Managing Financial Crisis in an Interconnected World: Anticipating the Mega–Tidal Waves

Zeti Akhtar Aziz

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Managing Financial Crisis in an Interconnected World: Anticipating the Mega–Tidal Waves

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Foreword

The first of two Per Jacobsson Foundation Lectures in 2014, "Managing Financial Crisis in an Interconnected World: Anticipating the Mega–Tidal Waves," was presented by Zeti Akhtar Aziz, Governor of Bank Negara Malaysia, on June 29, in Basel, Switzerland, in conjunction with the Annual General Meetings of the Bank for International Settlements. The event was introduced by Bank for International Settlements General Manager Jaime Caruana (who also presided over the panel discussion that immediately followed the lecture) and moderated by Per Jacobsson Foundation Chair Guillermo Ortiz (who was also a member of the panel).

The Per Jacobsson Foundation was established in 1964 to commemorate the work of Per Jacobsson (1894–1963) as a statesman in international monetary affairs. Per Jacobsson was the third Managing Director of the International Monetary Fund (1956–63) and had earlier served as the Economic Adviser of the Bank for International Settlements (1931–56). Per Jacobsson Foundation lectures and contributions to symposia are expressions of personal views and intended to be substantial contributions to the field in which Per Jacobsson worked. They are distributed free of charge by the Foundation. Further information about the Foundation may be obtained from the Secretary of the Foundation or may be found on the Foundation's website (www.perjacobsson.org).

Opening Remarks

JAIME CARUANA: I am really particularly grateful to Governor Zeti for agreeing to be the Per Jacobsson Lecturer this year. Governor Zeti is very well known to all of us. Zeti, you first attended meetings of Governors at the BIS [Bank for International Settlements], at the AGM [Annual General Meeting] in June 1997. And that was just on the eve of the Asian crisis. You were then Assistant Governor, and the meeting had a familiar theme. It was about how asset prices, developments, and capital flows should influence monetary policy.

Now, the crisis that followed put a huge amount of pressure on you as you were central in shaping the bank's policy response. You became Governor in 2000. Your views on what central banks should do to avoid crises and most importantly, to deal with crises when they arise have been very influential. Over many years, you have never been afraid to challenge conventional thinking, and your views have often been vindicated.

So I'm really grateful for the way you have contributed to all this debate, to all our discussions here at the BIS, and no one is better placed to talk about managing financial crisis than you are. I would like to give the floor to Guillermo, but before giving the floor to Guillermo, I would like to say something about just a couple of practical arrangements.

You will note that we are videotaping the proceedings of this Per Jacobsson Lecture. This is a semipublic event, so the lecture itself will be put on the BIS public website immediately following delivery, and copies of the text will be available as you leave the room. We will have a few minutes after Governor Zeti's speech to ask questions, and I understand that the Per Jacobsson Foundation normally publishes these questions and answers at a later stage.

But the videotape of the questions and answers will not be public. And if I understand correctly, when this is published, the questioner who asked the questions is not identified. So let me just remind you to stay in your seats once the Q & A is finished, because following the Per Jacobsson Lecture, we shall move immediately to the AGM panel discussion that will be chaired by Christian Noyer.

I know I don't need to introduce to you Guillermo Ortiz. He is acting today in the capacity of Chairman of the Per Jacobsson Foundation, but he is very well known here. He was chair of this institution. So welcome back, Guillermo, and the floor is yours. Thank you very much.

GUILLERMO ORTIZ: Thank you, Jaime. Good afternoon, everyone. I'm accompanied by Kate Langdon, who's the Vice President and Secretary of the Per Jacobsson Foundation, and she is also Assistant Director in the Communications Department of the International Monetary Fund (IMF).

So it's a real pleasure to welcome you here and particularly to welcome Dr. Zeti Akhtar Aziz, Governor of Bank Negara Malaysia. I have a few pages of her résumé but thankfully, Jaime has already mentioned a small part of it. So I will just say that Dr. Zeti was appointed Governor of Bank Negara Malaysia in May of 2000. And as Jaime pointed out, she has played an outstanding role in influencing her country's economic performance.

