

Mohan, Rakesh

Working Paper

Emerging contours of financial regulation: Challenges and dynamics

ADB Working Paper, No. 271

Provided in Cooperation with:

Asian Development Bank Institute (ADBI), Tokyo

Suggested Citation: Mohan, Rakesh (2011) : Emerging contours of financial regulation: Challenges and dynamics, ADB Working Paper, No. 271, Asian Development Bank Institute (ADBI), Tokyo

This Version is available at:

<https://hdl.handle.net/10419/53736>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



ADB Working Paper Series

Emerging Contours of Financial Regulation: Challenges and Dynamics

Rakesh Mohan

No. 271
March 2011

Asian Development Bank Institute

Rakesh Mohan is a nonresident senior research fellow at the Stanford Center for International Development, Stanford University. The author gratefully acknowledges the assistance of Anand Sinha, Prashant Saran, P. R. Ravi Mohan, T. Gopinath, and Muneesh Kapur in the preparation of this paper. The paper has also benefited from the Group of Twenty Working Group 1 report on Enhancing Sound Regulation and Strengthening Transparency. This paper is based on a presentation given at a conference on Financial Sector Regulation and Reform in Emerging Markets, organized by ADBI, Brookings Institution, Cornell University, and the Institute for Financial Management and Research Trust, Chennai, India, held on 22–23 October 2009 in Washington, DC.

The views expressed in this paper are the views of the authors and do not necessarily reflect the views or policies of ADBI, the Asian Development Bank (ADB), its Board of Directors, or the governments they represent. ADBI does not guarantee the accuracy of the data included in this paper and accepts no responsibility for any consequences of their use. Terminology used may not necessarily be consistent with ADB official terms.

The Working Paper series is a continuation of the formerly named Discussion Paper series; the numbering of the papers continued without interruption or change. ADBI's working papers reflect initial ideas on a topic and are posted online for discussion. ADBI encourages readers to post their comments on the main page for each working paper (given in the citation below). Some working papers may develop into other forms of publication.

Suggested citation:

Mohan, R. 2011. Emerging Contours of Financial Regulation: Challenges and Dynamics. ADBI Working Paper 271. Tokyo: Asian Development Bank Institute. Available: <http://www.adbi.org/working-paper/2011/03/25/4495.emerging.contours.financial.regulation/>

Please contact the author(s) for information about this paper.

Asian Development Bank Institute
Kasumigaseki Building 8F
3-2-5 Kasumigaseki, Chiyoda-ku
Tokyo 100-6008, Japan

Tel: +81-3-3593-5500
Fax: +81-3-3593-5571
URL: www.adbi.org
E-mail: info@adbi.org

© 2011 Asian Development Bank Institute

Abstract

In 2008–09 the world experienced the most severe financial and economic crisis since the Great Depression. The global financial crisis is attributed to a variety of factors, such as developments in the subprime mortgage sector, excessive leverage, lax financial regulation and supervision, and global macroeconomic imbalances. At a fundamental level, however, the crisis also reflects the effects of a long period of excessively loose monetary policy in the major advanced economies during the early part of this past decade. The global financial crisis has led to a new wave of thinking on all issues related to both monetary policy and financial regulation. The practice of both monetary policy and financial regulation had tended to become too formula bound and hence predictable. While these new principles are being debated, it is important to realize that in the face of unexpected developments that always arise in the financial sector, there is an important role for the exercise of judgment by both monetary authorities and financial regulators. Whereas considerable progress has been achieved on the principles governing this regulatory overhaul, very significant challenges remain on the implementation issues that will arise as a new regime takes hold globally.

JEL Classification: G01, G18

Contents

1. Introduction	1
2. Evolution of the Crisis: What Went Wrong?	2
2.1 Accommodative Monetary Policy	2
2.2 Search for Yields.....	3
3. Shortcomings in Financial Regulation and Supervision	5
3.1 Recurring Financial Crises: Buildup of Excessive Leverage.....	6
3.2 Growth in Securitized Credit and Derivatives	7
4. Reforming the Regulatory Framework: The Future Perspective	9
4.1 Financial Innovation	9
4.2 Perimeter of Financial Regulation	10
5. The Challenges Ahead.....	18
5.1 Regulatory Structure and Authority	18
5.2 Impact of Proposed Regulatory Changes.....	20
5.3 Implementing Countercyclical Capital Requirements	21
5.4 Identifying and Addressing Systemic Risks.....	21
5.5 Defining What Is Systemically Important	21
5.6 Handling Securitized Credit.....	21
5.7 International Regulatory Cooperation Regulating Large, Complex Global Firms	22
5.8 Capital Account Management	22
5.9 Exiting Accommodative Monetary Policy.....	23
6. Conclusion	23
References	24

1. INTRODUCTION

In 2008–09 the world experienced the most severe financial and economic crisis since the Great Depression. Although the crisis originated in the subprime mortgage market in the United States (US), it then spread to Europe and later to the rest of the world. The speed of the contagion that spread across the world was perhaps unprecedented. What started off as a relatively limited crisis in the US housing mortgage sector turned successively into a widespread banking crisis in the US and Europe, the breakdown of both domestic and international financial markets, and then later into a full-blown global economic crisis. Interestingly, however, although the emerging market economies in Asia and Latin America also suffered severe economic impacts from the crisis, their financial sectors exhibited relative stability. No important financial institutions in these economies were affected in any significant fashion. So it really should be dubbed as the North Atlantic financial crisis rather than as a global financial crisis.

The severity of the crisis can be gauged from a number of metrics. From an average annual growth rate of 4.1% between 2001 and 2008, world GDP growth fell to -0.8% in 2009 and is projected by the International Monetary Fund (IMF) to recover to 3.9% in 2010.¹ That the world was taken by surprise by the developments in 2008 and 2009 is shown by the fact that as late as July 2008, the IMF expected world gross domestic product (GDP) to grow by 3.9% in 2009.² The reversal in expectations was so sudden that exactly a year later the forecast had been reversed to -1.4% for 2009.³ Similarly, the growth forecast for 2010 was as low as 1.9% in April 2009; the speed of the recovery now taking place in 2010 was also unexpected.⁴

Optimism regarding the world economy had continued until mid-2008. In fact, global market capitalization fell by 53% between the end of October 2007 and the end of March 2009, and losses on US-originated credit assets were estimated by the IMF in April 2009 to amount to \$2.7 trillion. As economies have contracted, unemployment has increased to levels in excess of 10% in North America and Europe, and there is as yet little sign of recovery in employment. The decline in property prices has led to a severe reduction in household wealth. Global credit write-downs were estimated by the IMF at \$2.8 trillion in the October 2009 Global Financial Stability Report.⁵ Of these only about \$500 billion were outside the North Atlantic advanced economies.

Almost all governments and central banks of the world were busy during 2008 and 2009 in an effort to contain the effects of the crisis through both fiscal and monetary policy measures, respectively. The fiscal effort, which has been largely successful at containing the economic effects of the crisis, has been massive. Fiscal expansion of the Group of Twenty (G20) countries, relative to their 2007 levels, is approximately 6% of their GDP in both 2009 and 2010; US fiscal expansion is much higher, at just under 10% of its GDP. In containing the emerging North Atlantic financial crash in 2008–09, the total support given to the financial sector in advanced economies was approximately \$7 trillion, including capital injections into financial institutions by governments, purchase of assets by treasuries, central bank liquidity injections, and other upfront government financing. Some of these

¹ IMF (2010b).

² IMF (2008).

³ IMF (2009a).

⁴ IMF (2010b).

⁵ IMF (2009b).

expenditures will, of course, be recovered.⁶ So the cost of this crisis has been massive for the global economy, and its fiscal effects will be felt for some time to come. Just as the global nature of the crisis has been unprecedented, so has been the global nature of the response, as exemplified by the G20's commitment to coordinated action.

Along with the coordinated fiscal and monetary policy actions, a comprehensive reexamination of the financial regulatory and supervisory framework is also underway around the world. Consequent to all the rapid and exceptional policy actions taken around the world, some degree of normalcy has returned to global financial markets in 2009–10. Given the very heavy, worldwide costs of the recent financial crisis, it is essential that governments and regulatory authorities do not succumb to the natural temptations of complacency that such a return to normalcy could entail.

Against this backdrop, this paper attempts to analyze the emerging contours of regulation of financial institutions, with an emphasis on the emerging challenges and dynamics. Chapter 2 provides a broad overview of the global developments that contributed to the current global financial crisis. Chapter 3 presents the ongoing discussion and debate at the international level regarding the shortcomings of the extant regulatory framework. This is followed by an analysis of proposals for reforming the regulatory framework in Chapter 4, and the paper concludes with a discussion of the potential difficulties in implementing the regulatory proposals.

2. EVOLUTION OF THE CRISIS: WHAT WENT WRONG?

What are some of the identifiable sources of market failures that led to the current financial turbulence? The recent financial crisis is attributed to a variety of factors, such as developments in the subprime mortgage sector, excessive leverage, lax financial regulation and supervision, and global macroeconomic imbalances.⁷ At a fundamental level, however, the crisis also reflects the effects of a long period of excessively loose monetary policy in the major advanced economies during the early part of this past decade.

