012c) sets out the two resolution strategies: a single point of entry strategy and a multiple point of entry strategy. The single point of entry strategy fits naturally in the integrated global bank model (see figure 3.1). This strategy

involves the application of resolution powers at the top holding or parent holding company by a single resolution authority—most probably in the home country jurisdiction responsible for the global consolidated supervision. The assets and operations of particular subsidiaries are preserved on a going concern basis, avoiding the need to apply resolution at the lower level within the group. This top-down strategy is consistent with the international coordination approach, as discussed in sections 5.1 and 5.2. By contrast, the multiple point of entry approach fits in the decentralized global bank model (see figure 3.2). This strategy involves the application of resolution powers by two or more resolution authorities in multiple parts of the group, including strategies in which a group is broken up into two or more separate parts. This bottom-up strategy is consistent with the national approach without—or with very limited—coordination, as discussed in section 5.4 below.

5.4. NO COORDINATION

So far, this chapter has explored the coordination of national policies as a solution to the financial trilemma. But what if there is no political support for international coordination? An alternative solution to the financial trilemma is to reverse financial integration, moving back to national banks. An extreme version is to hive off all foreign operations of banks, resulting in fully national banks. A more realistic alternative is to operate foreign operations in stand-alone subsidiaries, which are self-sufficient. These self-sufficient subsidiaries need to hold their own liquidity and capital for regulatory purposes. These liquidity and capital requirements are then calculated on a solo basis, disregarding any diversification benefits within the group. Moreover, to make these subsidiaries really self-sufficient, the key management functions and systems, such as risk management, audit, treasury, IT, and human resources, need to be operated at subsidiary level, leading to duplications within the banking group.

But a segmented banking system with self-sufficient subsidiaries is costly (Cerutti and coautors 2010). A full cost-benefit analysis involves calculating the costs for the financial system and the impact on the economy. On the financial system side, cross-border banks face the costs of maintaining separate capital and liquidity buffers at their national stand-alone subsidiaries in the absence of cross-border transfers. In a first study on this topic, Cerutti and coauthors (2010) simulate the potential capital needs of 25 major European cross-border banking groups resulting from a credit shock affecting their affiliates in central, eastern,

and southern Europe (CESE). The scenario for the credit shock is a drop in GDP growth of 2 percent and an increase in interest rates of 2 percent. Because of this credit shock, the amount of nonperforming loans rises sharply, leading to losses in the CESE subsidiaries. The simulations show that under ring-fencing (stand-alone subsidiaries), sample banking groups have substantially larger needs for capital buffers at the parent and/or subsidiary level.

More specifically, under ring-fencing, there is no reallocation of excess capital (that is, capital beyond the regulatory minimum) and profits of the parent bank or the subsidiaries. Subsidiaries are self-sufficient, and new capital to restore the regulatory minimum capital after the credit shock has to be raised separately in the local market or from the local authorities. By contrast, in the case of integrated banks without ring-fencing, excess capital and profits in the remainder of the group can first be used to meet the capital needs. Cerutti and coauthors (2010) find that in the case of ring-fencing the sample banks' aggregate capital needs resulting from a CESE shock are over two times higher than in the case of no ring-fencing. Under ring-fencing about $45 billion of extra capital needs to be raised after the credit shock to restore the regulatory minimum capital, while only $20 billion is needed without ring-fencing.

On the economic side, the cost of capital may start to differ among the EU member states. The purpose of the single market in banking is to integrate banking markets and thus to drive down the cost of borrowing across the EU to the lowest denominator (see Guiso and coauthors 2004). When banking markets are segmented, the cost of borrowing may start to rise in banking markets that are dominated by foreign stand-alone subsidiaries with higher capital and liquidity buffers. This argument also applies at the global level. In particular for developing countries, the entry of foreign banks from developed countries helps to make financial markets in the host country more competitive (driving down the cost of capital) and to transfer technical know-how (for example, on risk management, credit scoring, and payment systems).

Another economic factor is the impact on financial stability. While international banks transmit financial shocks more easily, they also contribute to international risk sharing. National segmented financial systems may reduce the financial stability at the country level. This is, in particular, true when business cycles are not synchronic across countries. The business cycle is an important driver of credit risk, which is one of the major risks in banking. In an empirical study, Slijkerman (2007) shows that a merger of domestic banks increases the downside risk of the newly

merged bank, while a cross-border merger has a mitigating impact on the downside risk through the effects of credit risk diversification.

A final question is, to what extent are stand-alone subsidiaries effective in maintaining financial stability? Is the functional separation of subsidiaries really possible? The assumption is that the stability effects are contained within the local economy in case of the failure of a subsidiary or a parent bank. But, as indicated in chapter 3, the remaining solvent parts of a banking group may find it difficult to continue their operations. Because of (reputation) contagion risk, counterparties may stop trading or funding the remaining parts. Furthermore, depositors may walk away on the principle of being better safe than sorry.

5.5. CONCLUSION

Coordination among governments is possible through a supranational body or a binding burden-sharing agreement between participating countries. The model indicates that these coordination mechanisms improve the efficiency of international bank bailouts and thus enhance global financial stability. A first empirical estimation indicates that the efficiency is improved by 65 and 50 percent, respectively, compared to the current home country approach. So the suggested solutions are beneficial and realize the mutual gains from binding coordination.

To curtail the moral hazard of an international safety net, I propose to apply the new capital surcharge for the global systemic banks (the so-called G-SIBs) to all banks that would fall under the proposed safety net. Higher capital reduces the incentive for excessive risk taking. Moreover, there should be effective group resolution plans for these banks. While moral hazard can thus be contained, the real hurdle for international cooperation is political. The next chapter deals with the political economy of international bailouts.

The alternative to coordination among countries is maintaining national financial policies. The financial trilemma suggests that national financial policies are only possible by reversing international banking (assuming that international financial stability is desirable). International banks are then run as a string of stand-alone subsidiaries with higher holdings of capital and liquidity. That is costly. Moreover, chapter 3 challenges the feasibility of this strategy. Because of reputation risk, market investors may still regard the separate country banks as one international bank. By operating under a common brand name, banks reinforce this perception.

NOTE

1. In the case of no cooperation, I assume for simplicity that the costs are allocated according to the burden-sharing key in table 5.2. In practice, there is no coordination about allocation of the costs. For the game, each country has to take into account that the other minimizes its contribution (equation 2.1). In that case, each country has to work with the possibility that it has to pay the full costs (equation 2.3) and thus also save the full cost if there is no bailout.

CHAPTER 6
Political Economy

Common identities can facilitate cooperation among members of a transnational social group. States sharing a common transnational identity tend to value their associations with each other and are more likely to cooperate within this group. . . . Under conditions [of shared characteristics and economic interdependence] states are less likely to worry about relative gains *within* the transnational group. This can promote trust and help to overcome collective action problems.

Bruce Cronin, 1999

Although the financial trilemma is an economics-based concept, the real challenge is politics. Economic modeling underpins the financial trilemma, stating that (1) global financial stability, (2) international banking, and (3) national financial policies are incompatible. Any two of the three policy objectives can be obtained at the same time but not all three; one has to give. The choice of the two policy objectives is for the political leaders.

There is a parallel with the monetary trilemma. The monetary trilemma shows that national monetary policy and fixed exchange rates cannot be combined in a system with free capital flows, as explained in chapter 1. Through several currency crises, Europe has experienced the validity of the monetary trilemma. The establishment of Economic and Monetary Union (EMU)—to solve the monetary trilemma in Europe—was driven by leading politicians at the time. The politicians gave up independent national monetary policy in return for a fixed exchange rate between participating members, culminating in the conversion of the national currencies into the euro.

The ongoing sovereign and banking crisis in Europe has prompted current European political leaders to contemplate a banking union. Following the central banking adagium that monetary and financial stability are two sides of the same coin, such a banking union would be a natural complement of the already existing monetary union. The next chapter addresses the question whether a monetary and banking union would need a full-blown fiscal and political union.

This chapter discusses the political economy of global governance. Many observers question the feasibility of a global approach toward governance of international banking (Frieden and coauthors 2012). There are daunting political obstacles; not least of which is the territorial approach applied in the United States. Nevertheless, the normative case for international supervision and resolution is clear, as indicated by the analysis in this book. The current situation is not sustainable; coordination failure is likely to happen when a global bank faces difficulties.

Next to the prominent position of politicians, the supervisors and the supervised banks play a role in designing the structure of the governance. What are the driving forces for moving supervision and resolution of international banks to the international level, or keeping it at the national level? While supervisors are keen to preserve national arrangements, banks are found to be in favor of international governance in order to avoid higher capital and liquidity holdings at the national level.

6.1. KEY ROLE OF POLITICIANS

To analyze international politics, one first needs to know what determines the size of countries. Alesina and Spolaore (1997 and 2003) have done pioneering work in this field and show the trade-off between the benefits of size, such as economies of scale and internalization of externalities, and the costs of heterogeneity of preferences of the population. The provision of public goods, such as financial stability, climate control, defense, and so forth, suggests a single world country. In that case, the world government incorporates all externalities and implements the optimal policy. By contrast, the population prefers small homogeneous countries, with a common culture, language, and identity. Being part of the same country implies agreeing on a set of policies. Larger countries are more difficult to manage because of the increasing heterogeneity of the population. Interestingly, as economic integration—facilitating transactions between countries—advances, the size of countries becomes smaller. The number

of countries has almost tripled since the Second World War. Small countries can prosper as long as they are open to international trade.

Alesina (2003) argues that the same trade-off is useful in thinking about the role of supranational institutions of states. Supranational institutions can perform tasks for which economies of scale and externalities are large, and heterogeneity of preferences low. These supranational institutions need to share the burden of the tasks across the participating states. As burden sharing, the subject of chapters 5 to 7, is very controversial, Charles Goodhart and I provided an example of legally binding burden sharing in our first paper on this topic, satisfying both conditions of Alesina (Goodhart and Schoenmaker 2006). The purpose of the example was, and is, to show that burden sharing is feasible.

In the 1960s, a number of member countries in the Organisation for Economic Cooperation and Development (OECD) Nuclear Energy Agency agreed, in the Paris Convention and the Brussels Supplementary Convention, to share liability costs in case of a nuclear incident. The working of these conventions is explained in the appendix of this chapter. On the first condition of Alesina, safeguarding nuclear safety is an evident public good with large externalities. Moreover, the joint sharing of costs provides an incentive to engage in prevention of nuclear incidents. On the second condition, it is also evident that preferences are homogeneous; every citizen wants the nuclear power plants and the responsible authorities to exercise maximum effort to safeguard nuclear plants and, if an accident happens, to manage a crisis jointly (without fights between countries about sharing the cost, which may delay appropriate action). Of course, the heterogeneity of preferences for nuclear energy is very high (both within and across countries). But the issue at stake here is the preference of citizens for safety, given that nuclear energy is produced.