Dr. Zeti also chaired the Executives' Meeting of the East Asia–Pacific Central Banks task force that prepared the report for future central bank financial cooperation in the region. She was a founding member of the BIS Asian Consultative Council and one of the first Co-Chairs of the Financial Stability Board Regional Consultative Group for Asia.

She has also participated extensively in international forums. She was a member of the Commission of Experts of the President of the United Nations General Assembly on Reforms of the International Monetary and Financial System in 2009, a high-level task force established to examine reforms in the global and financial system, and is currently the Chair of the BIS Central Bank Governance Group, of which she has been a member since 2001.

Dr. Zeti has also been actively involved in the global development of Islamic finance through her career. This includes being part of a group of governors that established the Islamic Financial Services Board and the International Islamic Liquidity Management Corporation. And I could go on and on. So I will stop here and without further ado call on Dr. Zeti to give her lecture, which is entitled, by the way, "Managing Financial Crisis in an Interconnected World: Anticipating the Mega–Tidal Waves."

Managing Financial Crisis in an Interconnected World: Anticipating the Mega–Tidal Waves

INTRODUCTION

Dear colleagues, it is my very great honor to be invited to deliver the Per Jacobsson Foundation Lecture to this most distinguished audience here at the Bank for International Settlements (BIS) in Basel. This lecture series commemorates the lifelong contributions of Per Jacobsson to the international financial system. While his contributions have been extensive, important to mention is his role in the early years of the BIS, where he served for twenty-five years as the Economic Advisor. We are now the beneficiaries of this contribution. It is my privilege to be part of this lecture series.

The focus of this lecture will be on the new challenges in the management of financial crises that arise from the increased interconnectivity in national financial systems, which have also become increasingly internationalized and thus internationally interconnected and integrated. In my career of more than three decades at the Central Bank of Malaysia, I have had the experience of being close to three major financial crises: the first when I was based in London during the exchange rate mechanism crisis in the early 1990s; then the Asian financial crisis in the late 1990s, in which I was directly involved in its management; and third, the recent global financial crisis. The observation is that the manifestation of a financial crisis is highly dynamic, evolving not only with the changes in the financial landscape, but also with the changes in the circumstances during the different stages of the crisis. This lecture will identify the different phases in the evolution of a crisis, each phase demanding a different policy solution. The lecture sets out to suggest the indicative thresholds in the transition of a crisis to its various next phases. The aim is to anticipate the next eventuality of the crisis and thereby allow for its early and effective management.

The world has continued to experience successive financial crises, with their reach now extending both to the emerging and the developed economies. The cost of such financial crises has been immense. It has drawn significant research on the subject. The literature has for the most part focused on explaining the causes of such financial crisis, the lessons that might be drawn, and the debate on the solutions for containing and managing the crisis. And yet financial crises have continued to happen, and with them, new challenges for their management. While it may not be possible to avoid a financial crisis, it will certainly be possible to enhance our management of the crisis to minimize its costs on the financial system and the economy. This lecture therefore takes the crisis as a given and focuses on its management during the different stages of its evolution.

The literature distinguishes between different types of financial crisis, including currency, banking, and debt crisis.[1] To take into consideration the role and implications of interconnectivity in financial crises, I will distinguish the underlying financial and economic conditions behind the factors that explain the crises. These conditions can be grouped into three categories. The first relates to financial crises that are set off by an unexpected development. The shock could be financial, economic, social, or political. Examples include sudden changes in the terms of trade arising from disruptions in the commodity markets or from contagion effects in another jurisdiction. The second set of factors relates to financial crises that follow the buildup of excesses over an extended period of time. These include the buildup of financial imbalances such as unsustainable levels of leverage and indebtedness, formation of asset bubbles, or the pursuit of policies that fuel exuberance and encourage asset prices or exchange rates that do not reflect underlying fundamentals.