2.1 Accommodative Monetary Policy

After the dotcom bubble burst in the US around the turn of the decade, in a strong policy response, monetary policy was eased relatively aggressively in the US and then in other advanced economies. In the United Kingdom, whereas long-term real interest rates (yield on twenty-year treasury bonds) averaged about 3.5% between around 1985 and 1997, they then declined to about 1% by 2007.⁸ Policy rates in the US reached 1% in 2002 and were held around this level for an extended period, longer than was probably necessary.⁹ Excessively loose monetary policy led to excess liquidity and consequent low interest rates worldwide; furthermore, the burst of financial innovation during this period amplified and accelerated the consequences of excess liquidity and rapid credit expansion.¹⁰ At one time, investors in fixed income instruments, such as pension funds and other risk-averse institutions and individuals, could expect adequate risk-free real returns of around 3%, even

⁶ IMF (2009d, 2010a).

⁷ Scott, Schultz, and Taylor (2010).

⁸ Financial Services Authority (FSA 2009b).

⁹ Taylor (2009); Yellen (2009).

¹⁰ De Larosi re Group (2009).

in the long term. However, with long-term interest rates declining to 1% and short-term rates even lower, investors were now reduced to seeking higher yields through investment in riskier instruments in both equity and debt, and in increasingly complex derivatives.

What is interesting about this episode is that despite the persistent accommodative monetary policy and the accompanying strong worldwide macroeconomic growth, it did not result in measured inflationary pressures in goods and most services.¹¹ Consequently, central banks in advanced economies, particularly in the US, did not withdraw monetary accommodation for an extended period. The excess liquidity worldwide did show up in rising asset prices and later in commodity prices, particularly oil. It was only then that measured inflation did start rising and central banks began to tighten monetary policy, though belatedly.

With significant increases in both investment and consumption, along with declining savings, aggregate demand exceeded domestic output in the US for an extended period, leading to persistent and increasing current account deficits as the domestic savings investment imbalance grew.¹² This large excess demand of the US was supplied by the rest of the world, especially People's Republic of China (PRC), which provided goods and services at relatively low cost, leading to corresponding current account surpluses in PRC and elsewhere. The surpluses generated by the oil-exporting countries added to the emerging global imbalances.

Large current account surpluses in PRC and other emerging market economies (EMEs) and equivalent deficits in the US and elsewhere are often attributed to the exchange rate policies in PRC, other EMEs, and oil exporters. Given the fact that US demand exceeded output, it is apparent that with unchanged domestic macroeconomic policies, the US current account deficit would have continued at its elevated levels. In the event of a more flexible exchange rate policy in PRC, the sources of imports for the US would have been some countries other than PRC. Although the lack of exchange rate flexibility among the Asian EMEs and oil exporters did contribute to the emergence of global imbalances, it can not fully explain the large and growing current account deficits in the US, particularly since Europe as a whole did not exhibit current account deficits at the same time.

2.2 Search for Yields

As noted, accommodative monetary policy and the corresponding existence of low interest rates for an extended period encouraged the active search for higher yields by a host of market participants. The significant fall in real interest rates on low-risk instruments induced many institutional investors to look for ways and means to achieve uplift in their returns, both in their home economies and also through cross-border investments. Thus, as a manifestation of the search for higher returns, capital not only flowed toward financial innovation but also surged into EMEs; however, such flows could not be absorbed by these economies in the presence of either large current account surpluses or only small deficits, and thus largely ended up as official reserves. These reserves were recycled into US government securities and those of the government-sponsored mortgage entities such as Fannie Mae and Freddie Mac. Thus, while accommodative monetary policy kept short-term interest rates low, the recycled reserves contributed to the lowering of long-term interest rates in the advanced economies, particularly in the US.¹³ Such low long-term interest rates contributed to the growth in demand for housing mortgage finance and consequent rise in housing prices.

¹¹ Borio (2009).

¹² The U.S. personal saving rate hovered only slightly above zero from mid-2005 to mid-2007 (Yellen 2009).

¹³ Borio (2009).

Furthermore, the stable macroeconomic environment, relatively stable growth, and low inflation in the run-up to the crisis led to sustained underpricing of risks and hence excessive risk taking and financial innovation in the major advanced economies. It may be ironic that the perceived success of central banks and increased credibility of monetary policy, which led to enhanced expectations with regard to stability in both inflation and interest rates, could have led to the mispricing of risk and hence enhanced risk taking. Easy monetary policy itself may have generated a search for yields that resulted in a dilution of standards in assessing credit risk, leading to erosion of sound practices.¹⁴ Lower yields encouraged excessive leverage as banks and financial institutions attempted to maintain their profitability. Lacunae in financial regulation and supervision allowed this excessive leverage in the financial system. Assets were either shifted to off-balance-sheet vehicles that were effectively unregulated, or financial innovation synthetically reduced the perceived risks on balance sheets.

The sustained rise in asset prices, particularly house prices, on the back of excessively accommodative monetary policy, and lax lending standards coupled with financial innovations resulted in the high growth in mortgage credit to households, particularly to low-credit-quality households. Due to the “originate and distribute” model, most of these mortgages were securitized. In combination with strong growth in complex credit derivatives and with the use of credit ratings, the mortgages, inherently subprime, were bundled into a variety of tranches, including AAA tranches, and sold to a range of financial investors looking for higher yields.

As inflation started creeping up beginning in 2004, the US Federal Reserve did start to withdraw monetary accommodation. Consequently, mortgage payments started rising with the increasing interest rates, while housing prices started to ease. Low-to-negligible margin financing and low initial teaser rates incentivized default by the subprime borrowers. Although the loans were supposedly securitized and sold to the off-balance-sheet structured investment vehicles, the losses were ultimately borne by the banks and financial institutions, wiping out a significant fraction of their capital. The uncertainty about the extent of the likely bank losses led to a breakdown of trust among banks. Given growing financial globalization, banks and financial institutions in other major advanced economies, especially Europe, were also adversely affected by losses and capital write-offs. Interbank money markets nearly froze, and this was reflected in very high spreads in money markets and debt markets. There was an aggressive search for safety, which resulted in very low yields on Treasury bills and bonds. These developments were significantly accentuated following the failure of Lehman Brothers in September 2008, which led to a complete lack of confidence in global financial markets.

The deep and lingering crisis in global financial markets, the extreme level of risk aversion, the mounting losses of banks and financial institutions, the elevated level of commodity and oil prices (until the third quarter of 2008), and the sharp correction in a range of asset prices, all combined, suddenly led to the sharp slowdown in growth momentum in the major advanced economies, especially since the Lehman failure. Global growth for 2009, which was projected at a healthy 3.8% in April 2008, is now estimated by the IMF to have contracted by 0.8%.

Thus the causes for the global crisis reflect the interaction of monetary policy, the choice of exchange rate regime in a number of countries, and important changes within the financial system itself, along with lax regulation arising from the belief in efficient markets and light-touch regulation.¹⁵ To recap, low interest rates, together with increasing and excessive optimism about the future, pushed up asset prices, from stock prices to housing prices. Low

¹⁴ Mohan (2007); Borio (2009).

¹⁵ See the de Larosière Group (2009); Bank for International Settlements (2008).

interest rates and limited volatility prompted the search for yield down the credit quality curve, and underestimation of risks led to creation and purchase of riskier assets. Central banks, focused on measured consumer price inflation and aggregate activity, while neglecting asset price movements, did not perceive the full implications of the growing risks until it was too late.¹⁶

3. SHORTCOMINGS IN FINANCIAL REGULATION AND SUPERVISION

There have been calls for fundamental rethinking on macroeconomic, monetary, and financial sector policies to meet the new challenges and realities; many of these ideas entail a structural shift in the international financial architecture and a potentially enhanced degree of coordination among monetary authorities and regulators. A review of the policies relating to financial regulation needs to address both the acute policy dilemmas in the short run and a fundamental rethinking of the broader frameworks of financial and economic policies over the medium term.¹⁷

There has been a great deal of very active discussion internationally about existing regulatory practices and the future of financial regulation and supervision. It is also perhaps correct to say that there is an emerging consensus on how financial regulation and supervision needs to be changed. The intensity of discussion is reflected in the plethora of reports that have been issued by authoritative sources:

- i. *Report of the High-Level Group on Financial Supervision in the European Union*; chairman: Jacques de Larosière (de Larosière Group 2009).
- ii. *The Structure of Financial Supervision: Approaches and Challenges in a Global Market Place*; chairman: Paul Volcker (Group of Thirty 2008).
- iii. *The Fundamental Principles of Financial Regulation*, also known as the Geneva Report (Brunnermeier and others 2009).
- iv. *The Turner Review: A Regulatory Response to the Global Banking Crisis* (Financial Services Authority of the United Kingdom [FSA] 2009b).
- v. The report of Working Group 1 of the G20 on “Enhancing, Sound Regulation and Strengthening Transparency” (G20 2009).
- vi. *Report of the Commission of Experts of the President of the United Nations General Assembly on Reforms of the International Monetary and Financial System*, also known as the Stiglitz Report (UN 2009).
- vii. The U.K. Treasury report, *Reforming Financial Markets* (H.M. Treasury 2009).
- viii. The US Treasury report, *Financial Regulatory Reform: A New Foundation* (US Department of the Treasury 2009).
- ix. The report of the Warwick Commission (2009).

What is common among all these reports is the acknowledgment that regulation and supervision in the advanced economies were clearly too lax in recent times, and that considerable reevaluation is needed, leading to stronger and perhaps more intrusive regulation and supervision in the financial sector. There is clear recognition of serious regulatory and supervisory failures.

¹⁶ IMF (2009c).

¹⁷ Reddy (2008).