In a similar way, Frieden and coauthors (2012) discuss the future of global cooperation after the Great Financial Crisis in the Fourteenth Geneva Report on the World Economy. They raise three main issues. First, the number of areas in which normative theory provides strong support for global governance is relatively limited. In many economic-policy realms, economic problems can be addressed quite effectively at the national level. International cooperation is only truly necessary where there are substantial externalities that are not internalized by national economic and political systems.

Second, there may be domestic political obstacles. International cooperation typically means that the nations in question make compromises, giving up something in order to pursue a common approach to the problem. Cooperation requires, in other words, some sacrifices at the domestic

level—the willingness to forgo national policies with domestic political support in favor of global collaboration. While the ultimate effect is presumably positive for the nation (as well as the world), the changes could well threaten powerful domestic interests. After all, if cooperation is meaningful, it requires national governments to abandon policies that were adopted domestically, presumably for strong domestic political reasons.

Third, preferences may be heterogeneous. Over the past decade, it has become increasingly obvious that meaningful international cooperation will have to involve some of the major emerging markets. This is especially clear with the case of China, but it also applies to India and Brazil, and perhaps to other countries as well. However, an expansion of the group of countries relevant to global collaboration also means incorporating countries with very different concerns and attitudes.

How does the stability of the global financial system score on these criteria? The normative justification for binding cooperation is clear-cut. The externalities are large, as highlighted by the Great Financial Crisis. Our theoretical model in chapter 2 also confirms that improvised cooperation (that is nonbinding ex post cooperation) leads to an underprovision of the public good of global financial stability, because national authorities ignore cross-border externalities. Multilateral cooperation can solve this problem.

The intensity of cross-border externalities depends on the pattern of integration. Baldwin (2011) notes a transformation of industry and trade in the 1990s. Before that time, successful industrialization meant building a domestic supply chain and exporting manufactured goods. Nowadays, industrializing countries join supply chains and grow offshored production. In this new era, multinational companies spread their production over several (low cost) countries. In a similar way, some financial institutions have production processes fragmented across countries, with treasury in one place and some back office elsewhere. To make this work, deep integration (harmonized rules) between the countries involved is needed. A case in point is Nordea, which has divided its operations over the four Scandinavian countries. Other examples are the large wholesale banks, which typically perform important operations in London and New York (and increasingly in Hong Kong and Singapore). To accommodate this integration, cooperation through bilateral treaties may need to go deeper than multilateral treaties. In this light, the Bank of England in the UK and the Federal Deposit Insurance Corporation in the United States are closely working together to develop group resolution plans for their large international banks.

But domestic political obstacles to bi- and multilateral cooperation are daunting. At the global level, the major economy, the United States,

has so far followed monetary and financial policies geared toward domestic interests. China and, to a lesser extent, Europe, are also keen to follow their own policies with, at most, a limited role for international institutions. On the monetary front, the US Fed has full national control and sets the interest rate to achieve domestic price stability and maximum employment. The exchange rate is left to fluctuate. On the financial front, the United States adopts the territorial approach, putting national depositors first (see section 6.3 below). Also, internationally, the United States is the only country with a veto in the IMF. However, the governance of the IMF is under discussion after the Asian financial crisis and the Great Financial Crisis. In the new global setting, the emerging economies of China, India, Brazil, Russia, and South Africa (the BRICS) claim a bigger role in the IMF. The United States may have to give up its veto if it wants to avoid these new economies sidelining the IMF. Alternatively, the BRICS countries may try to muster a blocking minority of 15 percent. Europe also has a veto with over 30 percent of the votes.

The US hegemony, however, comes at a price. By executing the bailouts of US financial institutions on its own, as home country, the United States benefited foreign countries during the Great Financial Crisis. A case in point is the bailout of AIG. The Congressional Oversight Panel (2010) estimates that approximately $62 billion of TARP and other government funds received by AIG went to foreign institutions (predominantly European banks) because of the international nature of AIG's business (see chapters 2 and 4).

In Europe, the main political obstacle to further cooperation is likewise found in the largest country, Germany. In particular, the Deutsche Bundesbank was very reluctant to enter Economic and Monetary Union. History repeats itself, as the Bundesbank seeks to constrain the role of the ECB in assisting the problem countries in southern Europe, as of this writing. The politically well-connected Landesbanken are another obstacle to transferring power to the center.

More broadly, Goodhart (2012) argues that the West may not want to transfer sovereignty and political powers to the global level. The major inequalities between countries mean that, in a democratic, one-person, one-vote world system, the inhabitants of the wealthy developed West would most likely lose out against the poorer, more populous South and East. The main opposition to a truly world democratic system may thus come from North America and Europe.

The score on preferences is less clear. There is an emerging consensus among all countries that banks should have substantially higher holdings

of capital and that resolution procedures should be improved to reduce the potential cost for the taxpayers in a future crisis. But financial stability needs a fiscal backstop. Fiscal redistribution within a country with relatively close-knit, self-similar, and cohesive groups is far easier than between groups from different countries (Goodhart 2012). While international economic activity may foster international communications and, hence, a "transnational" identity (Cronin 1999), national identity and solidarity within the nation-state are stronger. Citizens and their governments are therefore not very willing to precommit to burden sharing, and even less so to grant supranational institutions direct taxation powers. So a supranational institution has to raise money from the participating countries, labeled intergovernmental taxation by Schelling (1955).

An important issue, then, is whether the supranational institution needs explicit approval by participating member countries each time before it can spend resources to maintain the public good. A case in point is the IMF, as discussed in the next chapter. Whenever the IMF wants to provide loans to a country in need, the IMF board, made up of executive directors representing the member countries, has to vote. The rescue package for Argentina in 2001–2002 was only agreed after a long rift between the United States and the European members. Barrett (2007) observes that international institutions have to then operate with one hand tied behind their back.

6.2. POSITION OF SUPERVISORS AND BANKS

While politicians are the ultimate decision-makers in global governance, the supervisors and the banks (as supervised institutions) also have a stake in the game. As noted earlier, supervisors are increasingly adopting a national approach. An example of this national approach is (informal) requests of host country supervisors for the subsidiary form for major retail operations. Another example is ring-fencing of assets in the host country. The national approach could reflect supervisory preferences, as domestic supervisory jobs will become less interesting in the presence of a hierarchal international supervisor. In that light, supervisors have a vested interest in keeping the status quo. Furthermore, national authorities (supervisors as well as central banks and ministries of finance) maintain typically close and cozy ties with their large banks, also dubbed as national champions (Boot 1999).

A more benign view would be that supervisors follow their political paymasters. In the absence of political progress on international

cooperation, supervisors take the logical conclusion of the financial trilemma by adopting the national approach. They have drawn this lesson from the Great Financial Crisis. In this context, Adair Turner, chairman of the UK Financial Services Authority (FSA), argues that we need either more European or more national powers for the supervision of cross-border banks. More specifically, the *Turner Review* (2009, 99) notes:

> Until and unless there is a willingness to change this approach [of limited international cooperation] and to move to a much more unified approach to global financial supervision and even fiscal support, mechanisms such as colleges of supervisors can make an important but still limited contribution. They can ensure better flows of information between national supervisors and achieve the voluntary coordination of national supervisory actions which will reduce the likelihood of firms coming close to crisis. But they cannot deliver fully integrated global supervision, since legal powers of intervention are national in nature, and since national governments look to national supervisors to protect national interests.

Another reason for national views is the domestic nature of legal and regulatory systems. The legal framework, including the resolution regime, is national. The same is true for banking regulations. The Basel capital framework, for example, needs to be implemented in national legislation to get full legal power. But the European Commission adopts a more central approach toward the implementation of the new Basel III capital rules. Most of the new capital rules (the so-called CRD IV package) will be implemented by regulation instead of the traditional directive. While a directive has to be implemented in national legislation, a regulation has direct application throughout the EU. In this way, the European Commission fosters a Single Rule Book for banking supervision.

The large international banks are in favor of an integrated approach to resolution. Their lobbying organization, the Institute of International Finance (IIF), calls for an international convention for bank resolution (Institute of International Finance 2012). Banks prefer group resolution to avoid higher capital and liquidity holdings at the national level. Of course, the globally integrated banks are very much in favor of a global governance approach. But the decentralized global banks with national subsidiaries also have an interest in persuading regulators that they will act on a group basis in the event of a crisis, to avoid trapping more capital and liquidity at the local level. It is more efficient—also for stability purposes—to use capital and liquidity where most needed in the group when problems emerge.

Similarly, the European Financial Services Round Table (EFR), the lobbying organization of the leading banks and insurers in Europe, is strongly in favor of consolidated supervision at the group level to avoid duplication of supervisory efforts at the country level (EFR 2009). To mirror that approach in crisis management, the European Financial Services Round Table promotes group resolution. Moreover, it argues that regulation, including the crisis management framework, should be neutral with regards to the banking business model (EFR 2011).

The need for group resolution is true for both integrated groups and groups consisting of separate subsidiaries. But the European Financial Services Round Table recognizes that the center of gravity will lie, respectively, with the parent group management and the consolidating supervisor/resolution authority on the one hand, and with the local management and the host supervisor/resolution authority on the other hand, in coordination with the consolidating supervisor and the group management. For instance, for integrated groups, this means that resolution plans should in the first place be developed at and for the group level. For significant subsidiaries, local plans may be developed, but these should be consistent with the group plan in form and substance.

6.3. COUNTRIES TAKE DIFFERENT APPROACHES

Although there is full endorsement of higher capital and better resolution across the world, countries take different approaches toward the governance of their large banks (domestic and international) as they also do in the case of the monetary trilemma. We therefore expect an evolutionary approach toward solving the financial trilemma. These country differences with respect to global governance are partly related to specific circumstances (for example, Asia and the United States have less cross-border banking than Europe) and partly related to political convictions.

Until now, the United States has opted for a territorial approach, which means preserving national policy, including national depositor preference and ring-fencing of foreign bank branches. Such a territorial approach obviously hinders international cooperation that fosters a universal approach (pooling all assets to pay off domestic and foreign depositors on an equal footing) and reflects the traditional status of the United States as the main player in the global financial system. But power is shifting: the United States now has four banks, Asia five banks, and Europe six banks, in the top 15 world banks in 2012 (*The Banker* 2012). And the Asian banks are on the rise in the international rankings.

By contrast, Europe applies a more universal approach, which involves sharing all global assets among creditors according to the legal priorities of the home country. This single-entity approach is followed, for example, by the UK, home to the largest international financial center. Moreover, Europe has a mix of national and supranational powers in European banking. So far, Europe has taken a gradual approach toward European governance. But European policymakers are now facing a fundamental decision to keep fiscal powers fully national or make inroads on the sovereignty principle by precommitting to burden sharing and moving to a banking union.