The third set of financial crises are those that are a consequence of structural deficiencies in the financial system. These deficiencies may exist within legal frameworks, regulatory and supervisory regimes and incentive systems or the international financial architecture that have not kept abreast with the fundamental changes taking place in the national and the international financial systems. Over time, the system may no longer be able to cope with the developments that are taking place. Financial

[1] Stijn Claessens and M. Ayhan Kose, "Financial Crises: Explanations, Types, and Implications," IMF Working Paper 13/28 (Washington, 2013), provides an extensive review of the analytical and empirical explanations of the different types of financial crisis.

crises may also be the result of the combination or cumulative effects of these conditions. The analysis of the underlying conditions prevailing in a financial crisis is important and valuable for our understanding of the nature of the crisis and how it might evolve and thus provides implications for its effective management.

Interconnectivity and Internationalization

In managing a financial crisis in today's world, an appreciation of the increased interconnectivity in the financial system and the intensification of its internationalization has become vital. While this trend has improved opportunities to diversify and thus reduce risk concentration, this phenomenon has also significantly increased the potential for the transmission of systemic risks throughout the financial system and across borders. Financial interconnectivity has also increased the channels through which localized financial stress in one institution or a segment of a financial market can spread to the rest of the financial system and to the overall economy. The key channels through which systemic risks can spread have been well documented.[2] These channels include the linkages that exist between financial institutions, the interactions between the financial intermediaries and financial markets, and the linkages between the financial sector and the real economy. Further channels exist through the market infrastructures and the two-way interaction between the financial sector and the government.

In addition, with the increased international integration of financial systems, the scope for cross-border contagion has also become more extensive, introducing new regional and international dimensions for the effective management of crises. With the intensification of financial globalization in the recent two decades, international financial linkages have become an important source of the spread of a crisis across borders. The ramifications of a financial crisis during this period have been more extensive and pervasive than in any other period. The international aspects of financial crises have drawn significant attention to the phenomenon of

[2] Nicolas Arregui, Mohamed Norat, Antonio Pancorbo, Jodi G. Scarlata, Eija Holttinen, Fabiana Melo, Jay Surti, and others, "Addressing Interconnectedness: Concepts and Prudential Tools," IMF Working Paper 13/199 (Washington: International Monetary Fund, 2013), provides a review of the tools for identifying and measuring interconnectedness to provide increased understanding of the direct and indirect spillover channels of systemic risks in the financial system.

international contagion: on the factors underlying the contagion, the channels that facilitate the cross-border effects, the consequences of the spillover effects, and the possible policies for mitigating such contagion. For the most part, the literature has focused on the contagion impact on liquidity conditions; cross-border exposures of financial intermediaries; the comovements in asset prices, including interest spreads; and economic activity across jurisdictions.[3]

The international connectivity has also intensified due in part to fundamental changes in the real economy. Not only have we seen increased trade flows, these flows have also been driven by the emergence of global supply chains. Over the years, businesses have divided their production into specialized segments which are outsourced to other local or international companies or by relocating part of their supply chain to other countries. While technological advancements have made such global supply chains more feasible, the lowering of trade and investment barriers, and the drive for proximity to larger markets, have reinforced this trend, strengthening the economic connectivity between countries.

For emerging market economies, the degree of financial interconnectivity will increase as national financial systems become more developed. In the early stages of financial development, financial systems tend to be clearly segmented, characterized by the closer proximity between the origination and retention of risks, with a distinct separation between the core activities of financial institutions operating in the different segments and between such financial institutions and their related entities. Cross-border exposures are also more limited in less-developed systems. As financial markets deepen and expand, financial connectivity will correspondingly increase, first within the domestic economy, and then—with liberalization—at the international level.