At the root of such rethinking is really the questioning of existing intellectual assumptions with respect to the functioning of markets and the nature of financial risk. To quote the *Turner Review*:

At the core of these assumptions has been the theory of efficient and rational markets. Five propositions with implications for regulatory approach have followed:

- (i) Market prices are good indicators of rationally evaluated economic value.
- (ii) The development of securitized credit, since based on the creation of new and more liquid markets, has improved both allocative efficiency and financial stability.
- (iii) The risk characteristics of financial markets can be inferred from mathematical analysis, delivering robust quantitative measures of trading risk.
- (iv) Market discipline can be used as an effective tool in constraining harmful risk taking.
- (v) Financial innovation can be assumed to be beneficial since market competition would winnow out any innovations which did not deliver value added.

Each of these assumptions is now subject to extensive challenge on both theoretical and empirical grounds, with potential implications for the appropriate design of regulation and for the role of regulatory authorities.¹⁸

What were the specific developments in the financial system that arose from these broadly accepted intellectual assumptions that led to the ongoing global financial crisis?

3.1 Recurring Financial Crises: Buildup of Excessive Leverage

Financial and banking crises have a long history, which is as old as the existence of the financial sector itself.¹⁹ All liquid markets can be susceptible to swings in sentiment that can produce significant divergence from rational equilibrium prices. However, boom and bust in equity prices have surprisingly small consequences relative to boom and bust in credit instruments, unless investment in equity instruments is itself from heavily leveraged borrowed resources. What is common among almost all crises is the buildup of excessive leverage in the system and the inevitable bursting of the financial bubble that results from such leverage. What is interesting about the current crisis is that this excess leverage occurred over a period when, through the Basel process, greater consensus had developed on the need for and level of adequate capital required in banking institutions across all major jurisdictions. Furthermore, it was assumed that sophisticated financial risk management capabilities also had been developed within large financial institutions during this period of unusually rapid growth in both the magnitude and sophistication of the financial system. This had some perverse results. First, because of the perceived increase in sophistication in the measurement of risk, high-quality risk capital in large banks could be as low as 2% of assets, even while complying with the Basel capital adequacy requirements. Second, large financial institutions could maintain lower high-quality capital because of the assumption that they had better risk management capacity than smaller, less sophisticated institutions.

¹⁸ FSA (2009b, p. 30).

¹⁹ Kindleberger and Aliber (2005); Reinhart and Rogoff (2009).

With financial deregulation in key jurisdictions like the US and the United Kingdom, as well as in most other countries, financial institutions also grew in complexity. Financial conglomerates began to include all financial functions under one roof: banking, insurance, asset management, proprietary trading, investment banking, brokerage, and the like. The consequence has been inadequate appreciation and assessment of the emerging risks, both within institutions and systemwide. What were the factors that led to this emergence of excessive systemwide and institutional risk?

3.2 Growth in Securitized Credit and Derivatives

Among the notable developments of the last decade has been the unprecedented explosive growth of securitized credit intermediation and associated derivatives.²⁰ “The wreckage on Wall Street stems in part from the explosive growth in complex and mispriced securitized mortgages, which the banks both issued and themselves held.”²¹ For example, the issuance of collateralized debt obligations (CDOs) tripled between the first quarters of 2005 and 2007, reaching a peak of \$179 billion in the second quarter of 2007, before collapsing to \$5 billion by the fourth quarter of 2008. The issuance of residential mortgage-backed securities doubled from \$1.3 trillion to \$2.7 trillion between 2001 and 2003. The assumption underlying this development was that it constituted a mechanism that took risk off the balance sheets of banks, placing it with a diversified set of investors and thereby serving to reduce banking system risks. The opposite actually transpired. As late as April 2006, the IMF’s Global Financial Stability Report noted that this dispersion would help “mitigate and absorb shocks to the financial system” with the result that “improved resilience may be seen in fewer bank failures and more consistent credit provision.”²²

This assumption has already proven erroneous, although simple forms of securitization have existed for a long time. Among the key functions of banks is maturity transformation: they intermediate shorter-term liabilities to fund longer-term assets in the nonfinancial sector. Banks are typically highly leveraged, and hence trust and confidence are crucial to their functioning and stability. Traditionally, therefore, banks exercised sharp vigilance over the risk elements of their assets, which were typically illiquid, to ensure constant rollover of their shorter-term funding liabilities. What securitization does is to turn illiquid assets into liquid ones, which in theory then disperse risks from the banks’ balance sheets and also reduce their required banking capital. With assets themselves seen as liquid short-term instruments, they began to be funded by ultra-short-term liabilities, including even overnight repos whose volume increased manyfold in recent years. The majority of holdings of securitized credit, however, actually ended up on the books of highly leveraged banks and bank-like institutions, and hence risk was concentrated rather than being dispersed. Systemic risk increased because traded instruments are inherently more susceptible to price swings in response to changes in market sentiment. What emerged was a “complex chain of multiple relationships between multiple institutions” and hence a higher risk of contagion within the financial sector.²³ Furthermore, liquidity risks in such markets were not understood adequately. It was assumed that these liquid markets would always exist, and hence securitized assets were assumed to be inherently less risky than illiquid long-term credit assets.

²⁰ Yellen (2009).

²¹ Committee on Capital Markets Regulation (CCMR, 2009, p. 19).

²² As quoted in the Turner Review (FSA 2009b, p. 42).

²³ FSA (2009b).

Financial innovation arising from the search for yields compounded this problem as second-order derivatives proliferated and as their valuation increasingly depended upon model valuation and credit ratings rather than on observable and transparent market valuation; hence such derivatives inherently became more opaque. Thus, when problems arose in these markets and prices were not visible, valuation of the assets of banks and the shadow banking system became unobservable. Consequently, trust and confidence evaporated and markets froze.

Compounding these problems was the emergence of the shadow banking system that took assets off of banks' balance sheets, thereby reducing the latter's capital requirements. The complexity and magnitude of intrafinancial sector transactions exploded over this past decade. For example, issuance of global credit derivatives increased from near zero in 2001 to over \$60 trillion in 2007; foreign exchange (forex) trading activity rose tenfold from about \$100 billion to \$1,000 billion in the twenty years between 1987 and 2007, and doubled again after 2002; over-the-counter (OTC) interest rate derivatives grew from around zero in 1987 to about \$50 trillion in 1997 and \$400 trillion by 2007; global issuance of asset-backed securities went up from about \$500 billion in 1997 to over \$2 trillion in 2007; and trading in oil futures increased from an equivalent of about 300 million barrels in 2005 to 1,000 million barrels in 2007, more than ten times the volume of oil produced!²⁴ Thus the financial sector was increasingly separated from the real economy.

Given the explosive increase in financial transactions unrelated to developments in the real economy, the financial sector exhibited high profits and growth while doing relatively little for the nonfinancial sectors of the economy, which the financial sector exists to serve in principle. The debt of financial companies increased to levels exceeding the GDP of leading economies: in the United Kingdom, for example, financial sector debt increased from 40% of GDP in 1987 to 200% in 2007, and in the US, from a similar 40% in 1987 to over 100% in 2007.²⁵ Thus, in the process of taking risks off balance sheets through securitization, these risks returned to the extended banking system itself, belying the original rationale for securitization. Rather than reducing systemic risk, the development of complex securitization and associated derivatives only served to increase it. Moreover, it became increasingly difficult to trace where the risk ultimately lay.

The regulatory system was clearly behind the curve in taking account of these developments. The procedures for calculating risk-based capital requirements underestimated the risks inherent in traded securitized instruments, thereby adding to the incentive for banks to securitize assets into traded instruments, which bore lower risk weights. The trading of these instruments has largely been in OTC markets that exhibit little transparency. As a result of this overall process, banks became effectively undercapitalized, and the leverage ratios of the unregulated shadow banking system and investment banks reached unsustainable levels. A good deal of the ongoing discussion on change in regulation is focused on this issue through mandating increased capital requirements for such activities.

With the existence of low interest rates, mispriced low-risk perceptions, and inherent incentives to originate lending and distribute securitized instruments, household indebtedness increased to unprecedented levels, particularly for housing. In both the US and the United Kingdom, the household debt-to-GDP ratio increased from an average of around 60% between the mid-1980s and 1990s to over 100% in the following decade.²⁶ Demand for housing assets rose and housing prices escalated accordingly. Thus microlevel behavior led

²⁴ Turner (2010).

²⁵ FSA (2009a).

²⁶ FSA (2009b).

to increased systemic risk that was not adequately appreciated or understood, and hence was not monitored by the authorities.

Thus there are immense emerging challenges that confront financial sector regulators as a consequence of the ongoing North Atlantic financial crisis. We can look forward to There will be extensive debate at both the academic level and among practitioners. How will economists and policymakers change their views on the efficiency and rationality of markets, particularly financial markets? What will be the effect of such reexamination on financial innovation in the future? What will regulatory authorities do in the meantime while these debates are being settled at the intellectual level? Will they overreact and restrict financial growth in the months and years to come? Will this affect global GDP growth as well?

At this point I turn to the key proposals currently being made for a major overhaul of the financial regulatory architecture.