Asia has, so far, less interest in global governance, as its banking system is predominantly domestic. In particular, China has a highly domestic financial system. An interesting question is whether the large Chinese banks will follow the large Chinese companies, which have started to expand abroad. There is no reason to believe that the Chinese banks will not adopt the follow-the-client approach. Notwithstanding the limited internationalization of the Asian banking system, the emerging Asian economies, China, India, and Korea, are rightly demanding their place next to Japan and Australia at the international table at the IMF, the BIS, the FSB, and the G20.

More Capital

The Basel Committee and the FSB have designed the major policy initiatives at the global level after the Great Financial Crisis. Chapter 1 argues that these new rules for higher capital and better resolution are very welcome, but notes that the incentives for international cooperation are absent. Some countries, which have a large banking system in relation to their economies and whose banks needed substantial government support during the Great Financial Crisis, are in the process of adopting higher capital requirements, well above the new Basel III capital charges. In particular, Switzerland and the UK have announced higher capital charges for their large banks.

As explained in chapter 1, the Basel III capital charges contain a common equity component of 7 percent (4.5 percent of equity minimum and 2.5 percent of capital conservation buffer) and an overall capital ratio of 13 percent (including the maximum surcharge of 2.5 percent for G-SIBs). Both Switzerland and the UK have increased the common equity component to 10 percent for their large banks. The overall capital ratio is set at 19 percent in Switzerland and 17 percent in the UK. While the common

equity part requires 3 percent more hard equity capital, the higher overall capital ratio can also be met by loss-absorbing debt, including contingent capital (often referred to as CoCos), which is a form of debt that converts into equity when there is a crisis or when certain triggers are met.

On the leverage ratio, the two countries diverge. Switzerland increases its leverage ratio from the Basel minimum of 3 percent to 4.56 percent for the big two Swiss banks, Credit Suisse and UBS. While the Independent Commission on Banking (2011) has recommended a similar increase to 4.06 percent in the UK, HM Treasury proposes to keep the leverage ratio at the Basel minimum of 3 percent for its large banks. But Andy Haldane (2012), executive director of the Bank of England, argues for a higher leverage ratio. Although HM Treasury (together with Parliament) has the ultimate say on UK regulations, the debate seems not yet to be settled in the UK.

Improved Resolution

Next to enhanced capital and liquidity rules, countries are improving their resolution procedures, considering structural reforms—splitting retail and wholesale—and adopting macro-prudential policies. Countries have followed varying approaches toward improving their insolvency regime, dependent on their particular experiences during the Great Financial Crisis. After the painful failure of Northern Rock in September 2007, the UK introduced a Special Resolution Regime for banks in the Banking Act 2009. This special regime—a carve-out of the general insolvency regime—enables banks to be resolved in the public interest and designates the Bank of England as Resolution Authority.

In the United States, the Dodd-Frank Act introduces a specific resolution regime for large banks and creates a new mechanism for their liquidation called "Orderly Liquidation Authority" (Avgouleas 2012). The new regime is intended to reduce taxpayer-funded bailouts of the large banks by providing the Federal Deposit Insurance Corporation (FDIC) with the tools for an orderly liquidation of systemically important banks. The European Commission has recently proposed EU-wide rules for bank recovery and resolution, which is critical for advancing consistent reforms across the EU. Other countries have also implemented special resolution regimes.

But national resolution regimes are not (yet) fully consistent with the FSB Key Attributes of Effective Resolution Regimes for Financial Institutions—discussed in chapter 1—in many FSB member jurisdictions. Reforms are under way to align the regimes more closely with the

Key Attributes. However, I restate my observation in chapter 1 that the Key Attributes do not provide incentives for effective international cooperation. At best, we may get more or less consistent regimes.

Structural Reforms

The massive amounts of government support for the failing banks have initiated very different discussions across countries about structural reforms to address the too-big-to-fail problem. The Swiss Commission of Experts chooses only to substantially increase capital, but shuns structural measures to split up the two big Swiss banks. The Dodd-Frank Act introduces the so-called Volcker rule, which forbids proprietary trading by deposit-taking banks. This is a relatively mild structural reform.

In a far-reaching report, the UK Vickers Committee recommends splitting the large universal banks into a ring-fenced retail part and a wholesale part (Independent Commission on Banking 2011). Only the retail part can potentially receive government support, if needed for systemic purposes. The irony is that the Great Financial Crisis started with the failure of Lehman Brothers, an investment bank and not a retail bank. So while the Vickers Report may reduce the potential liability of taxpayers, it remains to be seen whether it also fosters stability of the UK financial system. Interestingly, the Vickers Committee originally proposed to ring-fence the UK retail operations of the large banks. After finding out that such a national approach would breach EU rules on nondiscrimination, it widened the scope toward European Economic Area (EEA) depositors. Nevertheless, it underscores the central thesis of this book that national regulators and supervisors put domestic interests first.

In February 2012, the European Commission installed a High-Level Expert Group on structural aspects of the EU banking sector, under the chairmanship of Erkki Liikanen, governor of the Bank of Finland and formerly a member of the European Commission. In their final report, Liikanen and coauthors (2012) recommend separation of high-risk trading activities—defined as proprietary trading of securities and derivatives—into a separate legal entity. The Liikanen recommendations are less far going than the Vickers Report. While the latter recommends full separation of the investment banking activities from the retail banking activities, the Liikanen Group proposes to separate the trading activities only if they amount to a significant share of bank's business—defined as more than 15 to 25 percent of a bank's total assets or more than €100 billion. The assumption is that banks have to be able to do some trading to offset

their exposures from their business with retail and corporate customers. After consideration of the Liikanen Report, the European Commission will put forward a legislative proposal for banking reform in the EU.

Macro-prudential Tools

Some countries have started to adopt macro-prudential policy tools to strengthen the stability of the financial system. An important element is the prevention of asset price booms, which can destabilize the financial system and the wider economy. Remember that the Great Financial Crisis started with the US housing boom and subsequent bust. Nevertheless, so far, the United States and Europe have been slow in implementing such macro-prudential policies.

Several emerging market countries inter alia in Asia have been proactive in the development and use of macro-prudential instruments, and apparently successfully so. A good example is the active use of loan-to-value (LTV) ratios to constrain asset price booms. As soon as house prices are increasing, the authorities decrease the LTV ratio. The effect is that residents can borrow less and need more own equity to buy a house. This credit constraint slows down a credit-financed housing price boom. LTV policy has been in effect for nearly 20 years in Hong Kong. Also, the central banks in China, South Korea, Malaysia, Singapore, and Thailand have lowered the LTV ratio to curb the buildup of housing price bubbles. The United States and Europe have yet to start an active use of LTV ratios in a time-varying manner. The lesson of Asia is that central banks can combine monetary and financial stability objectives by a powerful combination of a general use of the interest rate instrument for the economy as a whole and a targeted use of the LTV ratio—targeted at a particular sector, such as housing.

In Europe, the European Systemic Risk Board (ESRB), with its secretariat at the ECB, is still in the process of designing macro-prudential tools. The ESRB tasks include the collection and analysis of all information relevant for macro-prudential oversight; the identification and prioritization of systemic risks; the issuance of recommendations for remedial action; and cooperation with the European Supervisory Authorities, including the development of indicators of systemic risk and the conduct of stress-testing exercises. Although ESRB recommendations are not binding, the parties addressed are obliged to respond under the principle of "comply or explain." In other words, they must follow the recommendation or explain why they are not doing so.

Within the various European countries, different initiatives have been launched to strengthen macro-prudential supervision at the national

level. While in some countries the legal mandate for macro-prudential policy is still relatively vague and does not contain explicit authorizations to use macro-prudential instruments, other have been more ambitious. For example, in the UK a new Financial Policy Committee (FPC) is created in the Bank of England, with primary statutory responsibility for maintaining financial stability. Unlike in the current system, which provides the bank with responsibility but no tools for financial stability, the FPC will be provided with control of macro-prudential tools to ensure that systemic risks to financial stability are dealt with. With the prospective move to banking union in Europe (see chapter 7), the ECB role may become stronger in macro-prudential supervision at the expense of the national central banks from the participating countries in the banking union.

As established under the Dodd-Frank Act, the Financial Stability Oversight Council (FSOC) in the United States should provide comprehensive monitoring to ensure the stability of the nation's financial system. The council is charged with identifying threats to the financial stability of the United States; promoting market discipline; and responding to emerging risks to the stability of the US financial system. The US Treasury secretary chairs the council, and the members comprise representatives from the Federal Reserve, federal financial regulators, and state regulators (as nonvoting members). The tasks of the FSOC comprise three sets of powers:

1. *Coordination powers*: the FSOC has the duty to support coordination and information sharing among its members.
2. *Advisory powers*: the FSOC may issue recommendations for regulatory policy. In particular, it may recommend new or stricter standards for interconnected institutions including nonbanks, as well as financial products and markets posing a threat to financial stability. The FSOC may also issue recommendations to the US Congress to close regulatory gaps.
3. *Systemic powers*: the FSOC has the power to require consolidated supervision of nonbank financial institutions and to designate specific financial market infrastructures (for example, payment, clearing, and settlement) as systemic so as to subject them to regulatory oversight. Finally, the FSOC also plays a role in the possible breaking up of institutions that pose a "grave threat" to financial stability.

The ESRB and the FSOC have a number of broad similarities (De Haan, Oosterloo, and Schoenmaker 2012). They both have analytical functions regarding the monitoring of the emergence of systemic risks and in this context the ability to share and collect information on the financial system. The main difference between the two is the ability to intervene

directly in the financial system. The ESRB does not have such ability, while the FSOC can bring institutions and market infrastructures within the scope of regulatory oversight and determine whether the Federal Reserve can act in the context of its important new power to break up financial institutions.

6.4. CONCLUSION

The politics of the financial trilemma are not very encouraging. While the economic case for international cooperation is strong, the political leaders of major economies, such as the United States and China, are keen to continue pursuing their own domestic interests. Citizens, who typically have a stronger national than transnational identity, reinforce this trend. Within such a setting, transfers within a nation are far easier to organize than transfers between nations.

Nevertheless, global banks are increasingly pushing for international cooperation to avoid higher local capital and liquidity holdings. Global trade and travel may help to develop the transnational identity—both for politicians and citizens—necessary for such international cooperation. In that light, a telling trend is that more and more American companies have passed the tipping point where more than half their earnings come from outside America (Tett 2012).

APPENDIX: BURDEN SHARING AFTER A NUCLEAR INCIDENT

This appendix provides an example of international burden sharing in case of a nuclear incident, based on a convention to make it legally binding. The conventions described below promote the safe production of nuclear energy for peaceful purposes, while ensuring that potential victims in all countries affected by a nuclear accident will be accorded equitable compensation for damage suffered. 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 among 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 that 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 (that is, a nuclear installation). The operator is required to insure his liability (Paris Convention).
2. Liability from €700 up to €1,200 million rests on the country in whose territory the liable reactor is situated (Brussels Supplementary Convention).
3. Liability from €1,200 up to €1,500 million is shared among all participating countries (Brussels Supplementary Convention).