As financial networks become more complex, mapping financial interconnections will continue to be a challenging task. Financial networks are also highly dynamic and change over a relatively short period of time in response to market incentives. Market imperfections further complicate the ability to predict the response of market participants to systemic shocks. Such behaviors may also be affected by the assumptions

[3] Kristin J. Forbes, "The 'Big C': Identifying and Mitigating Contagion," in *2012 Jackson Hole Symposium: The Changing Policy Landscape* (Kansas City: Federal Reserve Bank of Kansas City, 2012), 23–87, and Kristin J. Forbes, Jeffrey Frankel, and Charles Engel, "The Global Financial Crises," *Journal of International Economics* 88, no. 2 (November 2012): 215–436, discuss the evolution of the factors underlying interdependence and contagion and the effectiveness of various policies in mitigating contagion.

or perceptions about the extent of interdependencies between the institutions, financial markets, and the economy or may arise from a reassessment of the fundamentals by market participants following a shock. They may also result from irrational and herd behavior. These indirect effects of contagion may at times be as important as the direct contagion effects.

In such a complex, adaptive system, a greater understanding of the financial network and the manifestations of behavior under stress becomes important. With better frameworks and tools for identifying and measuring interconnectedness, our understanding of how such systemic risk is transmitted has advanced considerably.[4] However, this understanding still remains incomplete. For the most part, the focus of work in this area has been on the banking sector, in particular, on systemically important banking institutions, and its interconnections within the financial sector and to the other parts of the financial system. Other frameworks developed have drawn on the field of corporate finance, which allows for an assessment of the transmission of risks between sectors in the financial system and between the financial system and the real economy.[5] Following the 2008 global financial crisis, a number of major advanced economies have also implemented regulatory and supervisory responses to address such systemic risks arising from the increased connectivity.[6]

Better data on financial networks are key to achieving a better understanding of the network dynamics following a shock and increasing our understanding of how developments are transmitted throughout the financial system. This includes an understanding of the major nodes

[4] Andrew Haldane, "Rethinking the Financial Network," speech delivered at the Financial Student Association, Amsterdam, April 28, 2009, elaborates on the value provided by network analysis to enhance our understanding of financial systems and crises. Frameworks developed using network analysis and market-price-based measures have been applied to augment stress tests conducted on financial institutions and to improve early warning systems.

[5] Dale F. Gray, Robert C. Merton, and Zvi Bodie, "New Framework for Measuring and Managing Macrofinancial Risk and Financial Stability," Harvard Business School Working Paper 09-015 (Boston: Harvard University, 2008), have developed a contingent-claims framework for the national level illustrating how sectoral contingent claims in the balance sheets for the respective sectors can be constructed to provide a forward-looking, market-based set of indicators to measure the vulnerability of various respective sectors in the financial system and the economy.

[6] Janet Yellen, "Interconnectedness and Systemic Risk: Lessons from the Financial Crisis and Policy Implications," speech delivered at the American Economic Association/American Finance Association Joint Luncheon, San Diego, California, January 4, 2013, discusses in detail the reforms in banking and the over-the-counter derivatives market aimed at reducing the systemic risks to the financial system arising from the complex interconnectivity in the financial system.

in the networks where risk propagation is likely to be the strongest in terms both of magnitude and of speed. Therein lies the importance of cooperation both at the national and the international level to improve transparency and the collection of data on balance sheets of the respective financial intermediaries. In particular, more timely and granular data on common exposures and bilateral links between institutions will be important to gauge the potential transmission effects on the rest of the financial system.[7]

MANIFESTATION AND DYNAMICS OF FINANCIAL CRISES

The increased domestic and international connectivity has changed the manifestation and dynamics of a financial crisis. While the dynamics of each crisis has been unique, each successive crisis since the 1990s has spread more quickly and further afield from its epicenter, following the paths of increasingly complex financial networks. A deeper understanding and awareness of such networks and the associated contagion paths through which a crisis could unfold is vital for the effective management and containment of crises.

In this part of the lecture, I divide a financial crisis into five potential phases, a succession of mega–tidal waves. To understand the progression of a financial crisis through its different phases would provide for the identification of the appropriate policy responses and the timing of such actions. Of particular importance is the ability to anticipate the next tidal wave and provide for more forward-looking policy actions to withstand it.