4. REFORMING THE REGULATORY FRAMEWORK: THE FUTURE PERSPECTIVE

There has been and is a great deal of discussion at both the national and international levels on reforming the financial regulatory system to address the various weaknesses that have emerged. At the national level, for example, both the US and U.K. treasuries have released detailed proposals for regulatory reform that are now being considered by their respective legislatures.²⁷ At the international level, it is the G20 that took the lead in late 2008.²⁸ The resulting recommendations of the G20 Working Group 1 were broadly accepted by the leaders and remitted for implementation to the various standard-setting bodies, with the Financial Stability Board (FSB) assigned a broad coordination role. The key objective outlined by the FSB for regulatory reform is to create a “more disciplined and less procyclical financial system that better supports balanced sustainable economic growth.”²⁹

There is no question, therefore, that financial regulation has to be strengthened comprehensively. The prevailing intellectual paradigm of light-touch regulation premised on the efficient markets hypothesis is being questioned. Hitherto unregulated institutions, markets, and instruments now will have to be brought under the regulatory framework, and the framework itself will need to be redesigned to address the emerging needs at both the national and international levels. As this new enthusiasm for financial regulation unfolds, it is important that to keep in mind the basic functions of the financial system, and how they can be strengthened so that the needs of the real economy are better served. To reiterate: among the key objectives of regulatory reform is to emerge with a “more disciplined and less procyclical financial system that better supports balanced sustainable economic growth.” Such a system would not, for example, allow leverage to increase to the extent that it did.³⁰

4.1 Financial Innovation

Reform should ensure that the financial system continues to play a vital role in intermediating savings to provide adequate levels of funding to the real sector, thereby supporting economic growth. It needs to be recognized that financial markets will remain

²⁷ U.S. Department of the Treasury (2009); H.M. Treasury (2009).

²⁸ G20 Working Group 1 (2009).

²⁹ FSB (2009).

³⁰ FSB (2009).

global and interconnected, while financial innovation will remain important for fostering economic efficiency. Hence, while financial regulation and supervision must be strengthened, this process must take care not to stifle entrepreneurship and financial innovation. Still, the following question must be constantly asked: “Financial innovation toward what objective?”

As long as financial innovation is seen to promote price discovery, greater intermediation efficiency, better risk management, and hence overall efficiency and growth, it must be encouraged, but with appropriate safeguards to maintain financial stability. Unproductive financial innovation, however, will need to be discouraged. Therefore, the debate on financial innovation and regulation has to be framed in terms of the potential and systematic relevance of such innovations in addition to the means for bringing them effectively under the regulatory umbrella.³¹ The notional amounts of global derivatives relative to the nominal value of GDP exploded during the decade preceding the financial crisis. What was the economic contribution of such growth in the global economic and financial system? It clearly did not make the global financial system any safer at the macrolevel. Did market participants gain through better risk management in both the real and financial sectors? Addressing such questions will require intensive research on the utility of the kinds of financial innovation that have occurred over the past couple of decades. What has been beneficial and what has not? As work proceeds to bring new financial products and different kinds of derivatives under closer financial regulation and supervision, it should be guided by the answers to such basic questions.

In general, therefore, there is a need for reform of the regulatory framework to shield the financial system from potential crises while identifying measures to mitigate the consequences of any future episodes of financial stress.

4.2 Perimeter of Financial Regulation

The regulatory framework will need to keep pace with the associated risks in a more rapid and effective manner. Large, complex financial institutions will continue to operate in multiple jurisdictions in order to meet the needs of their large global clients, and supervision will need to be better coordinated internationally with a robust global resolution framework. To avoid regulatory arbitrage, there is a need for greater consistency in the regulation of similar instruments and of institutions performing similar activities, both within and across borders. As overall financial regulation is strengthened, it will be essential that it apply to *all* systemically important financial institutions. For example, if only banks are subject to tighter regulation, that will inevitably lead to regulatory arbitrage, with much financial sector activity shifting to other, more lightly regulated financial institutions. That is why the G20 Working Group stressed the need to regulate all systemically important financial institutions. The questions again are how much regulation, what constitutes “systemically important,” how to ensure that all applicable entities, markets, and instruments are regulated, and what form should the regulation take?

There is a great degree of continuing discussion on the regulation of large, complex financial institutions. Undoubtedly they will continue to have a global presence. How will they be better regulated across borders? How can better global resolution regimes be designed that will work in practice?

In addition, capital markets will require greater emphasis on reducing counterparty risk and on ensuring that their infrastructure allows them to remain a source of funding during periods of stress. The postcrisis period is likely to be characterized by a financial system that functions with lower levels of leverage, reduced funding mismatches (both in terms of maturity and currency), less exposure to counterparty risk, and greater transparency

³¹ Mohan (2007); FSA (2009b); Turner (2010).

regarding financial instruments. After credit markets recover from the crisis, it will be important to mitigate the inevitable pressure to expand profits through increased risk taking. A more developed macroprudential approach will be important in this context.

The type, size, and cross-border exposures of institutions and markets that will emerge from this crisis are likely to be considerably different than before. As banks and financial institutions consolidate, policymakers will have to adapt prudential regulation to firms of varying degrees of size and concentration. There is now general agreement, for example, that institutions above some size threshold should be subject to higher capital requirements, possibly on an escalating basis.³² Similarly, the design of any new or revised policy will need to ensure healthy competition. Were the high returns that the financial sector exhibited in the decade preceding the crisis due to inadequate competition, or to excessive expansion in the trading of financial instruments, or both? Financial institutions, markets, and instruments will continue to evolve in ways that pose challenges for regulation, notwithstanding the retrenchment that is currently underway. Financial institutions, policymakers, supervisors, and regulators will all need to become better equipped to manage the interconnectedness of markets, both domestically and globally, as well as the effects of innovation and the potential for incentives to become misaligned.

It will be necessary to consider the appropriate timing for changes in the regulatory framework going forward. Recommendations should promote proportionate regulatory reaction when needed, acknowledging the possible limits of the self-regulatory approach in some contexts. For example, while ultimately capital buffers for the system should be enhanced during periods of economic expansion, in order to be drawn down as needed in downturns, changes in the current environment may have negative impact on the real economy. A considered and comprehensive review of the consequences of reforms and harmonization, coordinated across jurisdictions, is necessary to increase the effective transition to a more stable financial system.³³

In short, the overarching mandate of reforms is to make regulatory regimes more effective over the cycle. This is related to many other issues, including certain aspects of compensation schemes at financial institutions, margin requirements and risk management practices focused on value-at-risk calculations based on short historical samples, the capital adequacy framework, and valuation and loan loss provisioning practices. In addition, there is a need to redefine the scope of the regulatory framework to establish appropriate oversight for the institutions and markets that may be the source of systemic risk. Risk management also must be improved to better evaluate vulnerabilities arising from low-frequency, systemwide risks and to better mitigate these risks.

Against this broad background, this section endeavors to focus on defining the priorities for action in so far as financial regulation and supervision are concerned.

4.2.1 Macroprudential Orientation

As observed, the buildup of microinstitutional risks resulted in the unfolding of massive macro risk, partly through the rise in unsustainable asset prices. Therefore, as a supplement to sound microprudential and market integrity regulation, national financial regulatory frameworks should be reinforced with a macroprudential oversight that promotes a systemwide approach to financial regulation and supervision and mitigates the buildup of observable excess risks across the system. For example, there is now increasing agreement that when credit growth exceeds certain thresholds, it should entail additional capital buffer

³² FSB (2009); BCBS (2009b); CCMR (2009); Warwick Commission (2009).

³³ G20 Working Group 1 (2009).

requirements.³⁴ Such thresholds will have to vary across jurisdictions, and the challenge will remain how to identify such thresholds. Prudential regimes should encourage behavior that supports systemic stability, discourages regulatory arbitrage, and adopts the concept of “systemic” risk, factoring in the effects of leverage and funding. In most jurisdictions, this will require improved coordination mechanisms between various financial authorities, mandates for all financial authorities account for financial system stability, and effective tools to address systemic risks. It will also require an effective global roundtable—currently proposed to be the Financial Stability Board—to bring together national financial authorities to jointly assess systemic risks across the global financial system and to coordinate policy responses.

A number of policymaking institutions, particularly central banks, have enhanced their analysis of systemic risk in recent years. In fact, many of the systemic vulnerabilities that caused or exacerbated the current turmoil had already been identified, but mechanisms to effectively translate these analyses into policy action have been lacking. The basic idea here is to multiply the capital adequacy ratios with a systemic risk factor. This means that better measures of macroprudential risk must be found. It is argued that leverage ratios, maturity mismatches, and estimates of bank credit expansion should be taken into account. Thus highly leveraged and fast growing “systemic” institutions would be subject to higher capital requirements than the rest. The idea is that when there is growing systemic risk, characterized by increasing leverage, maturity mismatches, credit expansion, and asset price increases during boom times, the required amount of banking capital should increase, and conversely decrease during downturns when deleveraging takes place (Brunnermeier and others 2009). These ideas are now gaining wider acceptance, and the standard setters are busy finding ways and means to translate them into practice.

Potential macroprudential tools to be explored further could include:

- i. complementing risk-based capital measures with simpler indicators aimed to measure the buildup of leverage, with enhanced sensitivity to off-balance-sheet exposures;
- ii. capital requirements that adjust over the financial cycle;
- iii. monitoring the sectoral growth of credit to identify areas of “excess credit growth” when they arise;
- iv. loan loss provisioning standards that incorporate all available credit information;
- v. use of longer historical samples to assess risk and margin requirements; and
- vi. greater focus on loan-to-value ratios for mortgages.

In general, the challenge is to continually endeavor to strike a balance between macro- and microprudential regulation.