The third tier is international burden sharing. The Brussels Supplementary Convention is basically a western European treaty administered by the OECD. The contracting parties are 16 European countries: the former EU-15 countries (except for Austria, Ireland, and Luxemburg), Norway, Slovenia (as first eastern European country), Switzerland, and Turkey. The burden-sharing arrangement is an example of general burden sharing. The burden-sharing key was originally 50 percent based on a country's share in total GDP, and 50 percent 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 percent related to GDP and 65 percent 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 (six months) and multilateral consultations (a further three months) between member countries, the dispute can be submitted to the European Nuclear Energy Tribunal.

CHAPTER 7
Global Governance

International cooperation is developed and sustained by international institutions. Like their domestic counterparts, international institutions restructure the incentives that determine individual behaviour. The difference is that, in the absence of a world government, international institutions have to do that with one hand tied behind their back.

Scott Barrett, 2007

International cooperation works in fits and starts. The cycle of international cooperation is related to movements in the business cycle. In boom times, politicians and, importantly, their electorate are more prepared to take steps on the international front to expand business. A case in point is the emergence of Economic and Monetary Union during the good times of the 1990s. The private sector faces similar spurs. The international stock exchange merger of NYSE Euronext, which created a global marketplace, happened in 2007, just before the onset of the financial crisis. New policy initiatives are also often a response to an earlier failure. The collapse of the Exchange Rate Mechanism in 1992 prompted the implementation of a more permanent solution, the Economic and Monetary Union, by 1999 at the latest. As of this writing, we are still facing an ongoing crisis in the financial system, as well as a slowdown of the broader economy. While a return to protectionism and nationalism has been limited so far, it is clearly not the time for more international governance.

Nevertheless, a new approach for the governance of international banks is necessary. Only a global approach can safeguard the stability of the

global financial system. The purpose of this chapter is to offer a long-term perspective on global governance, while distancing us from the current, more immediate, concerns over the financial system and the economy.

The chapter examines the design of an effective governance framework. An integrated approach, drawing together key supervisory and resolution policies, is necessary. A key issue is the legal basis for cooperation. As we have seen, the soft law approach with voluntary cooperation does not provide sufficient incentives for authorities to cooperate effectively during a crisis. Properly reforming global governance means that we have to explore a hard law approach based on a convention or treaty. Supervisory independence is also important at the international level. The real challenge is to organize democratic accountability. Rodrik (2000) highlights the absence of democratic control by parliament at the international level, as noted in chapter 2. At the EU level, there is also a widely felt democratic deficit, notwithstanding increasing powers for the European Parliament. Good governance arrangements may go a long way to address these concerns.

Starting with European governance, the EU has already several supranational bodies, such as the European Commission and the European Central Bank with effective powers. The EU has also a legal, treaty-based framework, which can be further adapted to include financial stability and financial supervision, as currently envisaged with the proposals for Banking Union. The evolution of the United States may be instructive. The restrictions on interstate banking were gradually liberalized in the 1990s, and the United States now has a banking union with countrywide banks, such as Bank of America and Wells Fargo. As the supervisory and resolution framework is organized at the federal level, US authorities are able to manage the stability of their banking system with, of course, the same hiccups as anywhere else.

This chapter's fundamental premise is that there are similar trade-offs for the supervision and resolution of truly global banks. The chapter presents an account of the institutional framework for global governance. Proposals are made to strengthen the global governance of global systemic banks, the so-called G-SIBs. Existing international institutions, in particular the FSB, the BIS, and the IMF, can play a major role in such a strengthened global governance framework. But major reforms would be needed. Harmonization of rules, without enforcement mechanisms, is not sufficient. Binding forms of cooperation are necessary to make real progress. To achieve ex ante binding rules providing predictability and legal certainty, a convention or a treaty may be needed (Lastra 2011). Such a proposal depends on effective administrative implementation.

7.1. FRAMEWORK FOR GOVERNANCE

Before turning to the role of international institutions, I first define the governance framework for these institutions. The governance framework for supervisory and resolution agencies include the following elements:

1. *Integrated approach*: the mandate and role of the various agencies should be assessed in an integrated framework to ensure a comprehensive coverage of supervisory and stability concerns and to align incentives of the agencies.
2. *Mandate*: the scope of the mandate—national or supranational—should be clear to guide the actions of the agencies. The legal basis of the mandate and the broader regulatory framework should be enforceable and provide legal certainty.
3. *Independence*: the agencies should have institutional independence to ensure that they can operate separately from government and parliament. Furthermore, supervisory independence should ensure that supervisors can execute their own judgment and powers without political interference in individual cases.
4. *Accountability*: the agencies should be accountable to government and parliament to ensure that they meet their mandate and stay within their remit. Judicial review of supervisory measures is important to ensure accountability toward the supervised entities.

Integrated Approach

The framework for governance starts with the rule-making authority. For the financial sector, the ministry of finance (in Europe) typically prepares proposals for financial legislation, which is subsequently amended and approved by parliament. The ministry of finance thus drives the policy-making agenda and has ultimate responsibility for the overall design of the regulatory and supervisory framework. The precise division of powers between the executive (government) and the legislative (parliament) differs across countries.

In the United States, Congress plays a major role. Congress, for example, created the Federal Reserve System and the SEC in 1913 and 1934, respectively. On several occasions, the executive has tried to take the initiative by establishing special presidential task forces. A case in point is the Presidential Task Force on Market Mechanisms to investigate the 1987 Stock Market Crash. But the real power lies with Congress. Although the

Obama administration introduced the bills for a major reform act after the Great Financial Crisis, Chris Dodd (chairman of the Senate Banking Committee) and Barney Frank (chairman of the House of Representatives Financial Services Committee) introduced revised versions, which were adopted. The act is consequently referred to as the Dodd-Frank Act. At the international level, Congress also influences US policy through its budget power (notably withholding, or delaying, payment of their subscription to international organizations, such as the IMF).

In Asia and Europe, the executive is more firmly in the driving seat.[1] For example, HM Treasury initiated the creation of the UK FSA, after the landslide victory of Labour in 1997. Asia and Europe more closely follow the standard pattern with the executive (either the president / prime minister's office or the finance ministry) proposing new rules and the parliament amending and approving these new rules. In the EU, the European Commission has the right of initiative for new legislation. At the international level, the European Commission has developed several regulatory dialogues with third countries, in particular with the United States, Japan, China, India, and Russia, over the past years.

The next stage in the framework is supervision. The supervisory agency aims to prevent a financial crisis occurring and can thus be seen as a form of *preventive* crisis management. By contrast, the other financial agencies—lender of last resort, resolution, and deposit insurance—have to deal with a financial crisis once it occurs. That is the *resolution* stage. The two stages are interrelated. In the game-theoretic framework adopted in this book, the endgame of resolution also determines the actions of the supervisory agency. I therefore propose a backward-solving approach, starting from the fiscal backstop in figure 7.1 (Goodhart and Schoenmaker 2009).

The guiding principle for decision making on crisis management is "He who pays the piper calls the tune." So long as recapitalizations are organized and paid on a national basis, the national governments will normally want to oversee and undertake the function of supervision. That is the current arrangement for financial supervision and crisis management, which are nationally organized. Only if recapitalizations are done at the international (European or global) level should supervision be moved to the same international level.

Figure 7.1 illustrates the various agencies involved in governance framework for financial supervision and stability. The framework starts with the rule-making and supervisory functions. So far, we have used the broad term of *resolution* for crisis management. In the initial stage, the central bank may provide lender-of-last-resort assistance to help one or more banks. If that does not work, the deposit insurance and resolution

authority comes in to decide on the appropriate line of action. The Great Financial Crisis showed (again) that deposit insurance is meant not only for depositor protection—originally initiated for protection of "widows and orphans"—in the case of an idiosyncratic failure, but also for maintaining financial stability. The level of deposit insurance was increased across the world during the Great Financial Crisis to prevent bank runs, that would further destabilize the financial system.

Deposit insurance and resolution can thus be regarded as an integrated function. Least-cost procedures require the resolution authority to choose the resolution method in which the total amount of the expenditures and (contingent) liabilities incurred has the lowest cost to the deposit insurance and resolution fund. The basic resolution methods include a (assisted) takeover by a healthy bank, a public assistance program, and a liquidation with payouts to retail depositors under the deposit insurance scheme. The only exception to the least-cost principle is if there are systemic risks affecting the financial system.

The final stage in the governance framework is the fiscal backstop. Crises affecting banks are commonly macroeconomic and general in nature, following asset market collapses and economic downturns. The deposit insurance and resolution fund can thus run out of funds. The ultimate backup of government support is needed to give the fund credibility. Legislation may contain an explicit provision for a loan from the Treasury or ministry of finance to the fund. Alternatively, there is an implicit backstop.

Similarly, the government is the ultimate backstop for the central bank. While a central bank can provide unlimited liquidity (by expanding its balance sheet), its capacity to bear losses is limited to its capital. In the case of large losses on lender-of-last-resort loans, the government may need to replenish the capital of the central bank. Because of the risk to public funds, the Memorandum of Understanding on Crisis Management

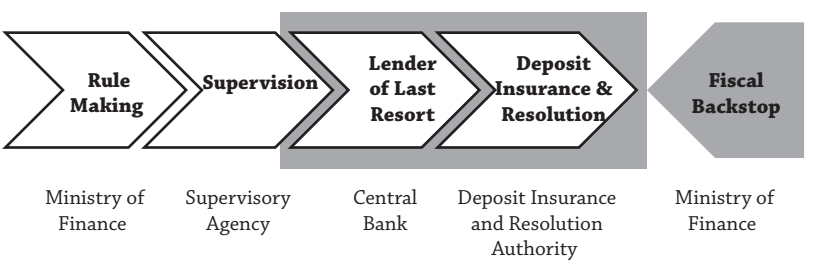

Figure 7.1
Governance framework for financial supervision and stability
The framework illustrates the five stages from rule-making to the fiscal backstop. The bottom line shows the agency for each function.

between HM Treasury and the Bank of England requires Treasury approval for any emergency liquidity assistance (lender of last resort) provided by the bank. The arrow for the fiscal backstop is backward in figure 7.1, illustrating a backward-solving approach toward governance.

Mandate

The scope of the mandate drives the actions of an agency. In a setting with national mandates, authorities may cooperate if the interests are aligned. But when conflicts of interest emerge, national authorities will look for national solutions first, putting the common interest second. The idea behind a supranational mandate is that an international institution adopts an overall approach toward financial supervision and stability for international banks. Such a supranational mandate solves the coordination failure among national agencies. An alternative to the supranational mandate is that the various (national) authorities operate on a common mandate. Also in this setting, an international institution is needed to ensure a common approach and settle disputes among the authorities. Otherwise we are back at square one with national authorities in the driver's seat. In the light of the integrated approach above, the various agencies for financial supervision and stability should have a similar scope in their mandate—either national or supranational—to make the governance system incentive-compatible (see section 5.3).

