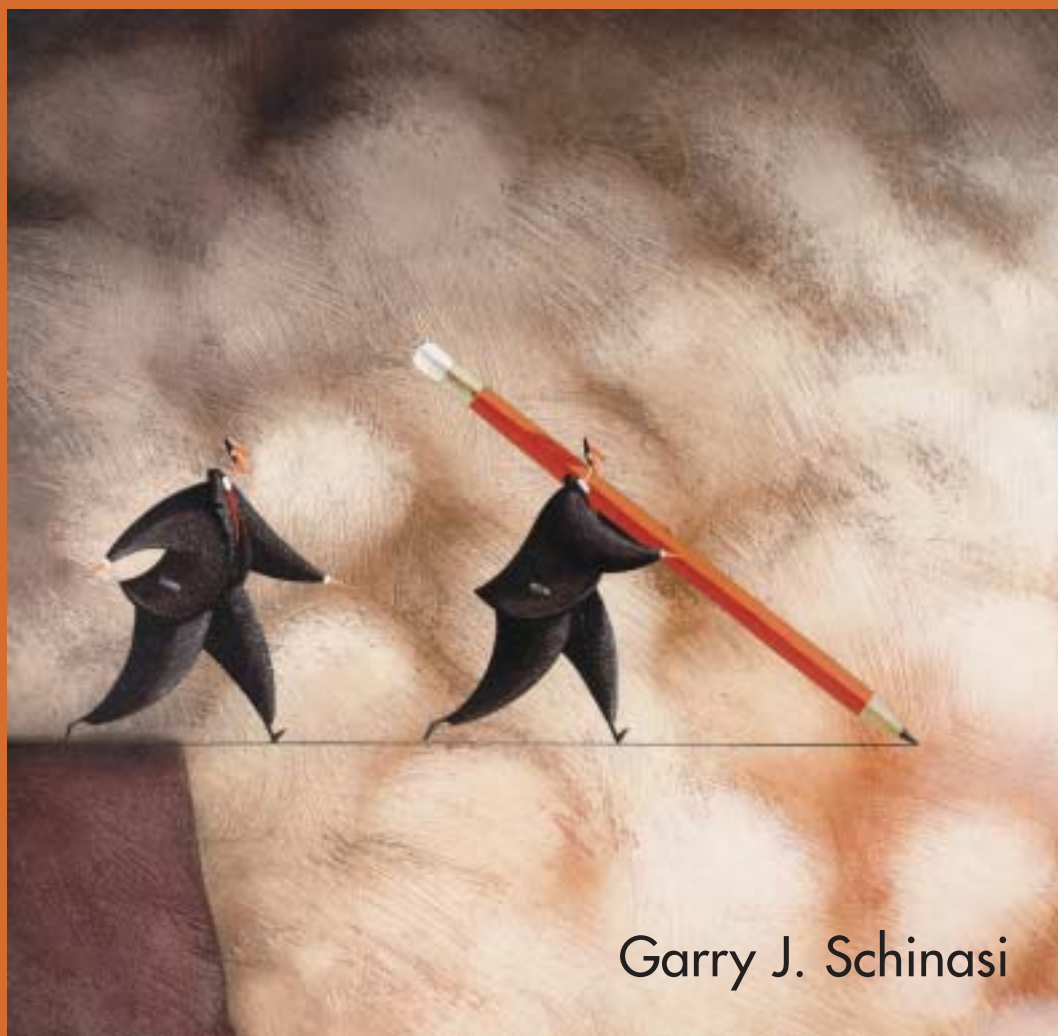


# SAFEGUARDING FINANCIAL STABILITY

## Theory and Practice



Garry J. Schinasi

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Garry J. Schinasi

I N T E R N A T I O N A L M O N E T A R Y F U N D

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Production: IMF Multimedia Services Division  
Cover design: Lai Oy Louie  
Cover photo: Bruno Budrovic, © Images.com/CORBIS

### **Cataloging-in-Publication Data**

Schinasi, Garry J.  
Safeguarding financial stability : theory and practice / Garry J.  
Schinasi — Washington, D.C. : International Monetary Fund, 2005.  
p. cm.

Includes bibliographical references and index.  
ISBN 1-58906-440-2

1. Finance. 2. Banks and banking, Central. 3. Risk. I. International  
Monetary Fund.  
HG101.S35 2005

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Price: \$28.00

Please send orders to:  
International Monetary Fund, Publication Services  
700 19th Street, NW  
Washington, DC 20431 USA  
Telephone: (202) 623-9730   Telefax: (202) 623-7201  
Internet: <http://www.imf.org>

I dedicate this book to my parents,  
Jack (deceased) and Josephine Schinasi.

*Here's what the experts are saying about*

## **Safeguarding Financial Stability** Theory and Practice

*By Garry J. Schinasi*

---

*“Safeguarding Financial Stability* explicates why financial stability matters, what it means, and the challenges in securing it. . . . [It is] a thoughtful and thought-provoking volume that is a must read not just for central bankers but for all concerned with financial stability—and if you are not concerned about the latter, you soon will be!”

—Gerard Caprio, Jr., *World Bank*

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“Garry Schinasi provides a unique and comprehensive framework for understanding financial stability and for assessing the risks posed by new financial instruments in increasingly unregulated markets in an increasingly globalized world. The channels of monetary policy management have changed tremendously, as anyone who follows the striking stability of long-term bond yields in the face of rising short-term interest rates will attest. The global business cycle is maturing, entering into a period of high financial risk, as discussed by Dr. Schinasi. Anyone who does not read this book today will regret not doing so, as the next financial shock and test of the stability of the global financial system is not long in coming.”

—Gail D. Fosler, *The Conference Board*

---

“The economic and institutional transformation of central banking that has taken place over the past four decades has been driven mainly by monetary policy issues. However, it has profoundly affected another historical mission of central banks—the preservation of financial stability. Financial stability is gradually emerging as a distinct policy function, requiring its own body of scholarship, not to be confused with monetary policy on the one side, and supervision on the other side, although it is related to both.

“Building an analytical approach and a policy paradigm consistent with this new setting as well as with the changing landscape of financial markets and institutions is one of the tasks of today’s research and policy agenda.

“Garry Schinasi takes us a big step forward in the fulfilment of this task. His book *Safeguarding Financial Stability* represents a brilliant attempt to provide solid and updated foundations to policies aiming at financial stability. The book is based on a thorough acquaintance with the literature, understanding of the real world, analytical skill, sense of the policy issues, familiarity with the diversity of country situations, and good judgement.

“The book can already be considered required reading for anyone interested in the subject of financial stability. Its clarity makes it accessible to practitioners as well as policymakers. At the same time, the book will stir debate and further research in academic circles.”

—Tommaso Padoa-Schioppa, *European Central Bank*

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“... this is a great book. It synthesizes a large literature on financial stability, ... and it fills in a number of crucial holes. ... I think it will be remembered as the first concrete attempt to analyze, define, and move toward operationalizing assessment of financial stability.”