4.2.2 Regulatory Regime

With the emergence of the shadow banking system and other leveraged financial institutions, the scope of regulation and oversight needs to be expanded to include all systemically important institutions, markets, and instruments. Accordingly, the perimeter of financial sector surveillance would have to be extended, possibly with differentiated thresholds to allow institutions to graduate from simple disclosures to higher levels of prudential oversight as their contribution to systemic risks increases. Work is under way to devise practical guidelines for regulators to assess systemic importance so that regulation of

³⁴ FSB (2009); BCBS (2009b); Warwick Commission (2009).

all systemically important institutions can be done in a consistent manner.³⁵ Financial authorities will need enhanced information on all material financial institutions and markets, including private pools of capital that are leveraged. Large, complex financial institutions require particularly robust oversight given their size and global reach. Regulatory disincentives should also be included to discourage such institutions from becoming too big to fail and to reduce complexity in their group structures. The regulatory and oversight framework should strive to treat similar institutions and activities consistently, with greater emphasis on functions and activities and less emphasis on legal status.

The main bone of contention here, *inter alia*, is whether and how to regulate private pools of capital, including private equity funds and hedge funds. There is no doubt that such funds have increased in size tremendously over the past couple of decades. The amount of money hedge funds manage has increased from around \$40 billion in 1990 to \$540 billion in 2001 and \$2 trillion in 2008, a growth rate far in excess of any metric related to the real economy.³⁶ There are now about 10,000 hedge funds in existence. There have been differences in opinion regarding the role of these funds in the current global financial crisis. Nevertheless, there is broad agreement that private pools of capital, including hedge funds, can be a source of risk owing to their combined size in the market, their use of leverage and maturity mismatches, and their connectedness with other parts of the financial system. There is emerging agreement that all such funds need to be registered with a designated regulatory authority, but there is continuing debate on the extent of their regulation.³⁷

The widespread reliance of market participants on credit ratings of market instruments led to inadequate risk analysis. Thus credit rating agencies also will require regulatory oversight. Furthermore, there is a need to modify rating agency practices and procedures for managing conflicts of interest and for assuring the transparency and quality of the rating process, particularly the process for rating complex securitized instruments and derivatives. Certain regulatory regimes mandate the use of credit ratings for risk management and for assessment of capital requirements within institutions, leading to inadequate in-house assessment of risk by these institutions. Regulators will need to reduce or eliminate such mandates so that all financial institutions take greater responsibility for their own risk assessments. Given the global scope of some credit rating agencies, the oversight framework should be consistent across jurisdictions, with appropriate sharing of information between national authorities responsible for the oversight of credit rating agencies. There is also need for much greater independent research in assessing *post facto* how well credit rating agencies have fared in their credit rating practices. Since their data and methodologies are generally proprietary, including the confidential information they have on the entities and instruments being rated, such research has been difficult, if not impossible, to do. Regulators will need to find ways of making such research possible without violating the need to maintain confidentiality.

4.2.3 Procyclicality

Once conditions in the financial system have recovered, international standards for capital and liquidity buffers will have to be raised, and the buildup of capital buffers and provisions in good times should be encouraged so that capital can absorb losses and be drawn down in difficult times, such as the current period. It will be necessary to develop a methodology to link the stage in the business cycle to capital requirements in a nondiscretionary way and to accounting and prudential standards. Broad agreement is now emerging in the Basel Committee on Banking Supervision (BCBS) and the FSB that capital buffers have to be built

³⁵ FSB (2009).

³⁶ CCMR (2009).

³⁷ FSB (2009); CCMR (2009).

in to constrain procyclical buildup of leverage in financial institutions. In addition to the changes being proposed to raise capital adequacy norms, minimum global liquidity standards are also being explored along with greater requirements for countercyclical provisioning. The implementation of these new standards then should be effective in constraining the procyclical buildup of leverage in financial systems on an automatic basis.

Many questions have also arisen about accounting conventions and procedures that are perceived to add to procyclicality in the financial system. It should be recognized that the clock should not be turned back on fair value accounting just to address the issue of temporary market illiquidity. What is needed is to make clear the nature of price uncertainty and to do so in a manner that symmetrically addresses the potential for mispricing in illiquid markets as well as in booming markets. Improvements could include better guidance and principles for mark-to-market valuation, information on the variance around the fair value calculations, and data on historic prices.

4.2.4 Prudential Oversight

There are three broad areas with regard to prudential oversight that require strengthening: capital adequacy framework, liquidity risk management, and infrastructure for OTC derivatives.

4.2.4.1 Capital Adequacy Framework

There is a clear recognition of the need for higher quantity and quality capital; this will result in minimum regulatory requirements that significantly exceed existing Basel thresholds. The emphasis is on increasing the quantity and quality of tier 1 capital. It is being proposed that only common equity shares and retained earnings be counted toward tier 1 capital. As these tougher requirements are introduced, it is understood that the transition to future standards needs to be carefully phased given the importance of maintaining bank lending in the current macroeconomic climate. In view of the serious problems that arose from lower risk weights being attached to assets in the trading book, there is also agreement that the capital required against trading book activities should be increased significantly. Published accounts could also include buffers to anticipate potential future losses, through, for instance, the creation of an “economic cycle reserve.” There is also increasing agreement on the introduction of a maximum gross leverage ratio as a backstop discipline against excessive growth in absolute balance sheet size.³⁸ In addition, in the context of rapid financial innovation and risk-based regulatory capital requirements, a well-constructed non-risk-based capital measure can at least partially address the problem of modeling deficiencies for the advanced approaches and ensure that a minimum level of capital is retained in the banking system.

4.2.4.2 Liquidity Risk Management

A new element in the future regulatory approach is explicit recognition that liquidity regulation and supervision must be given the same emphasis as capital regulation.³⁹ Individual institutions have demonstrated that their own internal incentive structures are such that liquidity risk may be procyclical due to its links with market and credit risk and to accelerator factors, such as the mark-to-market effects of asset values and net worth. Structural reliance on short-term wholesale market funding, including via securitization, has increased the sensitivity of banks’ balance sheets and cost of funds to procyclical elements. Some regulators were already giving attention to such issues. The Reserve Bank of India, for instance, places prudential limits on purchased overnight interbank liabilities and restricts

³⁸ CCMR (2009); BCBS (2009b); FSB (2009); Institute of International Finance (IIF 2009).

³⁹ BCBS (2009a).

the uncollateralized overnight market to commercial banks. It also monitors actively the ratio of wholesale purchased funding that banks have to their more stable deposit funding. Therefore, regulatory policies need to reflect appropriately the true price of funding liquidity on financial institutions' balance sheets—ensuring that the market does not rely excessively on the central bank's emergency liquidity support facility. Policies that could be considered include:

- i. improved funding risk management by strengthening risk management and governance and control;
- ii. introduction of minimum quantitative funding liquidity buffers of high-quality liquidity assets;
- iii. imposition of a thirty-day liquidity coverage ratio;
- iv. a longer-term structural liquidity ratio;
- v. introduction of a regulatory charge for institutions that present a higher-than-average liquidity risk, and pricing of access to central bank liquidity in order to encourage institutions holding better quality collateral; and
- vi. requiring global banks to have sufficient high-quality liquid assets.

An effective global framework for managing liquidity in large, cross-border financial institutions should include internationally agreed levels of liquidity buffers and should encourage an increase in the quality of their composition. Such a framework needs to be comprehensive and take into account overall liquidity needs. In the ongoing discussion related to enhanced requirements for mandating liquidity buffers, there is some debate on the choice of instruments that will qualify as high-quality liquid instruments: will they include only treasuries, or will high-quality corporate bonds also qualify?⁴⁰ Again, for example, the Reserve Bank of India has long imposed a 25% “statutory liquidity ratio” on all commercial banks: 25% of their net demand and time liabilities have to be invested in government securities. The financial industry would clearly like to broaden the kinds of instruments that would be acceptable, but the implication of such broadening would be that central banks also would have to broaden the collateral that they accept for their liquidity operations.

4.2.4.3 Infrastructure for OTC Derivatives

As documented, the explosion of credit derivatives and their offshoots (such as CDOs and CDOs-squared) has demonstrated the clear need for oversight and transparency in this market. The market for credit default swaps (CDSs) operates on a bilateral, OTC basis and has grown to many times the size of the market for the underlying credit instruments. In light of problems involving some large players in this market, attention has focused on the systemic risks posed by CDSs. There is a global consensus on the need for centralized clearing and a central counterparty (CCP) for all the OTC derivative products. Accordingly, efforts are on in the US, the European Union, and elsewhere to implement CCPs for CDSs. There is general agreement that standardized contracts should be conducted on designated exchanges, while the remaining OTC trades also should be cleared centrally. They would then be subject to the scrutiny of a central counterparty and would have mandatory reporting requirements on a transparent platform.⁴¹

The development of a CCP facilitates greater market transparency, including the reporting of prices for CDSs, trading volumes, and aggregate open interest. The availability of pricing information can improve the fairness, efficiency, and competitiveness of markets—all of which enhance investor protection and facilitate capital formation. The degree of

⁴⁰ IIF (2009).