There is an ongoing debate about soft versus hard law (Lastra 2006). What is the appropriate legal basis for international financial supervision and stability? International governance for financial supervision has so far been guided by a soft law approach, with memoranda of understanding that are legally not binding. This soft law approach spectacularly failed during the Great Financial Crisis, as noted earlier in chapter 1. When cooperation was most needed, national authorities put their national interests first. A hard law approach, based on a treaty or convention, is necessary to create legally binding rules. Still, such an arrangement depends on enforcement.

While soft law allows for flexibility (easier to change the rules in the light of changing circumstances), hard law fosters the legitimacy of the rules. A treaty or convention needs to be approved by the parliaments of the participating countries, ensuring democratic control. Next, a treaty or convention will typically specify which body (court or tribunal) will settle disputes between the international institution and its members. Furthermore, a treaty or convention also provides a legally binding

framework for supervisory rules and resolution procedures. So both the institutional side (mandate and powers of the international institution as well as administrative and judicial procedures) and the content side (supervisory and resolution standards) are covered. Finally, and importantly, a treaty or convention implies an inroad to sovereignty. While that is important to overrule national interests when needed for the common good, this is exactly the sticking point discussed in chapter 6. Are countries prepared to transfer these powers to an international institution?

Independence

Following the success of central bank independence on the monetary side, commentators have stressed the importance of independence for financial supervisors (Lastra 1996; Quintyn, Ramirez, and Taylor 2007; and Masciandaro, Quintyn, and Taylor 2008). However, there are some crucial differences. While monetary independence is nearly absolute (full and final responsibility of the central bank), the minister of finance bears the ultimate responsibility for the general direction and development of financial policies.

It is useful to distinguish between goal independence and instrument independence. Goal independence concerns the overall objective that the supervisory agency is required to achieve. The goal or mandate is established in the law creating the agency. Instrument independence refers to independence in the actual formulation and implementation of supervisory policies, which are left to the judgment of specialist officials. Hence, politicians have a proper role to play in setting and defining regulatory and supervisory goals, but supervisors need to have the autonomy to determine how they should achieve them—and also to be accountable in the event that they fail to achieve them.

To make the notion of instrument independence operational, Quintyn, Ramirez, and Taylor (2007) identify inter alia institutional and supervisory independence. The first refers to the capacity of the supervisory agency to operate separate from the executive (ministry of finance) and the parliament. While the government and/or parliament appoints the head and other senior directors of the supervisory agency (in line with democratic principles), the terms of appointment (and dismissal) should primarily relate to supervisors' competence and probity. Next, the governance structure of the supervisory agency should foster consistent decision making by establishing multimember commissions and appointing nonexecutive board members. To ensure institutional independence, these

commissions and oversight boards should not include representatives of government or parliament. The second, supervisory independence, concerns the independence with which a supervisory agency can exercise its judgment and powers in such matters as licensing, inspections, and sanctions. An important principle is that politicians should not interfere in individual cases.

As resolution is a relatively new area, the literature on independence is less developed in this area (an exception is a recent report by the Advisory Scientific Committee [2012] of the European Systemic Risk Board). While independence is equally desirable to avoid political interference, it is more difficult to achieve in practice. In the resolution process, fiscal resources may be needed to recapitalize a troubled bank or to guarantee its liabilities. More broadly, the two agencies (the central bank as lender of last resort and the deposit insurance and resolution authority) operate with an implicit or explicit fiscal backstop. In a democratic society, fiscal expenditures are proposed by government and approved by parliament.

Accountability

The complement to independence is accountability. Well-designed accountability mechanisms strengthen independence. The essence of accountability is the creation of complementary and overlapping checking mechanisms. Transparency in the form of publications (annual reports, regulations, supervisory practices) and speeches supports accountability. It may also enhance public confidence in the agency. The main principals to whom the supervisor is accountable are government—often delegated to the minister of finance—and parliament (Quintyn, Ramirez, and Taylor 2007). As noted above, the minister of finance has direct responsibility for financial policies and needs to be aware of threats to financial stability. In addition to the annual report, the supervisor has regular (monthly or quarterly) reports for, and meetings with, the minister of finance. This regular dialogue between the supervisor and the finance ministry supports the design of financial sector policies. The minister can request information from the supervisory agency. But, as said before, the minister should not interfere in individual cases.

Parliament, as legislator, is responsible for the design of the supervisor's mandate and should therefore be able to hold the supervisor to account for meeting the mandate. This can be arranged through regular institutionalized contacts. The parliamentary committee for financial affairs can request the head of the supervisory agency to appear or to report.

These parliamentary hearings (sometimes grillings) are not always liked by supervisors, but are nevertheless an important part of the democratic process. Parliament has no immediate powers over supervisors but can change the legal mandate or framework.

Koppell (2010) makes a distinction between "classical" and "cartel" type global governance organizations. The more classical international organizations, such as the IMF and the World Bank, follow the above model of accountability, based on legitimacy (democratic control). By contrast, the cartel type international institutions, such as the WTO and the BIS, build authority by satisfying members' preferences. Moreover, their club-style rule-making is often enforced by market mechanisms rather than government-based agencies. A case in point is the Basel capital adequacy framework. Any bank that falls short of the Basel minimum capital ratios is seen as weak and faces higher funding costs in the market. Adherence to the Basel ratios is thus compelled by market discipline.

7.2. EUROPEAN GOVERNANCE

International banking is most advanced in Europe. Chapter 3 documents that the 30 largest European banks conduct, on average, half of their business abroad—both in the rest of Europe and in the rest of the world. To deal with the resulting cross-border externalities, supranational governance arrangements are crucial at the European level. The urgency of European governance arrangements is reinforced by the ongoing sovereign and banking crisis in Europe, at the time of this writing. Bank and sovereign debt distress are highly correlated and their reliance on each other creates destabilizing feedback loops. These feedback loops are two-way: national banks have national government paper on their balance sheet; and national governments provide the fiscal backstop for national banks. Lifting banking supervision and resolution to the European level would mitigate this bank-sovereign link. But the long-term rationale for European governance is the intensity of cross-border externalities.

Players in a Banking Union

How would a European system of supervision and resolution look? The first player is the European Commission. The European Commission is a EU institution that is rather independent from the member states. Its most important task is to initiate legislation. Only the European Commission can come up with formal proposals for legislation, the so-called right of

initiative. The Council of Ministers and the European Parliament are only able to request legislation. The formal legislative process starts with the presentation of a proposal by the European Commission to the council and the European Parliament, after which the process of negotiation between the latter parties starts. For financial supervisory and stability policies, the relevant council is the Ecofin Council, comprising the ministers of economics and finance. So the European Commission is the key policymaker initiating new policies and rules for the financial system. In parallel, the European Banking Authority (EBA) has a key role in drafting technical standards and developing a Single Rule Book for the EU Internal Market.

In the June 2012 summit, the European Council—comprising the EU president and the heads of states and governments—gave a first glance of a prospective banking union. In particular, the European Council decided to explore a single supervisory mechanism with the ECB as supervisor and invited the European Commission to prepare proposals in this regard. In this light, the ECB emerges as supervisor and lender of last resort at the European level and becomes the key player in the supranational framework for the supervision of large European banks. The legislative proposals were adopted by the European Council in December 2012, subject to approval by the European Parliament.

A EU-level framework for deposit insurance and bank resolution enables swift and effective intervention into failing (cross-border) banks, reduces uncertainty, and strengthens market discipline. Critically, a central resolution authority needs the necessary resources to resolve large cross-border banks in an efficient manner. In a recent report of the Centre for European Policy Research, Allen and coauthors (2011) therefore suggest combining the resolution authority with a deposit insurance scheme for cross-border banks.

This proposal follows US and Japanese practice. The Dodd-Frank Act endows the Federal Deposit Insurance Corporation with powers to resolve large banks without the process of bankruptcy proceeding (in addition to their existing powers for small and medium-sized banks). Similarly, the Deposit Insurance Corporation of Japan has resolution powers. In the proposal by Allen and coauthors, the EU would accordingly get a European Deposit Insurance and Resolution Authority with resolution powers. The fund would be fed through regular risk-based deposit insurance premiums (Schoenmaker and Gros 2012). Industry-based funding reduces concerns of moral hazard. But deposit insurance, financed by banks themselves, always faces limitations in case of systemic bank failure. A fiscal backstop by national governments, possibly through the newly established European Stability Mechanism (ESM), is necessary. This is especially important in the early phases as the deposit insurance and resolution fund is being built up.

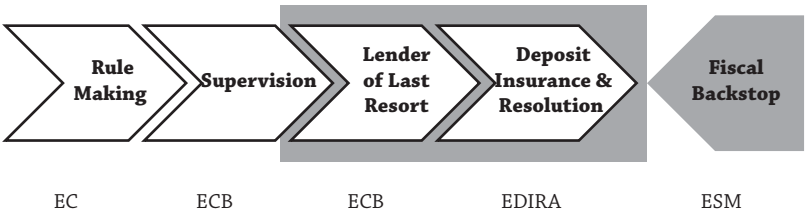

Figure 7.2
European institutions for financial supervision and stability
The framework illustrates the five stages from rule-making to the fiscal backstop. The bottom line shows the agency for each function.

Figure 7.2 depicts the bodies in this new European governance framework. While the EC (European Commission), the ECB, and the ESM are existing institutions; the EDIRA (European Deposit Insurance and Resolution Authority) would be a new institution. Although it is tempting to place the new resolution authority at the ECB, the functions of supervision and resolution should remain separate (Advisory Scientific Committee 2012). As supervisors have responsibility for the licensing and ongoing supervision of banks, they may be slow to recognize (and admit to) problems at these banks. Supervisors may fear that inducing liquidation before a bank becomes insolvent could, in some cases, cause panic in the market. A separate resolution authority can judge the situation with a fresh pair of eyes and take appropriate action with much-needed detachment. The private banking sector also applies this principle of separation. When a bank loan becomes doubtful, responsibility is transferred from the loan officer to the department for "special" credits to foster a "tough" approach. Given the need for a fiscal backstop, the new EDIRA could operate in close cooperation with the ESM. It is nevertheless important to guard the independence of the resolution authority, as the ministries of finance govern the ESM.

On the transition toward banking union, the focus of the European Commission is now on the regulatory and supervisory front, developing the Single Rule Book and the supervisory powers for the ECB. In line with the backward-solving approach presented here, it is important that deposit insurance and resolution are enacted at the same time. Some weak banks may need to be resolved (partly winding down and/or recapitalizing) before they enter the new European supervisory system to avoid unlimited contingencies. Countries then would have to deal with any legacy problems of weak banks. If needed, countries could apply for support from the ESM. Only well-capitalized banks should enter the new European system of supervision by the ECB and resolution by EDIRA. This is crucial given the highly discretionary character of resolution.