—R. Todd Smith, *University of Alberta*

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## Preface

This book was written because I could not find one like it in bookstores or in central bank libraries. In effect, it fills a gap—albeit imperfectly—in the existing policy, academic, and commercial literatures on financial stability issues.

The motivation for undertaking this project came to me in early 2003, after having spent nearly 10 years engaging in international capital market surveillance—first in the IMF’s Research Department (both as Deputy Chief and Chief of the Capital Market and Financial Studies Division) and then in the newly created International Capital Markets Department (as Chief of the Financial Markets Stability Division). Part of the challenge of the job was to understand the implications of structural changes in finance (including financial institutions, markets, and infrastructures), which required talking to market participants and the relevant authorities (including central banks and supervisory authorities). The job always entailed keeping management and colleagues well informed about capital market developments, prospects, issues, and most important, sources of risks and vulnerabilities.

The time spent searching for potential risks and vulnerabilities (or “pot-holes” as we called them) in the international monetary and financial system, especially in the more mature markets, challenged my colleagues and me to search continuously for new ways of understanding how calm market conditions can lead to turbulence, why changes in market sentiment often occur without much warning, and how the private and official sectors can adapt and learn to prevent and better cope with financial difficulties and crises. By mid-2003 I felt it was time to step back from the events as they were occurring and to reflect more systematically—and with less pressure—on what kind of framework would advance the understanding of financial stability issues, how to communicate the importance of these issues, and how to encourage and energize a greater focus on optimizing the benefits of finance for societies at large.

Before actually reaching the decision to take a one year sabbatical from the IMF, I challenged myself to produce an outline of a study on financial stability issues that I was fairly certain I could write, if given sufficient free

time. Instead, I produced an outline of a book that I wanted to read, but which I was uncertain I was capable of writing. I will leave it to the reader to decide whether the outcome was worth the effort. My only hope in publishing this study is that practitioners—that is, those who safeguard financial stability—will be motivated to think about these issues in a new and more productive way and that the relevant professions will be encouraged to develop useful, policy-oriented frameworks for achieving and maintaining national and international financial stability.

## Acknowledgements

This study was researched and partly written during a one-year sabbatical from the International Monetary Fund (IMF). I gratefully acknowledge the IMF's generous financial support under its Independent Study Leave Program.

I also gratefully acknowledge the support and encouragement of the European Central Bank (ECB) and De Nederlandsche Bank (DNB) while visiting them in 2003 and 2004, and would like to thank especially Tommaso Padoa-Schioppa, Mauro Grande, and John Fell at ECB and Henk Brouwer, Jan Brockmeijer, Aerd Houben, and Jan Kakes at DNB.

Chapters 2, 3, 5, and 6 are based, in part, on material researched and presented in various drafts of several papers (which were later revised and repackaged and issued as IMF Working Papers WP/04/101, WP/04/120, and WP/04/187). These and other related papers benefited from discussions with, and comments from, many colleagues both within and outside the IMF. These include Bill Alexander, Ivan Alves, Michael Bordo, Burkhard Drees, Christine Cumming, Udaibir Das, Phil Davis, Charlie Kramer, Myron Kwast, John Fell, Bob Flood, Andy Haldane, Aerd Houben, Jan Kakes, Russell Kincaid, Donald Mathieson, Leena Mörntinen, Tommaso Padoa-Schioppa, Lars Pedersen, Eric Peree, and James R. White. I also received useful comments during seminars at ECB, DNB, the European Investment Bank, the University of Hong Kong, and from other IMF colleagues during the review process for IMF working papers.

The chapters presented in Part III of this study are based, at least in part, on material that was originally cowritten with IMF colleagues and published in various editions of the IMF's *International Capital Markets—Developments, Prospects and Key Policy Issues* during 1995–2001, and *Global Financial Stability Report* during 2002–2003. I would like to acknowledge the following coauthors for their contributions to this earlier work and the more recent manifestations of it presented in this study: Charlie Kramer (Chapters 9, 10, and 11); Burkhard Drees (Chapter 9); Todd Smith (Chapter 10); Peter Breuer (Chapter 11); and Oksana Khadarina provided essential assistance in preparing the quantitative part of Chapter 8. I am also grateful to my coauthors Aerd Houben and Jan Kakes (of DNB) for allowing me to use

material from our joint IMF Working Paper WP04/101 and DNB Occasional Paper, “Toward a Framework for Safeguarding Financial Stability,” which we jointly researched, brainstormed, and drafted during a four-month period ending in mid-February 2004, and which makes up part of Chapter 6. I am grateful to my coauthor John Fell for allowing me to use material from our joint paper, “Assessing Financial Stability: Exploring the Boundaries of Analysis,” published in a special financial-stability edition of *National Institute Economic Review* (April 2005). I am especially grateful to John Fell for providing a fertile environment at ECB for the early stages of my work and for his persistent encouragement to complete this project. In all other instances in which I use material drawn from the work of colleagues both within and outside the IMF it is acknowledged in footnotes. I am grateful to Oksana Khadarina for untiring efforts in producing and updating the tables and charts and also to Yoon Kim for assisting in a part of this effort. Special thanks to Margo and Tom Vuicich for providing a sunny environment for thinking and writing part of this study.

Thanks are due also to Jeanette Morrison, Anne Logue, and Sherrie Brown for their editorial and publishing expertise. I am particularly grateful to Sean M. Culhane for providing expert professional advice and encouragement during each phase of the editorial and production process.

I owe thanks to Michael Mussa (IMF Economic Counsellor and Director of Research, 1993–2001) and David Folkerts-Landau (Assistant Director of Research until 1998) for providing me with the opportunity to be a part of the IMF’s international capital markets surveillance team in 1994–95.

Finally, I thank Katherine, Jack, and Sarah for their loving support throughout these and many other efforts.

# Abbreviations

ART	alternative risk transfer
CDO	collateralized debt obligation
CDS	credit default swaps
CFTC	Commodity Futures Trading Commission
CLS	Continuous Linked Settlement
ERISA	Employee Retirement Income Security Act
FA	funding arrangements
FSAP	Financial Sector Assessment Program
GDP	gross domestic product
GIC	guaranteed investment contracts
GKO	ruble-denominated discount instrument
HKMA	Hong Kong Monetary Authority
IAIS	International Association of Insurance Supervision
ISDA	International Swaps and Derivatives Association
LIBOR	London Inter-Bank Offer Rate
LTCM	Long-Term Capital Management
NDF	nondeliverable forward (market)
OCC	Office of the Comptroller of the Currency
OFZ	ruble-denominated coupon bonds
OTC	over the counter
SAR	Special Administrative Region (Hong Kong)
SEC	Securities and Exchange Commission
SPV	special purpose vehicle
TARGET	Trans-European Automated Real-Time Gross Settlement Express Transfer System