⁴¹ BCBS (2009b); IIF (2009); Warwick Commission (2009).

transparency, of course, depends on the extent of participation in the CCP. If needed, some incentives may be provided by national authorities, for example, by taking a higher capital charge for transactions not cleared through central counterparties. If capital requirements are related to the counterparty risk exposures that arise from derivatives, repos, and security financing activities, it will incentivize institutions to increase OTC derivative exposure to CCPs and exchanges while also reducing the probability of contagion when problems arise. To foster transparency and promote the use of a CCP and of exchange trading for credit derivatives, public authorities should also encourage the financial industry to standardize contracts and use a data repository for the remaining nonstandardized contracts, and to promote fair and open access to central counterparty services. The use of a CCP will naturally lead to higher costs in OTC trading, which would itself lend some stability to the system.

A CCP mechanism already exists for clearing and settling all interbank spot forex transactions and all outright and repo transactions in government securities. Nonguaranteed settlement of OTC trades in interest rate swaps also commenced in 2008. Guaranteed settlement of interest rate swap (IRS) and forex forwards is a work in progress at an advanced stage.

India already has an institution (the Clearing Corporation of India) for centralized clearing and settlement of all interbank spot forex transactions and all outright and repo transactions in government securities. Nonguaranteed settlement of OTC trades in IRSs has also started. Work is now under way on guaranteed settlement of IRS and forex forwards.⁴²

There is also some debate on the number of CCPs that are needed to foster stability in a system. Some argue that to mitigate systemic risk resulting from counterparty credit risk, it would be beneficial to have a competitive environment for central counterparties, but without imposing regulatory requirements that unduly fragment the market. Others argue that because of netting in a clearing house with a central counterparty, overall risk is reduced substantially, and hence only one or two clearing houses are needed in any particular system.⁴³ It must be ensured, however, that the CCP is adequately funded.

4.2.4.4 Compensation

Among the issues that have gained prominence as contributory factors to the emergence of the global financial crisis is the explosion of remuneration in the financial sector, particularly in comparison with trends in the rest of the economy. Much more attention is now being given to the development of sound practice principles by the international standard setters. It is important that reforms in this regard be done on an industry-wide basis so that improved risk management and compensation practices by some systemically important firms are not undermined by the unsound practices of others. Among the proposals being discussed is the principle that there must be a link between overall firm performance and individual bonuses given; this is in response to the observation that large bonuses are given even if the firm making losses. Another principle being enunciated is that guaranteed bonuses should be either prohibited or, at a minimum, be subject to limitations. In any case, there is general agreement that bonuses should be aligned with the long-term performance of the firm rather than with short-term profits.

In view of the compensation practices that have been observed even after the financial crisis, there is no doubt that there will be greater supervisory oversight over compensation practices for some time to come. At the present time, financial institutions have returned to profitability, to a great extent due to the extraordinary official measures taken to stabilize the financial system. The market mechanism does not seem to ensure that these profits are

⁴² Gopinath (2009).

⁴³ CCMR (2009).

retained in financial institutions to bolster their capital. The firms that benefited from Troubled Asset Relief Program funds have preferred to return the funds as soon as they could rather than submit to regulatory limitations on compensation that they would have been subject to otherwise. Some feel that restricting dividend payments, share buybacks, and compensation rates is an appropriate way to constrain the kind of excessive compensation practices observed.⁴⁴

Along with the enunciation of such principles and practices, it is important to look carefully at the inherent market incentive structure that has led to the observed compensation practices in the financial sector. Acting on this flawed incentive structure is more likely to be effective than regulatory prescriptions.

There is a need to question further the focus on compensation in the financial sector: is the compensation issue actually a red herring? Is it not the explosion in intrafinancial sector transactions and excess profitability of financial institutions that has led to the very high compensation levels of their employees along with the high returns to shareholders? If a firm has such high returns, they have to go somewhere: they are either distributed to shareholders or to the employees or a combination of both, which is what has been happening. In this case, it is then difficult to restrict compensation levels as is being argued currently. If the distribution of profits goes disproportionately to management and employees, then the question relates to corporate governance practices. Why do boards not act more in the interest of shareholders? Much of the discussion has veered off into the minutiae of compensation practices related to the various forms in which compensation is given. To my mind, the real question relates to the high profitability observed in recent years in segments of the financial sector.

Therefore, the question really is, is there a lack of competition in the financial sector? And if so why? Are there some regulatory provisions that restrain competition, or are there some entry barriers inherent in the structure of the financial industry? If competition is not lacking, then why are these profits not competed downward? And again, if the answer is indeed that there is a lack of competition, what can be done? What kind of competition policy measures would be relevant and applicable to the financial sector? Addressing these questions is probably more useful for addressing the compensation issue than focusing narrowly on compensation patterns and levels.

4.2.4.5 Risk Management

The fundamental weaknesses in risk management practices revealed in the current crisis were the inability of financial institutions to adequately monitor risk concentrations across products and geographic areas, shortcomings in stress testing, and inappropriate practices for managing risks arising from structured products. First and foremost, it remains the responsibility of the private sector to take the lead in strengthening firmwide risk management frameworks. Both management and the board of directors are responsible for instituting adequate risk management and control systems. Generally, banks are expected to have in place effective internal policies, systems, and controls to identify, measure, monitor, manage, control, and mitigate their risk concentrations in a timely manner and under various conditions, including stressed market situations. The supervisory authorities would have to oversee compliance of such best practices for capturing firmwide risk concentrations arising from both on- and off-balance-sheet exposures and securitization activities. For example, with respect to OTC derivative markets, it is being proposed that capital requirements be strengthened to reflect the actual risk of OTC derivatives. In deriving such capital requirements, it is also being proposed that new standards be devised to account for counterparty risks. When trading is done on an exchange or with a central counterparty, the

⁴⁴ FSB (2009).

capital requirement would naturally be lower, thereby incentivizing firms to minimize bilateral OTC trading.

4.2.4.6 Transparency

Given the serious problems that have arisen, there clearly needs to be greater emphasis on increasing the transparency of the techniques, data characteristics, and caveats involved in the valuation of complex financial instruments; improved information regarding OTC derivatives markets and clearing arrangements; and better reporting of exposures in a format that permits regulators to aggregate and assess risks to the system as a whole. This would help investors perform some of the due diligence currently outsourced to credit rating agencies while also helping the latter to do better in measuring the tail risks.

The fundamental issue here is twofold: standard setters should work with supervisors and regulators, first, to reduce complexity in accounting standards to facilitate better assessment of uncertainty surrounding valuation, and second, to achieve consistency of valuation methods and a single set of accounting standards.

4.2.4.7 Enforcement

International standards (including those for macroprudential regulation), scope of regulation, capital adequacy, and liquidity buffers should be coordinated to ensure a common and coherent international framework that national financial authorities should apply in their countries, consistent with national circumstances. The expanded Financial Stability Forum—now renamed the Financial Stability Board—the International Monetary Fund, and the international standard setters could assume this coordination role. In addition, the financial regulatory and oversight frameworks and their implementation in all G20 countries should be reviewed periodically, validated internationally, and made public.

5. THE CHALLENGES AHEAD

The agenda that is being developed for strengthening financial sector regulation and supervision is ambitious. Contentious issues are arising both at domestic regulatory levels and at the international level regarding regulatory cooperation. Whereas the principles that have been outlined for this regulatory overhaul are increasingly well accepted, many challenges will arise regarding their modes of implementation and their practicality.

5.1 Regulatory Structure and Authority

First, there is much discussion in many jurisdictions on the changes needed in regulatory structure to minimize the probability of such a financial crisis arising again. There is general agreement on the need to establish a regime of macroprudential regulation and financial stability oversight, and these regimes will need to be more effective over the economic cycle. The issue under discussion in different jurisdictions is, who will do it? Would it be a council of regulators, the central bank, or the treasury? The core concern behind such discussion relates to the location of responsibility for maintaining financial stability. Should central banks be made responsible, and also accountable, for maintaining financial stability? Macroprudential regulation is increasingly seen as one of the key means for maintaining financial stability. It entails the imposition of prudential regulations whenever some macroeconomic or overall financial trends require action. If the central bank is only a monetary authority, and a separate agency, like the Financial Services Authority of the United Kingdom, is responsible for financial regulation and supervision, how is coordination to be achieved so that such action can be implemented? The US has a very fragmented regulatory structure, whereas the United Kingdom has placed all regulatory responsibilities for all segments of the financial sector with the unified FSA. The US Federal Reserve

System does have significant regulatory responsibilities, but regulatory failures were significant in all North Atlantic financial systems, with the exception of Canada. So it is difficult to cite any existing system as comprising best practice.

The US Treasury has proposed the following:

- i. formation of a Financial Sector Oversight Council, to be headed by the treasury secretary, to coordinate all the regulators, and the chairman of the US Federal Reserve would be one among all the other regulators in such a council;
- ii. unification of all banking regulation in a single agency;
- iii. creation of a new agency for consumer protection in the financial sector; and
- iv. assigning greater responsibility to the US Federal Reserve for maintaining financial stability.⁴⁵

In the United Kingdom, the FSA has been made responsible for macroprudential regulation while the Bank of England retains the responsibility for financial stability. Meanwhile, the opposition Conservative Party has announced that it will merge the FSA with the Bank of England should it come to power in the next elections. All such proposals will have to undergo legislative approval in their respective jurisdictions. As of now, there is no emerging consensus with respect to the best regulatory structure for maintaining financial stability.

I have perhaps a biased view, having been in a central bank, though I have also worked in the treasury. I really do not believe that effective macroprudential oversight or financial stability oversight can be done without the central bank being at the helm of this activity. Any kind of group can be set up, depending on the country's overall regulatory framework, and can include the treasury and the heads of the other regulatory entities. The central bank is the lender of last resort; it is also the only agency that has an overall view of the economy, along with exceptional stability in terms of staffing and continuity in thinking, relative to most treasuries. It should have its ear to the ground with respect to evolving developments in all financial markets if it is doing its job well as a monetary authority.