Legal Framework

On the institutional front, there is no need for a treaty change. Based on the Lisbon Treaty, EU Regulations could establish the supervisory role of the ECB and the new EDIRA (Schoenmaker 2012). A key question is whether the new rules would apply to the euro area only or for the EU as a whole. The political dynamics, in particular the UK position, suggest that the feasibility of euro area arrangements is currently higher. At a later stage, arrangements can be extended in order to preserve the Internal Market in Banking, which has an EU-wide coverage. Flexibility can be built in the Regulations by making provisions for an opt-out. It may well be that the other outs, like Sweden and Denmark, may wish to join because of their regional banks, Nordea Bank and Danske Bank, respectively.

Such a flexible approach should pose few problems for existing institutions. The European Commission has clearly a EU-wide remit but can also prepare legislation for the euro area. While the ECB can work in the Governing Council format (only euro area central bank governors) for the euro area, it can shift to the General Council format (all EU central bank governors) for EU matters. Also, the fiscal side of the ESM can be broadened to noneuro members. The Irish rescue package, in which the outs (UK, Sweden, and Denmark) participated, provides a good illustration of the possibilities.

The ESM operates on the principle of burden sharing among participating member countries. As the ongoing crisis in Europe is threatening the stability of the European financial system as a whole, the ESM treaty adopts a general form of burden sharing instead of specific burden sharing (for example, based on asset shares of banks in various countries) and applies the ECB capital key to share the burden. The ECB capital key reflects the participating country's share in the total population and gross domestic product of the euro area. These two determinants have equal weighting. Elsewhere I have explored the importance of the ECB capital key for general burden sharing (Goodhart and Schoenmaker 2006).

A vital element of the ESM treaty is the voting rule. Major decisions, such as granting financial assistance or expanding the capital stock and the maximum lending volume, are taken by unanimity. Any participating member state can thus block financial assistance, as we have witnessed with the rise to power of nationalist parties in countries such as Finland and the Netherlands. Unanimity hampers the swift operation of the ESM and consequently feeds the mistrust of the markets in the new way of decision making. It is therefore necessary, if not imperative, to bring decisions concerning the expansion of the capital stock and the provision of

financial assistance under the rules of qualified majority voting. The ESM treaty foresees an emergency procedure under which decisions can be made by a special qualified majority of 85 percent. However, even under such qualified majority voting, Germany, France, and Italy effectively have a veto, with respectively 27.1 percent, 20.4 percent, and 17.9 percent of the votes. In the words of Scott Barrett (2007), these voting rules cause the ESM to operate with one hand tied behind its back.

Political Union

Granting of supervisory and resolution powers to European institutions raises the issue of democratic legitimacy. While full independence and limited accountability are widely accepted on the monetary side (the ECB president has to appear before the European Parliament), governance arrangements for supervision and stability should be more extensive. How can countries cede sovereignty over some aspects of banking (and fiscal) policy without democratic legitimacy? Who is playing the role of minister of finance at the euro area level?

There is an emerging view that political union is needed for a banking union (Pisani-Ferry and coauthors 2012; Marzinotto, Sapir, and Wolff 2011; and Goodhart and Schoenmaker 2011). Such a political union is not only needed for the required democratic accountability, but also for effective and swift decision-making to settle the ongoing sovereign and banking crisis. So far the political leaders in the European Council of Heads of States and Governments have been caught up in their national mandates, reinforced by their national parliaments and electorate. A political union would make it possible to operate on a EU / euro area–wide mandate.

The political framework starts with a much-needed euro area minister of finance, as suggested by Trichet (2011). But a strong, technocratic finance minister is not sufficient in itself. Proper mechanisms for election and accountability are needed to have the euro area finance minister work in a democratic setting. This position would rest inside the European Commission. National experience shows that the success of any finance minister crucially depends on strong support from the prime minister (and vice versa).

Thinking about a democratic political union therefore starts with a president of the European Commission, elected by the citizens of the EU. Political legitimacy for the Commission president is needed for two reasons: (1) to enforce budget discipline on participating members to restrict the impact of fiscal spending on the wider euro area; and (2) to oversee euro area banking supervision and resolution, to foster the stability of the European banking system.

After election, the president can then form a team, including his or her commissioner for economic and monetary affairs (who will be the euro area finance minister).[2] The commissioners will need to be approved in hearings by the European Parliament. Reform of the parliamentary side can be achieved by moving to a two-chamber system. The current European Parliament would continue to be chosen by European citizens and form the equivalent of the Bundestag, House of Commons, Tweede Kamer, or House of Representatives in the respective national countries. A new chamber—comprising the European Council—would be created and form the equivalent of the Bundesrat, House of Lords, Eerste Kamer, or Senate. The central idea of such a two-chamber system is that the political discussion would be initially held in the main chamber representing the full electorate, and that a separate *chambre de réflexion* would then represent the interests of the separate member countries.

Joint Sovereignty

As noted earlier in chapter 1, Padoa-Schioppa (2010) suggested that new thinking on the concept of the traditional nation-state is needed to make progress on the role of European institutions for financial supervision and stability. In the traditional Westphalian system of national states, the EU would have to move to a federal state to execute banking policies at the European level. But the citizens in Europe do not aspire toward such a federal state, as the no-vote in the French and Dutch referendum on the Constitutional Treaty in 2005 showed.

In line with the legal analysis of Jaap Hoeksma, we argue that the Lisbon Treaty has transformed the EU into a democratic polity of states and citizens (Hoeksma and Schoenmaker 2011). The construction of the EU as a democratic polity in international law allows for a different, post-Westphalian approach to the concept of sovereignty. Whereas the nation-states of the nineteenth and twentieth centuries regarded sovereignty as one and indivisible, the EU is built upon the principle of shared sovereignty. According to Article 1 of the Lisbon Treaty, the member states are conferring competences on the Union in order to attain common goals. The exercise of sovereignty has therefore changed from a static concept into a flexible one. The EU proves that it is possible for states to share sovereignty without ceasing to be a sovereign state.

The powers to set and execute banking policies would be transferred to the Union, just as the monetary powers were transferred to the Union. The concept of the joint sovereign (that is the Union and the participating

member states together) behind the euro is reflected in the constitutional set-up of the European System Central Banks (ESCB), comprising the ECB and the national central banks. The ECB at the center is an institution of the EU established by treaty. Yet the national central banks are the owners of the ECB. According to Article 32 of the ESCB Statute, the national central banks share the monetary income containing profits from seigniorage, as well as potential losses from monetary operations. The euro area member states thus share the profits (and the losses) on the euro via the ECB. The democratic legitimacy of the euro is also jointly shared, as the president of the ECB is accountable to the European Parliament and the presidents of the national central banks to their respective national parliament.

It should be acknowledged that, at present, the EU is a democracy on paper and that the legitimacy of the Union is in urgent need of improvement. The challenge ahead lies in the transformation of the EU from a nominal democracy into a living democracy of 28 member states and 500 million citizens. The proposals for an elected president of the European Commission aim to make the democracy at the Union level as lively as at the member state level.

7.3. GLOBAL GOVERNANCE

The emerging global banks give rise to trade-offs similar to those that Europe faces at the regional level. The vast majority of global systemically important banks (G-SIBs) on the FSB list are very international, conducting 25 to 80 percent of their business abroad, as documented in chapter 3. National authorities cannot deal effectively with these global banks. But the political obstacles to global governance are daunting, as noted in chapter 6. So reform is not on the cards in the short term. Nevertheless, the need for properly reforming the governance of international banking at the very least means that we have to explore how the role of international institutions could be expanded in the future.

International Players

The first player in the new financial architecture would be the FSB, in which ministries of finance, central banks, and supervisors of 24 major economies participate. The FSB would keep its current role as key body for the design and implementation of the international financial policy agenda, working

under the political guidance of the G20. The FSB would drive the policy and rule-making for the global financial system (see figure 7.3).

The FSB would oversee the work of the international standard setting bodies. In that light, the Basel Committee on Banking Supervision could keep its role as international standard setter of banking regulations, just as the International Organisation of Securities Commissions (IOSCO) for securities standards and the International Association of Insurance Supervisors (IAIS) for insurance standards. Next, the FSB would remain responsible for setting and amending the list of G-SIBs, on recommendation by the BIS. In that way, the FSB would define the international supervisory perimeter.

In a global governance framework, the IMF would play a central role. After the Second World War, the IMF emerged as the key player in the international monetary system with a strong track record. Accordingly, the IMF could extend its monetary function to supervision. It already has some of the operational capacity with its work on Financial Sector Assessment Programs (FSAPs). In turn, the supervisory role for the IMF would be in line with the agreement—back in 1996—between the IMF and the BIS, which specifies that the Basel Committee on Banking Supervision would do the regulatory "rule-making" and the IMF would do the supervision including the FSAPs (Goodhart 2011).

However, the IMF has representatives from both governments and central banks on its day-to-day Executive Board. The IMF's Board of Governors also consists partly of ministers of finance, which is consistent with the provision of resources (quota) to the IMF by governments or by central banks, typically with a government guarantee. But the presence of ministers on the board violates the important principle of institutional independence of an international supervisor. From this perspective, the split in the board could give rise to a gap in governance. This brings us back us to the need for neutrality in the supervisory structure for banks.

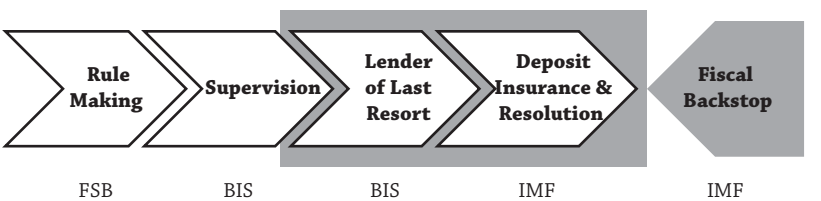

Figure 7.3
International institutions for financial supervision and stability
The framework illustrates the five stages from rule-making to the fiscal backstop. The bottom line shows the agency for each function

This demonstrates that the governance structure of the IMF is not appropriate for supervision.

In addressing how to structure an effective governance structure, the alternative international financial institution, the BIS, has the appropriate institutional independence from governments, as it is a truly central bankers' bank. Its Board of Directors is fully comprised of current and former central bankers. There are no government representatives on the BIS board. The BIS strongly guards its independence.[3] The BIS could thus be the international supervisor of the G-SIBs (see figure 7.3). Ultimately, one cannot predict whether a separate structure within the BIS would be needed to ensure the proper level of supervision and to allay concerns of independence from some leading banks.

A supervisory role for the BIS would be consistent with a wider trend of central bank involvement in banking supervision. Examples are the supervisory role of the Federal Reserve with regard to the bank holding companies, the prospective supervisory role of the ECB for the (large) European banks, the regained supervisory role of the Bank of England, and the expanded supervisory role of the Banque de France. But there are also counterexamples, such as the People's Bank of China, the Bundesbank, and the Bank of Japan. In the latter cases, the supervisory agency operates separately from the central bank.