# 1

## Introduction and Summary

*The objective of this book is to develop and present a framework for safeguarding financial stability. Part I reviews important logical foundations that show how the process of finance is related to real economic processes and why finance can and should be viewed as providing public goods and requiring forms of private-collective and public policy action. Part II proposes and develops a comprehensive and practical framework for safeguarding financial stability encompassing both the prevention and the resolution of financial imbalances, problems, and crises. Part III examines ongoing real world challenges to financial stability posed by recent structural financial changes such as the globalization of finance, the growing reliance on over-the-counter derivative instruments and markets, the growth of credit derivatives markets, and the capital market activities of insurance and reinsurance companies.*

### **This Book and the Financial Stability Questions**

Does financial stability require the soundness of institutions, the stability of markets, the absence of turbulence, and low volatility—or something even more fundamental? Can stability be achieved and maintained through individual private actions and unfettered market forces alone? If not, what is the role of the public sector, as opposed to private-collective action, in fostering financial stability? Should the public sector just make way for the private sector to achieve an optimum on its own, or is a more proactive role necessary for achieving the full private and social benefits of finance? Is there a consensus on how to achieve and maintain financial stability?

The role of the public sector is not likely to be clear and appropriately focused without an understanding of the requirements for financial stability in the first place. Likewise, the requirements for financial stability are not



likely to be well understood without an analytical framework that can rigorously consider the questions above, individually and collectively. Unfortunately, there is no single, widely accepted framework for monitoring, assessing, and safeguarding financial stability; in fact, there is not even a widely accepted definition of financial stability. Perhaps this is the root of the problem, because without a good working definition of financial stability, the quickly growing financial-stability profession will continue to have difficulties developing useful analytical frameworks for examining policy issues, for monitoring and assessing the financial-stability performance of financial systems, and for dealing with financial systemic problems should they arise.

The core objective of this study is to develop a practical framework for safeguarding financial stability. As anyone who has tried to engage in financial-stability analysis knows, there are few if any widely accepted models or analytical frameworks for monitoring and assessing financial-system stability and for examining policy issues, as there are for economic systems and in other disciplines. The practice of financial-stability analysis is still in its infancy when compared with, for example, the analysis of monetary stability or macroeconomic stability. In the rare cases in which financial systems are expressed rigorously, they constitute one or two equations in much larger macroeconomic models possessing most of the usual macro-equilibrium and macro-stability conditions. In addition, there are reasons to doubt strongly that a single measurable target variable can be found for defining and achieving financial stability, as there is believed to be for defining and achieving monetary stability (such as an inflation target), although many doubt that a single target variable approach accurately represents actual practice in monetary policymaking.

Lacking a framework for financial stability, a set of models for analyzing and understanding it, or even a concept of financial-system equilibrium and stability, it is difficult to envision a framework for safeguarding financial stability (including a practical definition) akin to what economists normally demand and use. Nevertheless, it would be useful to have a framework that not only encompasses, but also requires, the continuous development and use of both analytical tools and policy analyses.

This study develops and proposes such a framework. The approach developed here is not a final blueprint, however, and it should be seen as one further step in the evolution of the practice of safeguarding financial stability. In researching and writing about many of the issues the book addresses, the choice often had to be made to be practical and policy relevant rather than scientific and rigorous, in part because assessing financial stability is still more of an art form than a rigorous discipline or science.

Accordingly, there is great scope for more scientific and rigorous efforts, as will be discussed later in the study.

## **The Increasing Importance of Financial Stability Issues**

Since the early 1990s, safeguarding financial stability has become an increasingly dominant objective in economic policymaking. This is illustrated by the periodic financial stability reports launched by more than a dozen central banks and several international financial institutions (including the IMF, the Bank for International Settlements [BIS], and the World Bank), as well as by the more prominent place given to financial stability in the organizational structures and mandates of many of these institutions. The greater emphasis on financial stability is related to several major trends in financial systems during the past few decades. These trends reflect the expansion, liberalization, and subsequent globalization of financial systems—all of which have increased the possibility of larger adverse consequences of financial instability on economic performance (see Chapter 8 of this volume on the potential effects of globalization).

First, financial systems expanded at a significantly higher pace than the real economy. In advanced economies, total financial assets now represent a multiple of annual economic production. Table 1.1 illustrates this expansion over the period 1970–2004 for a heterogeneous group of advanced economies with relatively mature financial systems. For example, while currency remained relatively steady as a percentage of GDP over the period, total assets in financial institutions grew from 110 percent of GDP in 1980 to 377 percent in 2000 in the United Kingdom, from 182 percent in 1980 to 353 percent in 2000 in Germany, and from 111 percent in 1980 to 257 percent in 2000 in the United States. The growth of assets in the equity and bond markets is just as phenomenal. While differences between countries reflect their more market- or bank-oriented financial systems, most aggregates have increased. The broad measures of an economy's total financial assets invariably involve some double counting due to claims between financial institutions, but even these mutual holdings are relevant for financial stability because they represent the links, interactions, and complexities in the financial system.

Second, this process of financial deepening has been accompanied by changes in the composition of the financial system, with a declining share of monetary assets (aggregates), an increasing share of nonmonetary assets, and, by implication, greater leverage of the monetary base. The amount of currency relative to GDP has been broadly stable or decreased in all countries except Japan. In the United States, even the sizes of both M1 and M2 have fallen as financial innovation has progressed. For outlier Japan, the

**Table 1.1. Changes in Key Financial Aggregates**  
(In percent of GDP)

	1970	1980	1990	2000	2004	1970	1980	1990	2000	2004
<b>United States</b>										
1 Currency	6	5	5	6	6	<b>Germany</b>				
2 M1	21	15	14	11	11	1 Currency	5	6	7	7
3 M2	60	57	56	50	53	2 M1	15	17	22	28
4 M3	65	72	72	73	79	3 M2	25	29	39	65
5 Total bank assets <sup>1</sup>	54	54	53	58	53	4 M3	42	48	59	68
						5 Total bank assets <sup>1</sup>	121	160	216	303
6 Total financial institution assets	...	111	171	257	...	6 Total financial institution assets	...	182	259	353
7 Equity	34	25	35	132	114	7 Equity	11	7	17	48
8 Bonds	47	53	108	157	159	8 Bonds	26	37	67	112
6+7+8	...	189	314	546	...	6+7+8	...	226	343	513
<b>United Kingdom</b>										
1 Currency	8	5	3	4	3	<b>Japan</b>				
2 M4	52	50	86	93	110	1 Currency	8	9	10	13
3 Total bank assets <sup>1</sup>	51	47	108	156	262	2 M1	29	29	27	48
						3 M2	74	86	114	127
4 Total financial institution assets	...	110	242	377	...	4 M3	127	136	180	219
5 Equity	41	23	57	167	133	5 Total bank assets <sup>1</sup>	66	77	134	127
6 Bonds	52	31	33	74	70	6 Total financial institution assets	122	157	269	260
4+5+6	...	164	332	618	...	7 Equity	41	25	76	70
						8 Bonds	23	60	78	124
						6+7+8	186	242	423	454