Since the Reserve Bank of India is the monetary authority and also the financial sector regulator, it has been able to supplement its monetary policy very effectively with prudential actions on a consistent basis. It regularly monitors credit aggregates, including movements in sectoral credit. Consequently, it took action when it observed excess credit growth, both on an aggregate basis and in particular sectors like real estate and housing. So it increased the cash reserve ratio to curb overall credit growth and imposed higher risk weights for lending in the affected sectors. As part of its supervisory activities, it also monitors the incremental credit deposit ratio carefully and cautions banks when such a ratio is found to exceed acceptable norms. It is also able to do forward-looking countercyclical capital buffering through increases in loan loss provisioning when needed. In addition, when it observed regulatory arbitrage being practiced by the lightly regulated nonbank finance companies during 2005–07, it took measures to tighten their regulation so as to reduce their capacity to take on excess leverage. This experience is a valuable example for practicing the kind of proposals being put forward for implementing macroprudential policies as supplements to monetary policy as normally practiced in a narrow fashion.

I do believe that given different countries with large variations in institutional legacies, traditions, and systems, no one size can fit all. But at the same time, I think that the central bank does need to have a lead role as far as financial stability is concerned within any kind of arrangement that is deemed fit in a particular country. As a recent IMF paper notes: "If one accepts the notion that, together, monetary policy and regulation provide a large set of

⁴⁵ U.S. Department of the Treasury (2009).

cyclical tools, this raises the issue of how coordination is achieved between the monetary and the regulatory authorities, or whether the central bank should be in charge of both. The increasing trend toward separation of the two may well have to be reversed. Central banks are obvious candidates as macro prudential regulators.”⁴⁶ In any case, there is a clear need for a comprehensive approach to regulatory risk in the financial sector, particularly as the perimeter of financial regulation is widened to encompass hitherto unregulated or lightly regulated entities such as hedge funds, credit rating agencies, and other nonbank financial companies.⁴⁷

5.2 Impact of Proposed Regulatory Changes

The various proposals that are under discussion with respect to enhanced capital requirements will lead to increased levels of regulatory capital over the economic cycle, and extension of such capital requirements to bank-like institutions that are currently unregulated or lightly regulated will inevitably lead to lower profitability for equity investors. In addition to the increases in basic capital adequacy that are being considered, other proposals under discussion include:

- i. higher quality tier 1 capital to consist of only common shares and reserves,
- ii. maintenance of countercyclical capital buffers,
- iii. countercyclical provisioning,
- iv. higher risk weights for trading instruments, and
- v. higher capital requirements for systemically important financial institutions (for example, institutions with assets exceeding \$250 billion).

The bargaining power of banking institutions had become weak in the wake of the financial crisis; hence there was little initial observable protest regarding such proposals. As the financial crisis is resolved and as some semblance of normalcy and profitability begins to return to the financial sector, the financial industry is likely to do its utmost to resist the requirements for higher capital. It will be a challenge for regulators and governments to resist demands for relaxation of the new capital requirements, both the enhanced minimum levels and the capital buffers proposed for good times. The lobbying power of the financial industry will be restored by that time, and therefore authorities will need to be prepared for such challenges.⁴⁸ Lower systemic profitability levels will also be effective endogenously in limiting compensation levels in the financial sector.

Everyone seems to agree that there is need for increased levels of regulatory capital. The key problem that requires further analysis is that such a change implies lower profitability for the financial sector. That in itself may not be such a bad idea for the maintenance of financial stability. But there is still need for greater understanding of its implications for the financial sector as a whole. Would more stringent capital requirements imply a slower pace of credit intermediation and overall lower economic growth? Or does it just mean that there will be less intrafinancial sector activity, with negligible implications for the real economy? There is clearly a great need to work out the overall economic effects of the current recommendations related to the proposed regulatory overhaul. Such impact studies are now being conducted by the BCBS before the new capital standards are put in place.

⁴⁶ Blanchard, Dell’Ariccia, and Mauro (2010).

⁴⁷ CCMR (2009).

⁴⁸ For example, see IIF (2009).

5.3 Implementing Countercyclical Capital Requirements

The proposal for provision of countercyclical capital will face significant implementation issues. Regulators will need to do significant technical work on understanding business cycles so that turning points can be recognized. What would be the triggers for changing these capital buffers in either direction? Would these changes commence in anticipation of business cycle turns or post facto? How formal- or rule-based would these changes be so that regulated institutions know in advance what they need to do? An additional issue in this sphere arises from the possibility of economic cycles occurring at different times in different jurisdictions. This would necessitate greater cross-border cooperation between home and host regulators in terms of applicable capital requirements for different segments of the same international financial conglomerate. An additional problem for EMEs would be the lack of adequate data for business cycle identification.

5.4 Identifying and Addressing Systemic Risks

There is general agreement on the need for macroprudential regulations and the identification of systemic risks such as the buildup of asset bubbles. However, considerable technical work will need to be done at both national and international levels on identifying what such risks are, what is systemic and what is not, and what kind of regulatory actions would be effective. In the recent experience, for example, there was ample awareness of the buildup of both global financial imbalances and the asset price bubble, but there was little agreement on what needed to be done. Even if adequate work is done to identify systemic risk and determine the regulatory measures necessary, what will be the enforcement methodology internationally? Within national regulatory systems, issues relating to interregulatory cooperation will also arise: who will be in charge of issuing early warnings and who will listen to them?

5.5 Defining What Is Systemically Important

There is also general agreement on extending regulation to all systemically important institutions, markets, and instruments. But here again there is an implementation issue: how to decide what is systemically important. Certainly, all financial institutions that have access to the central bank liquidity window or to whom the central bank can act as lender of last resort should be subject to capital regulation. Considerable debate has ranged around the regulation of hedge funds, which come in all sizes and forms. Some are large but not leveraged, others can be both large and leveraged, and yet others can be small and leveraged or otherwise. Whereas it may be that individual hedge funds or other equity pools are not systemically important, they may be so collectively. Furthermore, they could be collectively not important systemically in good times but become so in times of extensive leveraging. A similar story applies to markets and instruments. Thus national and international regulatory systems have their work cut out for them in this regard, especially since excessive regulation could indeed snuff out entrepreneurship.

5.6 Handling Securitized Credit

A great deal of debate has emerged around the issue of securitized credit and its offshoots. Were financial innovations in this area largely unproductive and dysfunctional, and do they need to be discouraged? That the explosion in the magnitude of such derivative instruments did not provide any benefit to the financial system or the economy as a whole is now clear. However, securitization is a time-honored practice that has done much to lubricate the financial system and helped fund real economy needs at competitive costs. So how these instruments are regulated and how the “good” financial innovations will be winnowed from the “bad” will be a challenge.

5.7 International Regulatory Cooperation Regulating Large, Complex Global Firms

As the current global crisis has shown, whereas many of the large, complex financial institutions operate on a worldwide scale, their regulation is national. There is currently much discussion on how international regulatory cooperation can be improved, and there appears to be a good degree of consensus emerging in the standard-setting bodies regarding the contours of enhanced regulation for global firms.⁴⁹ But implementation of their recommendations will rest with national authorities and their respective legislatures. The domestic debates within national jurisdictions are much more fractious than those within the international standard-setting bodies, and the financial industry has much greater lobbying power within national borders and their respective legislatures and governments than among the largely technocratic standard setters. Apart from the regulatory problems associated with ongoing institutions, even more difficult are the problems associated with cross-border resolution of failing institutions. The discussion on these issues has just begun.

There is also increasing debate on institutions being too big to fail.⁵⁰ In the US, there has been renewed debate on whether to reinstitute some Glass-Steagall type restrictions on the activities that are allowed for banking institutions. Should banking be boring? Whereas there would appear to be little support for bringing back the full separation between commercial and investment banks, broker-dealers, and insurance companies, there is emerging consensus that banks' activities in proprietary trading should be curbed.⁵¹ Banks have deposit insurance protection and also have access to lender of last resort facilities from the central bank. In times of liquidity stress, they can receive liquidity assistance from the central bank, whereas in times of insolvency, it is deposit insurance that comes to their rescue. Thus, if banks' risk-taking activities result in stress, their losses are effectively socialized. Therefore some curb on their excessive risk-taking activities is justified. The recent experience has shown that in times of extreme crisis and panic, as happened in late 2008 in the US, even institutions that are, *ex ante*, not entitled to central bank liquidity support effectively receive it if they are deemed to be systemically important and hence too big to fail. So apart from the issue of restrictions on banks' speculative activities, there is a general issue of financial institutions becoming too big on a global scale.

5.8 Capital Account Management

From the perspective of emerging market economies, at the macrolevel, the volatility in capital flows has led to severe problems in both macroeconomic management and financial regulation.⁵² These capital flows have been influenced significantly by the extant monetary policy regimes in developed countries, and hence their volatility is not necessarily related to economic conditions in the receiving economies. Excess flows, sudden stops, and reversals have significant effects on EME financial sectors, the working of their capital markets, and asset prices, and hence on their economies as a whole. Management of this volatility involves action in monetary policy, fiscal management, capital account management, and also financial market regulation. This will remain a challenge since there is little international

⁴⁹ BCBS (2009b); FSB (2009); G20 Working Group 1 (2009).