Eatwell and Taylor (2000) also argue for the BIS, because of its expertise and experience in international financial regulation. Moreover, there may be concerns about how quickly and sharply the IMF could adjust to a supervisory role, as the IMF is more focused on fiscal and trade imbalances than on capital markets. The IMF's conflation of insolvent economies and illiquid capital markets was seen as a primary element in the mishandling of the Asian crisis. As a result, regulators might fear that this structure could cause the same injury to financial institutions in future crises. The choice of the BIS can easily be defended, as evidenced by the respect it commands from governments and the financial services industry in the area of global finance.

The BIS has helpfully expanded its global reach beyond the traditional G10 countries. It has recently opened up its membership to key players in Asia (China, India, and Korea), Africa (South Africa), and South America (Mexico, Brazil, and Argentina), and the governor of the People's Bank of China has also become a member of the Board of Directors. The BIS has additionally established regional offices for the Asia-Pacific region in Hong Kong (1998) and for the Americas in Mexico City (2001).

The BIS, as a central bankers' bank, is also the natural candidate for the international lender of last role for the G-SIBs. In its role as prime counterparty for central banks in their financial transactions, the BIS has built

up a major Banking Department with asset management and banking operational services. The banking community would probably thus prefer an institution that has the required operational capacity to conduct such a lender-of-last-resort role.

The next question is the choice of an international institution for resolution of international banks. At the start of this century, Anne Krueger, the first deputy managing director of the IMF, proposed a new sovereign debt restructuring mechanism, in which the IMF would play a prominent role. Still, the diversity of security claims on sovereign countries has made it more difficult to secure collection action from creditors when a sovereign's debt obligations exceed its payment capacity. This has reinforced the tendency for these countries to delay restructuring until the last possible moment, with substantial uncertainty and loss of asset values, to the detriment of debtors and creditors alike. The purpose of a mechanism for majority voting on restructuring terms is to speed up the process of working out an equitable debt restructuring that returns the country to viability and growth.

To make this restructuring mechanism work, Krueger (2002) proposed to establish a legal framework through the establishment of universal treaty obligations rather than through the adoption of legislation in a limited number of jurisdictions. Such a treaty approach would prevent circumvention and ensure uniformity. Obviously, she proposed to establish the treaty framework through an amendment of the IMF's Articles of Agreement (the "IMF Treaty"). The IMF would then be the coordinator for the restructuring settlement. However, the proposal was not adopted, as the United States—with its veto on the IMF board—did not agree to it.

In a similar way, there is evidence that the IMF could play a role as effective resolution authority for the G-SIBs (see figure 7.3). To play this role, the IMF would need to have full access to information on the financial condition of the G-SIBs. The exchange of information has always been a major stumbling block for international cooperation. Supervisors are reluctant to share confidential information about banks under their supervisory wings for two reasons. First, and fundamentally, supervisors may lose discretion in dealing with emerging problems when they share information with another body, as highlighted in chapter 1. Second, supervisors are afraid that confidential information may become available to parties (including government and parliament) that should have no access to information on individual cases. Such leakage could create a reputation problem if the receiving body cannot guarantee restricted access to the confidential information to those concerned with supervision and resolution.

The creation of a separate resolution agency within the IMF can solve the confidentiality problem. The choice for a separate resolution agency would allow managers and experts to freely use this information, while ring-fencing it from other departments within the IMF. Furthermore, the IMF Resolution Agency would need some administrative powers to collect direct information from the G-SIBs. At this point, the request for information could be organized similarly to the US Federal Deposit Insurance Corporation, which can collect information for resolution and deposit insurance purposes. In that way, the IMF Resolution Agency would not be fully dependent on the BIS for receiving information. Ultimately, the preferred route is that the BIS, as supervisor, would share information with the IMF, as resolution agency, to reduce reporting burdens on banks.

As a coherent response to the Great Financial Crisis, the IMF agency could combine the resolution role with deposit insurance for the G-SIBs. It would then collect deposit insurance premiums and be authorized to build a deposit insurance fund. But a fiscal backstop would be necessary for the resolution and deposit insurance function (Obstfeld 2011). The IMF could, akin to the ESM, provide this backstop. The IMF construction for stability support for "problem" countries could be used, under which member countries precommit resources at the IMF for this purpose. If the IMF were to receive this role as resolution authority, separate arrangements would need to be made for organizing and funding this resolution role. Some lobbying would be necessary to ensure sufficient funds.

It should be stressed again that the primary role of the resolution agency is to resolve a troubled bank timely in order to return it to viability (preferably without the use of public money) or to liquidate (parts of) that bank. The use of public money is a last resort and should only be used for systemic reasons to safeguard the stability of the international financial system.

Institutional Framework

As this book has demonstrated, a hard law approach is needed to make international cooperation effective in times of crisis. Legal scholars also stress the need for a treaty or convention base to provide an effective basis for the operation of international financial institutions (Lastra 2006 and 2011; Avgouleas 2012).

The advantage of using existing international institutions is multifold. First, the FSB, the BIS, and the IMF have established a reputation and gained credibility in international finance. The new activities could build

on this reputation. Second, the international financial institutions have operational capacity, but that may need to be expanded. In particular, the BIS has a reputable research and statistics department and a large banking department, but no direct supervisory capacity. The FSB may also need to expand its staff to drive the international policy agenda and monitor implementation. Third, the institutional arrangements for the new activities can be grafted upon the existing treaties of these institutions, though some major changes, and updates, may be needed. Rosa Lastra (2006) provides an excellent overview of the treaties governing the BIS and the IMF.

The FSB, as international policy agency, would continue to work under the auspices of the G20. The charter of the FSB specifies that the plenary meeting, comprising the central bank governors, head of supervision, and deputy ministers of finance, appoints the chair. In the new setting, the G20 heads of state would appoint the FSB chair. The legal status of the FSB could also be strengthened with a treaty base. That would provide greater democratic legitimacy to its policy- and rule-making powers for the global financial system.

The arcane BIS Convention, dating back to 1930, would need a major overhaul. A very limited set of countries is signatory to this convention. The Hague Convention respecting the BIS is only signed between the governments of Belgium, France, Germany, Italy, Japan, the UK, and the United States, and the government of Switzerland as host country. Japan subsequently renounced its obligations under this convention in 1952. The set of countries signatory to the convention would need to be broadened to, at least, the other G20 countries, and possibly beyond. The Constituent Charter of the BIS, signed by the central banks of the same countries, would similarly need to be broadened.

The objectives and operational arrangements, including the appointment of the Board of Directors and the general manager, are specified in the statutes of the BIS. The appointment of the directors is partly ex officio (the central bank governors of the signatory countries, but without Japan) and partly elected among BIS central bank members. The board elects its own chairman and appoints the general manager. Enhanced governance is the key factor needed for the BIS to assume the role as the international supervisor (and lender of last resort) of the G-SIBs. Most importantly, the appointment of the chairman, and possibly the other directors, would need to become political. The G20 heads of state would then appoint the BIS chair. More broadly, the club-based approach is less suitable to the public role of a supervisor. In turn, the accountability of the BIS would need to be enhanced if it were to receive formal sanctioning powers over

the global banks. Nevertheless, it may be useful to keep some of the club approach, as the BIS has been very effective through time (Koppell 2010).

The Articles of Agreement of the IMF were adopted at the United Nations Monetary and Financial Conference at Bretton Woods in 1944. The articles have been subsequently amended on several occasions. In the aftermath of the Asian crisis and the Great Financial Crisis, there have been calls to reform the governance reflecting the shift of global power. In particular, the role of Asia will be increased at the expense of Europe, with its multiple directors and large quota. The Netherlands and Belgium will, for example, merge their seats at the IMF board. As currently foreseen, the United States will keep its special position with a veto for major decisions. The United States has a 17 percent vote, while the majority requirement for major decisions is 85 percent. To make the IMF acceptable to other major economies, the United States may have to give up its special positions in a future reform.

The IMF needs to amend its Articles of Agreement to assume the role of Resolution (and Deposit Insurance) Agency for the G-SIBs and arrange the accompanying backstop. Given the experience with earlier amendments, these new amendments, including ratification by the member countries, would be relatively straightforward. An important issue is the governance of the Resolution Agency and the backstop. As all 187 member countries are represented at the Board of Governors, the board has a smaller committee that meets normally twice a year to discuss policy matters. This International Monetary and Financial Committee (IMFC) contains the 24 governors (ministers of finance and central bank governors) of the countries that are also represented in the IMF's 24-member Executive Board. The Resolution Agency could be made accountable to the International Monetary and Financial Committee. Furthermore, this committee would also set the guidelines for the possible use of resources for resolution purposes. The Resolution Agency should subsequently be able to operate freely within these guidelines.

On accountability, it is important to organize a regular and meaningful dialogue of the heads of the supervisory and resolution agencies with the FSB chair on (new) policy issues. That could be organized in addition to the large plenary meetings. Moreover, the supervisory and resolution heads would be part of the FSB's Steering Committee. There should also be a direct reporting line from the international supervisor and international resolution agency to the G20.

Moving to parliamentary accountability, the G20 heads of state would be responsible for the overall framework for supervision and resolution of G-SIBs. Democratic accountability would be indirect through G20 heads of state, who are accountable to their respective national parliaments. The

challenge is to ensure that the heads of state are held accountable on a mandate of international financial stability. It is already standing practice in many countries that the respective IMF director appears at the national parliament. In the new setting, this standing practice could be extended to the BIS governors, who would be held accountable for the discharge of their international supervisory role.

Supervisory and Resolution Framework

In the current setting, the international standard setters, such as the Basel Committee on Banking Supervision, IOSCO, IAIS, and the FSB, operate on a soft law approach. Although the standards are not legally binding, the sponsoring bodies tend to adhere to these standards in practice. The standards have legal effect only after implementation in national (or European) legislation. The BIS as international supervisor, and the IMF as international resolution agency, would need a legal framework for supervisory and resolution regulations with appropriate powers, including sanctioning powers, to perform their new duties.

The supervisory rule book for the G-SIBs should thus be embedded in a convention or treaty. Several academics, as well as international banks, call for an international resolution convention or treaty to enable the resolution of global banks on a group-wide basis (Lastra 2011; Avgouleas, Goodhart, and Schoenmaker 2013; Institute of International Finance 2012). Going forward, the newly proposed treaty base for the FSB could contain the role of the FSB as global rule-maker, as well as the core standards for global financial supervision and resolution.

7.4. CONCLUSION

Global banks need global institutions. This chapter sets out a possible governance framework at the European and global levels. Key components of such a framework are legal certainty, independence for supervision and resolution, and accountability. The main challenge is democratic accountability. While Europe is slowly moving toward political union, there is no prospect of organizing that at the global level. National politicians remain the driving, and sometimes blocking, force behind the international financial institutions.