<b>France</b>										
1	Currency	10	5	4	3	6				
2	M1	29	24	25	23	30				
3	M2	44	51	44	44	58				
4	M3	62	69	74	65	78				
5	Total bank assets <sup>1</sup>	...	...	...	...	255				
6	Total financial institution assets	...	...	...	...	...				
7	Equity	6	4	14	84	65				
8	Bonds	14	19	42	55	86				
6+7+8		...	...	...	...	...				
<b>Canada</b>										
1	Currency	4	3	3	3	3				
2	M1	11	9	7	11	13				
3	M2	38	47	56	48	49				
4	M3	46	63	64	65	69				
5	Total bank assets <sup>1</sup>	...	...	...	...	152				
6	Total financial institution assets	...	...	...	...	...				
7	Equity	9	18	26	87	89				
8	Bonds	33	52	68	76	67				
6+7+8		...	...	...	...	...				
<b>Italy</b>										
1	Currency	10								
2	M1	44								
3	M2	76								
4	M3	76								
5	Total bank assets <sup>1</sup>	...								
6	Total financial institution assets	...								
7	Equity	7								
8	Bonds	...								
6+7+8		...								
<b>Netherlands</b>										
1	Currency	8								
2	M1	23								
3	M2	...								
4	M3	53								
5	Total bank assets <sup>1</sup>	71								
6	Total financial institution assets	116								
7	Equity	41								
8	Bonds	11								
6+7+8		168								

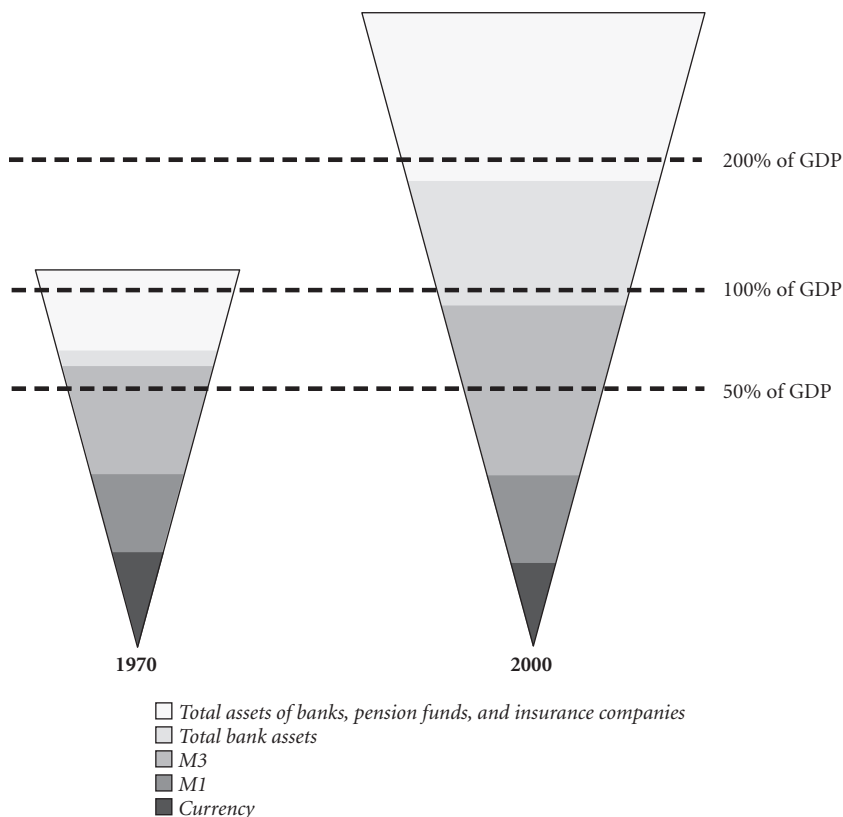
Sources: Thomson Financial, IMF, Bank for International Settlements, Merrill Lynch, Salomon Smith Barney, and various national sources.

Note: Currency is coins and bank notes in circulation; M1, M2, M3, and M4 are national definitions. Total assets of financial institutions consist of total bank assets and (depending on data availability) assets of insurers, pension funds, and mutual funds.

<sup>1</sup>Figure in 2004 column is from 2003.

**Figure 1.1 Composition of Key Financial Aggregates in 1970 and 2000**

(In percent of GDP, average of the United States, Germany, the United Kingdom, Japan, France, Italy, Canada, and the Netherlands)



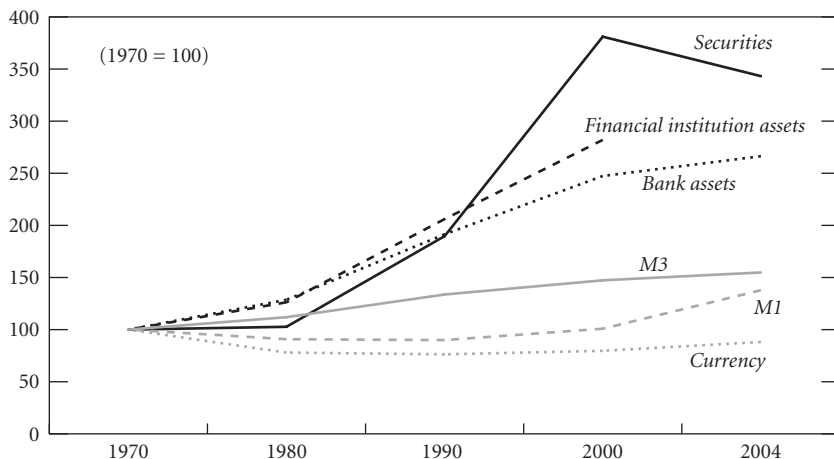
Source: Table 1.1.

increasing importance of narrow money in the 1990s may be attributable to greater incentives to hold money due to the Japanese financial sector's fragile state and enduring deflationary pressures.

The simple average expansion of the financial systems shown in Table 1.1 is illustrated in Figure 1.1, in which total assets of financial institutions are reflected by the triangle's surface. Figure 1.1 shows rather dramatically that between 1970 and 2000 the size of these assets almost tripled relative to GDP. Note also how the average of the financial systems has become more highly leveraged, in the sense that the broader monetary and financial assets represent a much greater share of the triangle in 2000 than in 1970 relative to central bank money (or currency).

**Figure 1.2. Growth of Key Financial Assets, 1970–2004**

(Average for the United States, Germany, the United Kingdom, Japan, France, Italy, Canada, and the Netherlands)



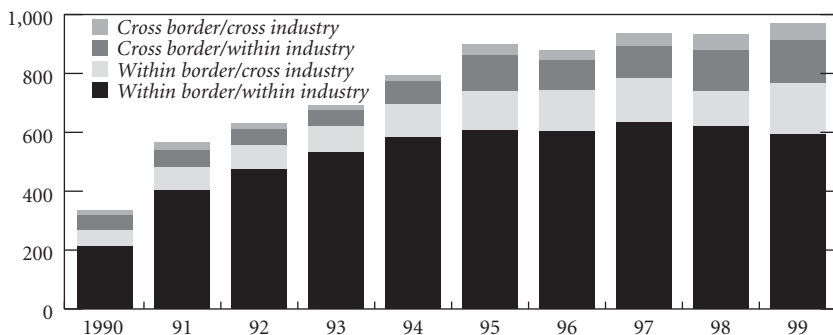
Source: Table 1.1.