⁵⁰ Scott, Schultz, and Taylor (2010).

⁵¹ See Volcker (2010); Brady (2010); Schultz (2010).

⁵² Committee on the Global Financial System (2009).

discussion on this issue. There is, however, increasing recognition that some degree of capital controls may be desirable in such circumstances.⁵³

5.9 Exiting Accommodative Monetary Policy

In response to the crisis, monetary policy has been loosened substantially in major advanced economies since the second half of 2007. Policy rates have been cut to near zero levels, even lower than that in 2003–04, and financial systems have been flooded with large liquidity. Abundant liquidity is already being reflected in return of capital flows to EMEs, and this excess liquidity, if not withdrawn quickly, runs the risk of inducing the same excesses and imbalances that were witnessed during 2003–07, including the likely recycling back of capital to the advanced economies. As the global economy starts recovery, a calibrated exit from this unprecedented accommodative monetary policy will have to be ensured to avoid the recurrence of the financial crisis being experienced now.

6. CONCLUSION

To summarize, the emergence of the global financial crisis has led to a new wave of thinking on all issues related to both monetary policy and financial regulation. The practice of both monetary policy and financial regulation had tended to become too formula bound and hence predictable. While these new principles are being debated, it is important to realize that in the face of unexpected developments that always arise in the financial sector, there is an important role for the exercise of judgment by both monetary authorities and financial regulators. Whereas considerable progress has been achieved on the principles governing this regulatory overhaul, very significant challenges remain on the implementation issues that will arise as a new regime takes hold globally.

⁵³ For example, see Commission on Growth and Development (2010); Ostry and others (2010).

REFERENCES

- Bank for International Settlements. 2008. *78th Annual Report, 2007–08*. Basel, Switzerland: Bank for International Settlements.
- Basel Committee on Banking Supervision (BCBS). 2009a. International Framework for Liquidity Risk Measurement, Standards, and Monitoring. Consultative document. Basel, Switzerland: Bank for International Settlements. www.bis.org/publ/bcbs165.pdf?noframes=1
- _____. 2009b. Strengthening the Resilience of the Banking Sector. Consultative document. Basel, Switzerland: Bank for International Settlements. www.bis.org/publ/bcbs164.pdf?noframes=1
- Blanchard, O., G. Dell’Ariccia, and P. Mauro. 2010. Rethinking Macroeconomic Policy. Staff Position Note SPN/10/03. Washington, DC: International Monetary Fund.
- Borio, C. 2009. The Financial Crisis of 2007–?: Macroeconomic Origins and Policy Lessons. Paper prepared for the G20 Workshop on the Global Economy. Reserve Bank of India and the Bank of England, Mumbai, India, 24–26 May. www.g20.org/pub_further_pubs.aspx
- Brady, N. 2010. Fifty Years in Business: From Wall Street to the Treasury and Beyond. In *Ending Government Bailouts as We Know Them*, edited by K. Scott, G. P. Schultz, and J. B. Taylor. Stanford, CA: Hoover Institute Press.
- Brunnermeier, M., and others. 2009. *The Fundamental Principles of Financial Regulation*. (Geneva Report). London: Center for Economic Policy Research.
- Committee on Capital Markets Regulation (CCMR). 2009. *The Global Financial Crisis: A Plan for Regulatory Reform*. New York, NY: CCMR.
- Committee on the Global Financial System. 2009. *Report of the Working Group on Capital Flows to Emerging Market Economies*. Basel, Switzerland: Bank for International Settlements.
- Commission on Growth and Development. 2010. *Post-Crisis Growth in Developing Countries: A Special Report of the Commission on Growth and Development on the Implications of the 2008 Financial Crisis*. Washington, DC: World Bank.
- De Larosi re Group. 2009. *Report of the High-Level Group on Financial Supervision in the EU*. (Chairman: Jacques de Larosi re). http://ec.europa.eu/commission_barroso/president/pdf/statement_20090225_en.pdf
- Financial Services Authority (FSA). 2009a. A Regulatory Response to the Global Banking Crisis. Discussion Paper 09/02. London: FSA.
- _____. 2009b. *The Turner Review: A Regulatory Response to the Global Banking Crisis*. London: FSA. www.fsa.gov.uk/pubs/other/turner_review.pdf
- Financial Stability Board (FSB). 2009. Improving Financial Regulation: Report of the Financial Stability Board to G20 Leaders. September. www.financialstabilityboard.org/publications/r_090925b.pdf
- Gopinath, S. 2009. Emerging Blueprint for Prudential Regulation: Assessment and Challenges. *Reserve Bank of India Bulletin*, December. www.rbi.org.in/scripts/BS_SpeechesView.aspx?Id=449
- Group of Thirty. 2008. *The Structure of Financial Supervision: Approaches and Challenges in a Global Market Place*. Washington, DC: Group of Thirty.

- _____. Working Group on Financial Reform. 2009. Financial Reform: A Framework for Financial Stability. (Chairman: Paul A. Volcker). Washington, DC: Group of Thirty. www.group30.org/pubs/reformreport.pdf
- Group of Twenty (G20), Working Group 1. 2009. Enhancing Sound Regulation and Strengthening Transparency. (Co-Chairs: Tiff Macklem and Rakesh Mohan). www.g20.org/Documents/g20_wg1_010409.pdf
- H. M. Treasury. 2009. *Reforming Financial Markets*. London: Stationery Office. www.hm-treasury.gov.uk/d/reforming_financial_markets080709.pdf
- Institute of International Finance (IIF). 2009. *Reform in the Financial Services Industry: Strengthening Practices for a More Stable System*. Washington, DC: IIF.
- International Monetary Fund (IMF). 2008 Global Slowdown and Rising Inflation. *World Economic Outlook Update* (July).
- _____. 2009a. Contractionary Forces Receding but Weak Recovery Ahead. *World Economic Outlook Update* (July).
- _____. 2009b. *Global Financial Stability Report: Navigating the Financial Challenges Ahead*. Washington, DC: IMF. October.
- _____. 2009c. Initial Lessons of the Crisis. Washington, DC: IMF. February.
- _____. 2009d. The State of Public Finances Cross-Country Fiscal Monitor: November 2009. Staff Position Note SPN/09/25. Washington, DC: IMF.
- _____. 2010a. Financial System Stabilized, but Exit, Reform, and Fiscal Challenges Lie Ahead. *Global Financial Stability Report: Market Update*, January. www.imf.org/external/pubs/ft/fmu/eng/2010/01/index.htm
- _____. 2010b. A Policy-Driven, Multispeed Recovery. *World Economic Outlook Update*, January.
- Kindleberger, C. P., and R. Z. Aliber. 2005. *Manias Panics and Crashes: A History of Financial Crises*. Basingstoke, England: Palgrave Macmillan.
- Mohan, R. 2007. Recent Financial Market Developments and Implications for Monetary Policy. *Reserve Bank of India Bulletin*, October.
- Ostry, J. D., and others. 2010. Capital Inflows: The Role of Controls. Staff Position Note SPN/10/04. Washington, DC: IMF.
- Reddy, Y. V. 2008. Global Financial Turbulence and Financial Sector in India: A Practitioner's Perspective. *Reserve Bank of India Bulletin*, August.
- Reinhart, C. M., and K. S. Rogoff. 2009. *This Time Is Different*. Princeton, NJ: Princeton University Press.
- Schultz, G. P. 2010. Make Failure Tolerable. In *Ending Government Bailouts as We Know Them*, edited by K. Scott, G. P. Schultz, and J. B. Taylor. Stanford, CA: Hoover Institute Press.
- Scott, K., G. P. Schultz, and J. B. Taylor, eds. 2010. *Ending Government Bailouts as We Know Them*. Stanford, CA: Hoover Institute Press.
- Taylor, J. 2009. The Financial Crisis and the Policy Responses: An Empirical Analysis of What Went Wrong. National Bureau of Economic Research Working Paper 14631 Cambridge, MA: National Bureau of Economic Research.
- Turner, A. 2010. After the Crises: Assessing the Costs and Benefits of Financial Liberalisation. Fourteenth Chintaman Deshmukh Memorial Lecture. Reserve Bank of India, 15 February. <http://rbidocs.rbi.org.in/rdocs/Speeches/PDFs/ISRT12022010.pdf>

- United Nations. 2009. *Report of the Commission of Experts of the President of the United Nations General Assembly on Reforms of the International Monetary and Financial System*. (Chairman: Joseph Stiglitz). New York, NA: United Nations.
www.un.org/ga/econcrisissummit/docs/FinalReport_CoE.pdf
- United States Department of the Treasury. 2009. *Financial Regulatory Reform: A New Foundation*. www.financialstability.gov/docs/regs/FinalReport_web.pdf
- Volcker, P. 2010. Financial Reforms to End Government Bailouts as We Know Them. In *Ending Government Bailouts as We Know Them*, edited by K. Scott, G. P. Schultz, and J. B. Taylor. Stanford, CA: Hoover Institute Press.
- Warwick Commission. 2009. *The Warwick Commission on International Financial Reform: In Praise of Unlevel Playing Fields*. Coventry, UK: University of Warwick.
- Yellen, J. L. 2009. A Minsky Meltdown: Lessons for Central Bankers. Presentation to the Eighteenth Annual Hyman P. Minsky Conference on the State of the US and World Economies. Levy Economics Institute of Bard College, New York, NY, 16 April
www.frbsf.org/news/speeches/2009/0416.html