Phase 1: The Onset of a Financial Crisis

The first phase of the crisis is perhaps the most difficult to recognize. While the manifestation and dynamics of the start of a financial crisis are generally evident in the financial markets, less clear is when the financial market turmoil becomes a crisis. Financial markets have a vital role in the intermediation process, connecting surplus and deficit units. The ability of the market to intermediate the surplus and deficit funds and to

[7] Jaime Caruana, "Interconnectedness and the Importance of International Data-Sharing," speech delivered at the Third Swiss National Bank–International Monetary Fund Conference on the International Monetary System, Zurich, May 8, 2012, discusses the importance of international cooperation, including in the collection and sharing of data, which is essential for monitoring and responding to vulnerability arising from increased interconnectivity within and across jurisdictions.

perform this clearing function is impaired during the onset of a crisis. Such disruptions can occur from losses experienced by financial institutions or investors on assets that they hold or from defaults by borrowers on loans extended by the financial institutions. As such losses begin to spread among market participants, increased risk aversion will result in segmentation in the interbank and funding markets. This in turn affects the liquidity conditions across the financial markets. Asset liquidations by the affected financial institutions experiencing losses further exacerbate the liquidity conditions.

When, then, does a financial market stress become a crisis? In the asset markets, common early signs are sharp increases in volatility in asset prices and a generalized deterioration in credit quality of one or more asset classes. The fire sale disposal of assets in the markets experiencing stress will depress prices, creating a spiral in which asset liquidations begin to spread across to other markets to compensate for the losses. Increasingly, market players are able to liquidate only at increasingly larger price concessions as buyers begin to disappear, creating further downward pressure on asset prices. Under these conditions, liquidation occurs even in well-performing asset markets, resulting in across-the-board generalized price declines, including across borders.

During this phase of the crisis, a deterioration in funding conditions can be observed. There is heightened uncertainty over the financial health of counterparties with exposures to the affected markets or credits. At this stage, liquidity begins to evaporate, and financial institutions begin to be confronted with the inability to access liquidity or funding in the money markets. Increasing numbers of banking institutions with liquidity will become less willing to provide such liquidity. This breakdown in the interbank market also hampers the ability to make markets across other asset markets. Money market rates and the diverging spreads between banking institutions provide early indications of such systemic stress. Behaviors in the markets during such periods shift rapidly, resulting in discontinuous and significant increases in liquidity premiums.

A similar pattern can be observed in the foreign exchange market during the early phase of an imminent currency crisis. The mounting pressures in the currency market are generally accompanied by increased volatility, while the thinning of liquidity in the market results in a significant widening of the bid-ask spreads. Such stress in the foreign exchange market may follow a trigger event that results in sudden shifts in investor behavior, risk aversion, and herd phenomenon. Incomplete information and increased uncertainty prompt investors to liquidate their positions. Moreover,

the central role of expectations produces an overshooting in the foreign exchange market, which further exacerbates the distressed conditions.

During the Asian financial crisis, sharp price movements first became evident in the asset markets. In Thailand, the stock market index declined by 37 percent in 1996 following disruptions in the construction sector which resulted in sharp declines in property prices. This rapidly spilled over into a number of other regional equity markets that precipitated outflows, leading to mounting pressures on the currencies in early 1997. As liquidity tightened, money market rates rose sharply. The months that followed the collapse of the Thai baht on July 2, 1997, saw a widespread liquidation of stocks in the equity and bond markets across Asia, pressures on the regional currencies, and a tightening of liquidity conditions in the money markets.[8] Yet during this period, most of the countries in the region did not fully recognize the developments as the unfolding of a major regional financial crisis.