Figure 1.2 shows the change in composition of the financial system over the past decades by expressing key financial aggregates as a percentage of their value in 1970 (all deflated by GDP). Clearly, the relative importance of monetary aggregates has decreased, while nonmonetary components have increased rapidly.

Third, as a result of increasing cross-industry and cross-border integration, financial systems are more integrated, both nationally and internationally. Financial institutions now encompass a broader range of activities than that of a traditional bank, which takes deposits and extends loans. This is reflected in the rise in financial conglomerates, which provide a vast array of banking, underwriting, brokering, asset-management, and insurance products and services.<sup>1</sup> In the 1990s, the number of mergers and acquisitions within the financial sector soared (Figure 1.3). Some of these transactions involved different industries or countries, especially in Europe where roughly half the deals in this period were either cross-border, cross-industry, or both (Table 1.2). In addition, cooperation between financial institutions intensified through joint ventures and strategic alliances. The greater international orientation of financial systems is also reflected in the

<sup>1</sup>See the various issues of the IMF's *International Capital Markets* report and Group of Ten (2001).

**Figure 1.3. Financial Sector Mergers and Acquisitions, 1990–1999**  
*(Number of mergers and acquisitions in Group of Ten countries)*



Source: Group of Ten, 2001.

increasing size of cross-border transactions in bonds and equity relative to GDP (see Table 1.3). On this score, the amount of outstanding international debt securities surged over the past decades (Table 1.4).

Fourth, the financial system has become more complex in terms of the intricacy of financial instruments, the diversity of activities, and the concomitant mobility of risks. Deregulation and liberalization created scope for financial innovation and enhanced the mobility of risks. In general, this greater complexity, especially the increase in risk transfers (see Chapter 10), has made it more difficult for market participants, supervisors, and policymakers alike to track the development of risks within the system and over time. To illustrate the higher mobility of risks, Table 1.5 presents the worldwide development of several types of derivatives since the mid-1980s. In nominal terms, total notional amounts outstanding have increased more than 40 times, while the number of derivative contracts has increased fivefold. (Chapter 9 provides a description of the potential risks to financial stability introduced by the widespread and more active use of over-the-counter derivatives.)

These trends and developments reflect important advances in finance that have contributed substantially to economic efficiency, both nationally and internationally. They evidently also have had implications for the nature of financial risks and vulnerabilities and the potential impact of risks and vulnerabilities on real economies, as well as implications for the role of policymakers in promoting financial stability. Consider financial system and market developments in the 1990s and early 2000s—a period during which global inflation pressures subsided and in many countries were eliminated. During this period, reflecting in part the above-mentioned trends, national financial systems around the world either experienced, or were

**Table 1.2. Distribution of Financial Sector Mergers and Acquisitions, 1991–1999**  
(In percent)

	North America	Europe	Japan and Australia
Within border/within industry	80	53	64
Within border/cross industry	12	19	16
Cross border/within industry	6	21	14
Cross border/cross industry	2	8	5
Total	100	100	100

Source: Group of Ten, 2001.

exposed to, repeated episodes of unpleasant financial-market dynamics including asset-price volatility and misalignments; volatile if not unsustainable financial and capital flows; extreme market turbulence, at times leading to concerns about potential systemic consequences; and a succession of costly country crises in 1994–95, 1997, 1998, 1999, and in the early 2000s (Table 1.6). The experiences of, and fallout from, these financial stresses and strains occurred within both advanced countries with highly sophisticated financial markets and developing countries with financial systems of varying degrees of immaturity and dysfunction.

As these developments were occurring, economic and financial policymakers became increasingly concerned that global financial stability was becoming more difficult to safeguard.

## The Need for an Analytical Framework

While dealing with the urgencies of financial-market and country crises in the 1990s, those situated at the front lines of financial-system policy-making—including at the major central banks and supervisory authorities, and at the IMF—searched widely and intensively for ways to advance their understanding of the ongoing problems and to reform national and international “financial architectures” to prevent and better cope with the potential for financial distress and crises. Some lessons were learned and efforts made to reform the rules of the game of international finance, many of which are documented in case studies and review articles.<sup>2</sup> Monitoring efforts were stepped up considerably, both nationally and internationally. Most notable are the IMF’s efforts to strengthen its ongoing surveillance

<sup>2</sup>Much of this material can be found on the Web sites of the Bank for International Settlements, the Financial Stability Forum, the IMF, and the World Bank. Also see the Web site of the RGEMonitor at <http://www.stern.nyu.edu/globalmacro/>.



**Table 1.3. Cross-Border Transactions in Bonds and Equities**  
(In percent of GDP)

	1975-79	1980-84	1985-89	1990-94	1995-99	2000-2003	2001	2002	2003
United States									
Bonds	4.0	9.4	63.6	93.9	139.0	188.0	161.4	208.4	262.1
Equities	1.9	3.6	9.9	14.7	45.0	90.8	87.4	85.0	82.1
Japan									
Bonds	2.2	9.8	115.3	72.9	63.7	70.2	73.7	73.8	77.8
Equities	1.1	4.4	14.9	9.6	17.2	36.5	36.7	33.1	35.3
Germany									
Bonds	5.3	9.7	37.8	86.5	208.7	350.5	378.7	351.1	394.0
Equities	1.9	3.4	11.7	14.9	48.6	132.6	133.6	115.6	112.2
France									
Bonds	...	6.8	21.9	108.6	233.5	293.9	288.1	299.3	362.0
Equities	...	2.4	12.1	16.9	56.1	150.7	140.2	138.1	154.0
Canada									
Bonds	1.2	3.9	29.3	104.5	216.6	149.5	135.6	157.0	175.8
Equities	3.3	6.5	14.8	19.2	52.3	122.8	101.9	151.5	132.1
Italy <sup>1</sup>	0.9	1.4	9.4	114.7	518.8	1,126.5	821.9	1,197.0	1,705.2

Sources: Bank for International Settlements; and national balance of payments data.

Note: Gross purchases and sales of securities between residents and nonresidents.

<sup>1</sup>No breakdown between bonds and equities is available.