International trade and monetary law—with the WTO and the IMF—emerged after the Second World War, while international finance law is

emerging following the Asian crisis and the Great Financial Crisis (Lastra 2012). This chapter suggests that the BIS could assume the role of supervisor and lender of last resort for the G-SIBs, and the IMF the role of resolution agency for these G-SIBs. The FSB would remain the key policy-setting body for the international finance community. These three international financial institutions would operate under the political guidance of the G20 leaders.

While global governance of finance is clearly a remote future "ideal," European political leaders have been experiencing that a national approach toward an integrated financial system is not working. As of this writing, Europe is exploring how a banking union can facilitate a move from a fractional national approach to an integrated supranational approach. The ECB, a new European Deposit Insurance and Resolution Authority, and the recently established ESM are the key players in a prospective banking union. It is too early to predict the likely shape of the final structure of the EU's banking union, as certain structures may persist.

NOTES

1. There are a few exceptions. The Finnish parliament has broad constitutional powers. An example is the Parliamentary Oversight Council overseeing Suomen Pankki, the Finnish central bank.
2. The usual ministry of finance functions are divided among three positions in the European Commission: (1) the commissioner for economic and monetary affairs, responsible for economic growth, stable public finances, and financial stability; (2) the commissioner for internal market and services, responsible inter alia for financial services; and (3) the commissioner for financial programming and budget, responsible for the EU budget.
3. An anecdote from personal experience can confirm BIS's independence. In the late 1990s, I visited the BIS with a colleague from the Dutch Ministry of Finance (at which I served for 10 years). The general manager then, Andrew Crockett, told us that it was very exceptional for the BIS to receive government officials. He jokingly added that government officials were regarded as "sniffer dogs" that should be kept at a distance.

Summary and Conclusions

The financial trilemma states that policymakers have to choose two out of the three policy objectives of (1) financial stability, (2) international banking, and (3) national financial policies. The outcome of the financial trilemma is crystal clear. Financial authorities need to operate over the same terrain as banks if we want to maintain financial stability. So the public domain will need to assert itself on global banks, which underpin the wider global financial system (giving up the third objective). Alternatively, national regulators will need to require the current global banks to turn their banking group into a string of nationally licensed stand-alone subsidiaries (giving up the second objective). The model of the financial trilemma developed in this book has laid the theoretical foundation for this strong conclusion. The game of cooperation between national supervisors is basically an application of the prisoner's dilemma. By putting their own self-interest first, supervisors cannot reach the cooperative equilibrium. The handling of international bank failures during the Great Financial Crisis confirms this noncooperative behavior in practice.

Reform of global governance, guided by the Group of Twenty (G20) and executed by the Financial Stability Board (FSB), has so far focused on soft law solutions. Regulators adopt a consensual approach toward the setting of international standards. For day-to-day supervision, home and host supervisors of global banks work together in supervisory colleges. For crisis management, home and host authorities cooperate in crisis management groups. This approach is underpinned by legally nonbinding memoranda of understanding, buttressed by peer reviews of each other's supervisory system.

The central thesis in this book is that such voluntary cooperation is bound to break down, in particular in crisis times when cooperation is most needed. The explanation is that financial stakes are high and national governments, which are accountable to their national parliament, only take care of the domestic effects of an international bank failure. But how important and how international are these global banks? Empirical evidence shows that internationalization is still strong, though global deleveraging is outpacing domestic deleveraging in the aftermath of the Great Financial Crisis. Half of the top 60 world banks have more than 25 percent of their asset base abroad. So cross-border externalities are substantial and cannot be ignored. Recognizing the importance of global banks, the FSB has developed a list of 28 so-called G-SIBs (global systemically important banks). All large and global banks—defined as having total assets exceeding $1 trillion and foreign assets more than 25 percent of total assets—are on the FSB list.

Global banks support the move to a supranational approach for banking supervision and resolution because they fear the alternative of national subsidiaries with high capital and liquidity requirements. These local capital and liquidity holdings will be trapped in the national subsidiaries, as the national supervisors want to keep these extra safety valves at the national level, in particular when a crisis hits and capital and liquidity should be directed to where most needed. It feels like not being able to use the firefighters and water resources of a neighboring village when the village's fire brigade is fighting a raging fire.

But the politicians are in charge of global governance and not the private sector. The dominant approach in the leading economies, notably the United States and China, is national. The United States applies a territorial approach, which puts domestic interests first in a bankruptcy. By contrast, Europe favors a universal approach, under which all depositors (and creditors) get equal treatment. Moreover, Europe is exploring a banking union in response to the ongoing sovereign and banking crisis in Europe. We find that there are important parallels between the vulnerability—in the form of cross-border externalities—of the European banking system and the global banking system.

The ultimate driver for global governance of the global financial system may come from the corporate sector and citizens. Multinational companies produce and trade on a global scale. To operate on a global scale, these multinationals need the services of globally operating banks that can execute cross-border payments efficiently and pool local balances—held in various currencies—centrally at the end of the day. Citizens enjoy the benefits of a wide choice of domestic and foreign products and services,

at low prices. Furthermore, global travel and global consumption may foster a transnational identity on top of a strong national identity. That may, in turn, provide a fertile ground for developing an international approach toward governance. The result is then a multilayered approach toward governance, whereby most economic issues are dealt with at the national level and some at the European or wider global level. However, some observers have a more skeptical view. Rodrik (2011), for example, argues that the nation-state remains the only game in town when it comes to global governance.

GLOBAL GOVERNANCE

How would a system of global governance look? While policymakers tend to embrace evolutionary methods, a piecemeal approach may make things worse. The combination of an international supervisor (whether European or global) of banks with national resolution of bank failures distorts incentives. What is the incentive for the international supervisor, other than reputation, to put in sufficient effort, if somebody else pays the bill in case of failure? That is why Charles Goodhart and I have always stressed in our joint work that supervision and resolution should be at the same level. The guiding principle for decision making on crisis management is "He who pays the piper calls the tune."

The endgame of resolution sets the incentives for ex ante supervision. In that light, we apply a backward-solving approach, illustrated by the backward arrow for the fiscal backstop in figure C.1. The design of global governance thus starts with mobilizing the funds for resolution, the so-called fiscal backstop. At the European level, the European Stability Mechanism (ESM) is fulfilling the role of the European crisis fund for countries and is now on the verge of expanding that role to banks.

A European governance system may therefore consist of the following building blocks: the European Commission (EC) as European rule-maker, the European Central Bank (ECB) as European supervisor and lender of last resort, a new European Deposit Insurance and Resolution Authority (EDIRA), and the ESM as fiscal backstop. The European Deposit Insurance and Resolution Authority will be the new player in this governance system. To minimize the cost for taxpayers and maximize private sector involvement, this new authority should build a deposit insurance fund, funded by risk-based premiums levied on the European banks. Only after that fund is exhausted would the European Deposit Insurance and Resolution Authority have access to the ESM.

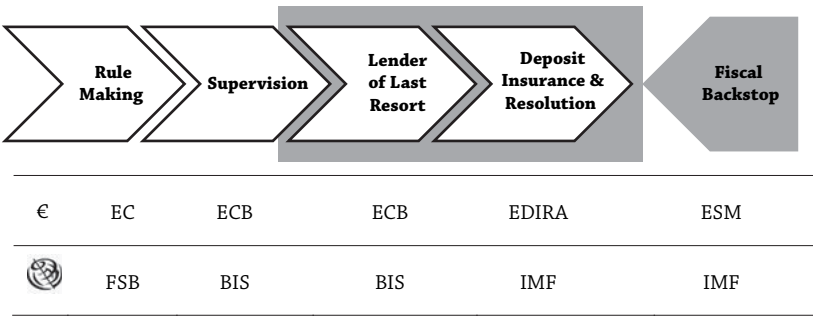

Figure C.1
European and global governance of financial supervision and stability
The framework illustrates the five stages from rule-making to the fiscal backstop. The bottom shows the agency for each function at the European level and the world level, respectively.

A banking union along these lines will need a political union. As public resources are potentially spent at the European level, there should be a democratic process involving the citizens. An elected president of the European Commission would then, with his commissioner for economics and finance, make a proposal for emergency funding of bank bailouts, if and when needed; the European Parliament would grant approval for such expenditures.

Moving to the global level, the International Monetary Fund (IMF) is the international financial institution with resources for crisis management (figure C.1). The IMF would broaden its global support from sovereign countries to global banks and thus become the International Resolution Authority for global banks. The IMF already has the governance arrangements in place for involvement of, and accountability to, the ministers of finance who provide the resources to the IMF.

While many observers would also give the role of international supervisor of global banks to the IMF, I argue for the Bank for International Settlements (BIS) for two reasons. First, supervisory independence, one of the core principles for effective banking supervision, would otherwise be violated. As ministries of finance play a dominant role in the governance of the IMF (which is much needed for the decision making on spending public resources for crisis support to countries or banks), the IMF cannot act independently from government. Second, the functions of supervision and resolution should be separated. Supervisors have a tendency toward forbearance, hoping for better times, while resolution authorities aim for timely intervention to minimize the costs.

The BIS has required a strong reputation in international policymaking, as host to multiple international committees, notably the Basel Committee on Banking Supervision. But a major overhaul would be needed. First, the BIS has no supervisory capacity. It would need to expand its staff resources. Next, the BIS is currently a cozy central bankers' club. It will need to beef up its governance, moving to appropriate accountability mechanisms, including the appointment of the BIS head by the G20. Finally, the Financial Stability Board (FSB)—also under the political guidance of the G20—would remain the international body for driving the international policy agenda and international rule-making.

MORAL HAZARD

The main objection toward global governance is moral hazard. International safety nets would induce excessive risk-taking by the institutions or countries that enjoy the protection. That objection needs to be addressed. The international policy agenda, after the Great Financial Crisis, has already substantially strengthened the capital framework. That is much needed. The FSB is also implementing a capital surcharge for G-SIBs. Moreover, the authorities need to ensure that a resolution plan is in place for the G-SIBs. That would facilitate an orderly wind-down and make it possible to (partly) liquidate nonsystemic parts of a global bank.

Such extra capital charges and resolution plans should be in place for all banks under global supervision. The capital surcharge is only foreseen for the risk-weighted capital ratio (capital divided by risk-weighted assets) of global banks. I argue to increase the leverage ratio (capital divided by total assets) accordingly. That would strengthen the supervisory lever on risk-taking and unbridled expansion of the balance sheet by large banks.

In sum, the remit of the ESM in Europe and the IMF in the world would be expanded from international monetary stability to international monetary and financial stability. That is in line with the current trend at national central banks, which are now moving beyond their narrow monetary mandates. The role of the ESM and the IMF would be broadened from global support for sovereign countries to global support for global banks, recognizing the key role of these banks in the global financial system. If and when these fiscal backstops are in place, the supervision can also be lifted to the ECB for European banks and, perhaps later, to the BIS for truly global banks. That would make the global financial system a safer place.

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