**Table 1.4. Outstanding International Debt Securities by Nationality of Issuer**  
(In percent of GDP)

	1970	1980	1990	2000	2003	2004
United States	0.1	0.7	3.1	17.8	27.9	28.6
Japan <sup>1</sup>	0.0	1.5	10.5	6.0	6.3	6.4
Germany <sup>2</sup>	0.1	0.4	4.5	47.9	80.5	86.4
France <sup>1</sup>	0.1	2.1	7.8	24.0	42.2	45.9
Italy	0.1	0.5	4.6	19.4	35.8	40.6
United Kingdom <sup>1</sup>	0.2	2.3	14.9	40.8	63.0	68.0
Canada	0.2	13.4	18.6	27.9	31.0	29.9
Netherlands	0.6	2.4	13.0	79.4	112.6	118.6
Sweden <sup>1</sup>	0.3	7.5	20.1	44.5	52.4	52.4
Switzerland <sup>2</sup>	0.5	1.7	4.5	41.2	49.0	72.9
Belgium	0.4	2.1	15.0	57.3	82.5	85.9

Sources: Bank for International Settlements; and IMF, *World Economic Outlook* database.

<sup>1</sup>Figure in 1970 column is from 1971.

<sup>2</sup>Figure in 1970 column is from 1972.

over member countries' macroeconomic policies, to assess national financial systems' compliance with international financial standards and codes (under the new and voluntary Financial Sector Assessment Program implemented jointly with the World Bank), and to enhance its multilateral surveillance of the global economy and financial system. Moreover, there is also now a general sense that policy responses in the future are likely to require coordination between a greater number of authorities from a greater number of countries.

As a result of these experiences and lessons, safeguarding financial stability is widely recognized as important to maintaining macroeconomic and monetary stability, and to achieving sustainable growth. Many advanced-country central banks (including under the auspices of the Bank for International Settlements), as well as the IMF, devote considerable resources to monitoring and assessing financial stability and to publishing financial-stability reports. A casual reading of these publications would suggest that financial-stability practitioners share some common understandings:

- Finance is fundamentally different from other economic functions such as exchange, production, and resource allocation.
- Finance contributes importantly to other economic functions and facilitates economic development, growth, efficiency, and ultimately social prosperity.
- Financial stability is an important social objective—a public good—even if it is not widely seen as being on par with monetary stability.
- Monetary and financial stability are closely related, if not inextricably intertwined, even though there is no consensus on why this is so.

Table 1.5. Exchange-Traded Derivative Financial Instruments: Notional Principal Amounts Outstanding and Annual Turnover

	1986	1990	1995	2000	2001	2002	2003	2004
<b>Notional principal amounts outstanding</b>								
Interest rate futures	370.0	1,454.8	5,876.2	7,907.8	9,269.5	9,955.6	13,123.8	18,191.5
Interest rate options	144.0	595.4	2,741.8	4,734.2	12,492.8	11,759.5	20,793.8	24,605.0
Currency futures	10.2	17.0	33.8	74.4	65.6	47.0	80.1	104.5
Currency options	39.2	56.5	120.4	21.4	27.4	27.4	37.9	60.8
Stock market index futures	13.5	69.1	172.2	371.5	333.9	325.5	501.9	634.9
Stock market index options	37.8	93.6	337.7	1,148.3	1,574.9	1,700.8	2,202.3	3,024.8
<b>Total</b>	614.8	2,286.4	9,282.1	14,257.7	23,764.1	23,815.7	36,739.8	46,621.5
North America	514.6	1,264.4	4,852.3	8,167.9	16,203.2	13,693.8	19,504.0	27,612.3
Europe	13.1	461.4	2,241.3	4,197.4	6,141.3	8,800.4	15,406.1	16,307.9
Asia and Pacific	87.0	560.5	1,990.2	1,606.2	1,308.5	1,192.4	1,613.2	2,452.4
Other	0.1	0.1	198.3	286.2	111.1	129.1	216.5	248.9
<b>Annual turnover</b>								
Interest rate futures	91.0	219.1	561.0	781.2	1,057.5	1,152.0	1,576.8	1,902.6
Interest rate options	22.2	52.0	225.5	107.6	199.6	240.3	302.2	361.0
Currency futures	19.9	29.7	99.6	43.6	49.1	42.7	58.7	83.8
Currency options	13.0	18.9	23.3	7.1	10.5	16.1	14.3	13.1
Stock market index futures	28.4	39.4	114.8	225.2	337.1	530.2	725.7	804.3
Stock market index options	140.4	119.1	187.3	481.4	1,148.2	2,235.4	3,233.9	2,980.1
<b>Total</b>	314.9	478.2	1,211.6	1,646.1	2,802.0	4,216.8	5,911.7	6,144.6
North America	288.7	312.3	455.0	461.3	675.7	912.2	1,279.7	1,633.6
Europe	10.3	83.0	354.7	718.5	957.8	1,074.8	1,346.4	1,412.6
Asia and Pacific	14.3	79.1	126.4	331.3	985.1	2,073.1	3,111.5	2,847.5
Other	1.6	3.8	275.5	135.0	183.4	156.7	174.1	250.9

Source: Bank for International Settlements.

**Table 1.6. Market Turbulence and Crises in the 1990s and Early 2000s**

1992	Exchange rate crises involving Italy and the United Kingdom
1994	Bond market turbulence in Group of Ten countries
1994–95	Mexican ( <i>tesobono</i> ) crisis Failure of Barings
1996	Bond market turbulence in United States
1997	U.S. equity market correction
1997–98	Asian crises (Thailand, Indonesia, Republic of Korea)
1998	Russian default Long-Term Capital Management crisis and market turbulence
1999	Argentina and Turkey crises
2000	Global bursting of equity price bubble
2001	Corporate governance problems—Enron, WorldCom, Marchoni, Global Crossing, and so forth September 11 terrorist attacks
2001–2002	Argentina crisis and default Parmalat

The academic literature also continues to grow, much of it covering specific financial-stability topics in considerable depth and some of it providing rigorous anchors for debating substantive and policy issues. For example, the extensive literature on banking covers the special role and fragility of banks in finance; the costs and benefits of deposit insurance; and the causes, consequences, and remedies for bank failures. Moreover, recent empirical studies have highlighted the rising incidence of banking crises,<sup>3</sup> as well as their considerable costs.<sup>4</sup> At the same time, central bank concerns with financial stability are as old as central banks themselves, given their ultimate responsibility for confidence in the national currency.<sup>5</sup> For example, the principal reason for the founding of the U.S. Federal Reserve System in 1913 was to assure stable and smoothly functioning financial and payments systems.<sup>6</sup> The literature on market sources of financial fragility and systemic risk more generally also continues to grow.<sup>7</sup>

<sup>3</sup>Bordo and others, 2001.

<sup>4</sup>Lindgren, Garcia, and Saal, 1996; Caprio and others, 1997, 2000, and 2003; Hoggarth and Saporta, 2001.

<sup>5</sup>Padoa-Schioppa, 2003; Schinasi, 2003.

<sup>6</sup>Volcker, 1984.

<sup>7</sup>For examples see Acharya, 2001; Allen and Gale, 2004; Allen, 2005; and Bernardo and Welch, 2004.

Despite this practical and intellectual progress in financial-stability analysis in recent years, it is still in a formative stage when compared with macroeconomic and monetary analysis. The various literatures taken together do not yet provide cohesive and practical toolkits useful for thinking about and *analyzing systemic financial-stability issues* and controversies, for *monitoring* and *assessing* financial stability in real time, for *preventing* problems from becoming potentially systemic, for *resolving* them when they do occur, and for *designing policies* more broadly to optimize the net social benefits of finance. Even the now ubiquitous phrase “financial stability” has no widely understood and accepted definition.

In short, the discipline lacks a generally accepted and useful “framework.” To use a nautical metaphor—and to exaggerate somewhat—the profession is sailing on the high and at times turbulent seas with neither a well-conceived and time-tested map nor a reliable compass. The fact that many advanced-country financial markets and the international financial system remained resilient and that financial resilience (if not stability) has been reasonably well maintained in the early 2000s—especially in the mature markets—may have as much to do with good luck as with successful preventive policy design and market surveillance.<sup>8</sup>

That this is so is no fault of the relevant professions. It is an occupational hazard that financial crises are difficult to foresee, even when they are closely upon us. The financial world has changed rapidly, the problems requiring solutions are complicated, and stresses and strains arise within a poorly understood set of dynamic financial markets and institutions. In short, the challenges have been and still are daunting, even with important progress in understanding specific financial-stability issues.

Although the movement toward greater attention for financial-stability issues is clear, the point of focus of this attention is not. Consensus has yet to be reached on how to define the concept of financial stability, how to assess developments under this objective, and what role public policy should play.

Nevertheless, the practice of assessing and safeguarding financial stability is ongoing.

## Specific Objectives of This Study

In this light, this study proposes a basic framework for financial-stability analysis and policy. At its core, the study develops both a working defini-

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<sup>8</sup>Stock and Watson (2003) provide arguments and evidence for this view for macroeconomic policymaking during the fight in the 1990s against inflation. It seems to apply equally to financial-system policymaking.

tion of financial stability and a broad practical framework for monitoring, assessing, and maintaining it. Although most financial systems are still analyzed at the national level, the scope of this framework can be easily extended to international financial-stability issues.

One possible reason for the lack of a widely accepted definition of financial stability and a framework is that there is no widely accepted or articulated logical foundation for why private finance should be the purview of collective action, including public policy action and involvement. Modern finance is often portrayed to nonspecialists as a purely private activity having little to do with, or need for, private-collective or government involvement. Likewise, the benefits of finance are seen primarily, if not exclusively, as conveying to private counterparts engaged in specific financial activities and markets.

While there is some truth in the characterization of finance as primarily a private affair, it would be an illusion to evaluate the effectiveness of private finance and its enormous real economic benefits either entirely as private or exclusively as the result of individual private actions and unrestrained market forces. Regardless of what is thought about the necessity and efficacy of collective action and public policies, obtaining the full extent of the private net benefits of modern finance requires, at a minimum, the existence and effectiveness of many private-collective, publicly sanctioned, publicly mandated, and taxpayer-financed conventions, arrangements, and institutions.

Although finance would no doubt exist and bestow private and collective benefits without the particular social arrangements that have actually emerged and evolved, there would most likely be significantly fewer such benefits. Moreover, finance would most likely be significantly less efficient and supportive of economic activity, wealth accumulation, growth, and ultimately social prosperity. Is this not the case in many (if not most) developing countries in which financial systems have yet to reach a critical point of effectiveness and efficiency?

In short, the enormous and pervasive private benefits of modern finance and financial systems result from the existence of an effective financial system that has long been understood and supported as a public good. This is not meant to imply that all public policy involvement in private finance is appropriate, beneficial, or acceptable. Nor should this be taken to mean that all citizens benefit equally or have equal access to these private and social benefits. But the social benefits are there for the taking, especially in the more democratic societies with liberalized economies.

Although there now seems to be a consensus that many of the social conventions and arrangements that have developed over time are essential prerequisites for effective finance, this reflects a relatively new and modern

understanding of the role of finance. Less than 75 years ago, society's mismanagement of both money and finance played an important and devastating role in the Great Depression. More recently, some of these lessons are being learned again, in both mature markets and in an increasing number of emerging- and less-developed-market countries. For example, in the aftermath of recent corporate scandals in some mature markets in the early 2000s, improvements are being advocated and implemented—with accounting standards and their enforcement and the efficacy of existing corporate governance procedures and accountability, for instance. Likewise, as the result of recent financial crises in emerging-market countries, many of these social arrangements are being aggressively advocated for adoption in both less advanced and least developed economies and financial systems.

The obvious private and social benefits of finance as well as the sometimes disturbing events of the current era and their relationship to financial stability can be understood either to be the result of, or as at least reflecting, important strengths and weaknesses of finance. As discussed in Chapter 3, finance inherently embodies uncertainty and is associated with several other market imperfections:

- Some financial services provide positive externalities while others provide negative externalities.
- Some financial services are public goods.
- There are information failures in the provision of financial services.
- Financial contracts and markets are incomplete.
- Competition is not always perfectly balanced.

The practical import is that some market imperfections in finance can lead to the underconsumption and underproduction of some socially desirable financial activities, and the overconsumption and overproduction of some socially undesirable ones. In addition, these market imperfections can, at times, lead to the creation and accumulation of both economic and financial imbalances, which if not corrected could threaten financial stability.

As in other economic policy areas, it would seem reasonable to think that private-collective and public actions could be designed and implemented to address each source of market imperfection in finance, depending on how significant the efficiency losses associated with each might be. For example, for cases in which the presence of a market imperfection inhibits consumption and production of desirable financial activities, the challenge would be to provide incentives to supply and consume more of the activities that provide public benefits and positive externalities, that tend to open up new markets, and that increase competition unless there

are natural monopolies. For cases in which a market imperfection encourages consumption and production of undesirable goods, the challenge would be to minimize the production and consumption of financial activities that result from these market failures. In considering this approach, the effectiveness of policies could be improved if they were designed and implemented in a cohesive fashion so that a policy designed to eliminate the negative impact of one kind of market imperfection does not offset the benefits of a policy designed to deal with another.

Because tendencies to underproduce and overproduce financial activities exist simultaneously, financial-system policies would be more effective if they strove to strike a socially optimal balance between *maximizing* the net social benefits of the positive externalities and public goods and *minimizing* the net social costs of the other market imperfections in finance. To what extent such policy cohesiveness and coordination is actually achieved in practice by countries or across borders is not clear. Striving to achieve the social optimum will undoubtedly entail difficult choices, including trading off some of the individual private benefits for the greater good, if and when this can be justified.

The public policy discussion in Part I deals first with the efficiency loss associated with market imperfections. However, each and every loss of efficiency does not require intervention. The desirability or necessity of some form of collective intervention is much clearer when a market imperfection in finance leads to an inefficiency that poses a significant threat to financial stability, because of the impact on either financial institutions or markets or both. Unfortunately, the financial-system policy literature rarely makes a clear distinction between sources of market imperfections that threaten stability and those that do not. Likewise, no framework exists now either for measuring the efficiency losses associated with market imperfections in finance or for assessing the risks to financial stability associated with market imperfections. These are some of the challenges in the period ahead, for which an analytical framework for financial stability would be useful for policy purposes. But this, too, is an enormous challenge.

In sum, while finance provides tremendous private and social benefits, important aspects of finance are associated with market imperfections and inherently hold the potential (although not necessarily a high likelihood) for fragility, instability, systemic risk, and adverse economic consequences. When private incentives and actions alone do not lead to an efficient pricing and allocation of capital and financial risks, it is possible that some combination of private-collective action and public policy could provide incentives to encourage the private sector to obtain a more efficient and desirable outcome.



Whether something can or should be done about this is the subject of active debate, but practically depends on the social net benefits of taking action. If the private and social benefits of taking action and providing incentives outweigh the private and social costs, they are worthy of consideration. A rule to consider, although difficult to implement, is that only policies that provide clear and measurable net benefits should be implemented.

This calculus most often involved both spatial and intertemporal trade-offs. While immediate benefits might be associated with specific private-collective or public sector policies, there may be greater future costs associated with private market reactions and adjustments to the policies. Examples include the costs of moral hazard and regulatory arbitrage.

Ultimately, it is a social and political decision whether private-collective and public sector involvement and intervention are appropriate. These cost-benefit, intertemporal, and social and political considerations are key reasons that financial-system policies are so difficult to devise and implement successfully.

In sum, this book addresses these and other closely related issues of immediate relevance to global finance. The study is divided into three somewhat separable parts:

- Part I presents foundations for thinking about financial-stability issues.
- Part II develops a working definition of financial stability and a broad framework for monitoring, assessing, and ensuring it.
- Part III examines ongoing challenges to financial stability posed by relatively recent structural financial changes, drawing on parts of the framework presented.

## **Organization of the Book**

The remainder of this chapter lays out the organization of the study in somewhat more detail and summarizes some of its main findings.

The chapters in Part I provide a logical foundation for thinking about financial-stability issues. Chapter 2 lays out the essence of modern finance—the temporary transfer of the liquidity and payment services of money (legal tender and its very close substitutes) in return for a promise to return a greater amount of money to its original owner. The element of human trust in financial relationships and contracts is the source of both finance’s strengths (efficiency gains) and weaknesses (fragility). In principle, both these strengths and weaknesses can be defined and measured in

terms of the manner in which finance does or does not enhance the efficiency and effectiveness of other real economic processes, particularly intertemporal economic processes such as production, wealth accumulation, economic development and growth, and ultimately social prosperity. In reality, precise measurement is extremely difficult if not impossible.

After developing and examining this simple logic—drawn from disparate literatures—Chapter 3 applies some of the concepts from the economics of the public sector to finance. The chapter identifies sources of market imperfections in finance, justifies a role for both private-collective and public policy involvement, and argues that both fiat money and finance have the potential to convey significant positive externalities and the characteristics of a public good.

Chapter 4 briefly clarifies what is meant by efficiency and stability from an economic perspective. The implicit and practical import of this distinction is that not all market imperfections in finance may necessitate a private-collective or public policy response; whether intervention is desirable or necessary depends on the size and importance of the imperfection with regard to its impact on efficiency. While difficult to measure in practice, in principle the deviation from the efficient outcome should be part of the decision to intervene. The chapter distinguishes between volatility, fragility, and instability by drawing on the experience in the 1990s and early 2000s with market turbulence and country crises.

Part II then develops a broad policy-oriented framework for assessing and safeguarding financial stability and for resolving problems when they arise. The framework can be applied in a wide variety of existing ways of managing financial system policies in various countries. Chapter 5 develops a working definition of financial stability in terms of economic processes—in principle, measurable ones—and identifies several practical implications of the definition for financial-stability work. Based on this definition, Chapter 6 proposes a generic framework for financial-stability monitoring, assessment, and policy. The framework proposed is generic in three senses: it encompasses all the important aspects of financial systems (institutions, markets, and infrastructure); its implementation entails monitoring, analytical assessments, and policy adjustments when necessary; and it remains at a general level that allows it to be an umbrella framework for most existing frameworks. This chapter also identifies remaining analytical and measurement challenges. Chapter 7 discusses the role of central banks in ensuring financial stability, which in many countries might be a natural or special role.

Part III identifies and analyzes ongoing challenges to financial efficiency and stability posed by relatively recent structural changes in national and

global finance. Each of these structural changes is no doubt improving financial and, it is hoped, economic efficiency, but may also be posing new risks or redistributing existing risks in ways that are poorly understood. The chapters in this part of the study are sequenced so that they progress from the general and broad in scope, to the more specific. Chapter 8 examines the stability implications of the globalization of finance and financial risk for both national financial systems and the international financial system. Chapter 9 examines the potential for instability in national and global financial markets related to the growing reliance on over-the-counter derivatives instruments and markets. Chapter 10 examines the implications for financial stability of the increased reliance on efficiency-enhancing risk transfer mechanisms, and focuses in particular on credit derivatives. Chapter 11 examines the supervisory, regulatory, and perhaps systemic challenges raised by the now greater role of insurance companies (and implicitly of other institutional investors) in financial and capital market activities.

Chapter 12 collects the main challenges to financial stability that are discussed in the book and that are likely to be faced in the future. Each of the areas identified in Part III taken separately, and certainly all of them taken together, lead to the strong conclusion that further and continuous reforms are desirable and should be aimed at striking a better balance between relying on market discipline and relying on official or private-collective action. In some countries—most of them advanced countries with mature markets—a rebalancing toward relying more on market discipline is desirable. In other countries—many of them with poorly developed markets—strong efforts need to be made to improve the financial infrastructure through private-collective and government expenditures and commitments and to target the role of government to enhance the effectiveness and efficiency of market mechanisms for finance. Specific areas where reforms are most needed include

- a realignment of private market incentives, including within firms—to improve internal governance at the board level, to improve management and risk controls, and to improve the alignment of incentives at the board, management, and staff levels;
- a reevaluation of regulatory incentives and their consistency with private market incentives—to reduce moral hazard;
- enhancements to disclosure by a wide range of financial and even nonfinancial entities—to improve the potential for effective market discipline and to improve private-collective and official monitoring and supervision;

- improvements to market transparency—to reduce asymmetries in markets and the tendency toward adverse selection;
- an enhancement to legal certainty where it is still ambiguous, such as with close-out procedures for swaps, credit derivatives, and other complex structured financial instruments;
- the development and implementation of comprehensive and appropriately targeted frameworks for monitoring, assessing, and safeguarding financial stability to better ensure financial stability and restore it when this fails;
- an increase in international cooperation and coordination in financial-system regulation, surveillance, and supervision—to eliminate international gaps in information and analysis and to reduce, if not eliminate, opportunities for regulatory arbitrage.