Similarly, in the early stages of the global financial crisis, following the decline in house prices in the United States, the subprime securities market began to experience massive losses. The effects of widespread liquidation of assets in the market rapidly spread to other markets. The signs of the liquidity strains were reflected in the widening of interest rate spreads in the interbank market.[9] By mid-2008, as the credit market became increasingly impaired, the spreads between the corporate and Treasury bonds increased sharply. In this phase of the financial market turmoil, it was also not recognized as the unfolding of a major financial crisis. During this period, the concern was still on the risks of inflation and on the need for interest rates to be increased.[10]

Similarly, in Europe, liquidity constraints were experienced in 2007 as the subprime crisis unfolded.[11] Several major banking institutions in

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[8] In Malaysia, the daily money market rates increased from 7.5 percent to 40 percent in July 1997. In Korea, the monthly average money market rates rose sharply in November of that year to peak at 26 percent the following year. In Indonesia, money market rates rose from 16 percent to 65 percent in one month between July and August 1997. In Thailand, they increased from 8 percent in March to 24 percent in September 1997.

[9] The T-bill–Eurodollar (TED) spread jumped from an average of around 40 basis points before August 7, 2007, to 240 basis points by August 20.

[10] Frederic S. Mishkin, "Over the Cliff: From the Subprime to the Global Financial Crisis," *Journal of Economic Perspectives* 25, no. 1 (2011): 49–70, highlights that even at the onset of the financial crisis during the summer of 2008, there were discussions at the Federal Open Market Committee meetings on the need to raise interest rates to contain inflation.

[11] A review of the European experience during this period can be found in Florian Heider et al., "Liquidity Hoarding and Interbank Market Spreads: The Role of Counterparty Risk," ECB Working

Europe faced losses arising from their exposure to the assets associated with the subprime crisis. The Euro Interbank Offered Rate (Euribor)–Euro Overnight Index Average (Eonia) swap spread, a standard measure of the interbank market tensions, rose sharply, accompanied by a significant increase in excess reserves as banks hoarded liquidity during this period.[12] At this stage of the financial turmoil, it was not envisaged that it could evolve into a severe banking and economic crisis. In fact, in mid-July 2008 interest rates were raised to address inflation. In late 2009, a further disruption in the sovereign debt market that followed the fiscal distress in Greece and several other European economies further worsened the conditions in the funding markets. While the money market rates had stabilized prior to this, the financial position of banking institutions had already been substantially weakened. By 2010, this deteriorated further. Widespread losses were experienced from exposures to sovereign debt arising from the massive sell-off and liquidation of the papers. This was reflected in sharply higher bond yields, further declines in the equity markets, and a tightening in money market conditions.

These experiences suggest the need to identify the threshold levels beyond which market stresses will transition into a full-blown crisis. Rigorous stress tests need to be applied to asset markets under severe scenarios to provide warnings of early signs of severe market stress. Such stress tests should provide insights into the potential changes in the liquidity conditions in the key asset markets. This can be done by gauging the trends and volatility of key asset prices and the volume of activity in the respective markets under plausible stress scenarios, taking into account the risks associated with the underlying conditions in the markets.[13] Among such risks are the degree of household and corporate indebtedness and foreign holdings of domestic financial assets. In the money markets, relevant risks include the maturity profile of the liquidity position of banking institutions, the funding concentrations, and the strength of contingency funding arrangements.

Paper 1126 (European Central Bank, 2009), and Philip Lane, "The European Sovereign Debt Crisis," *Journal of Economic Perspective* 26, no. 3 (Winter 2012): 49–68.

[12] The three-month Euribor-Eonia swap spread rose to almost 100 basis points at the end of 2007 from an average of 5 basis points prior to that.

[13] During the Asian financial crisis, Malaysia conducted these assessments on the foreign exchange market that took into account the net foreign exchange position of banking institutions, the degree of nonresident participation in domestic markets, the degree of external indebtedness of the different sectors, and the volatility of the international reserve level.

Phase 2: The Impairment of the Financial System

Unless the underlying distressed asset class and the inefficient distribution of liquidity in the markets are swiftly and systematically addressed, financial market participants will begin reevaluating their initial risk perceptions and valuation of assets on a broader scale. A generalized risk aversion then results in rapid shifts in trading and investment strategies to cut losses. As panic sets in, it becomes a race to the bottom through the massive deleveraging and disposal of toxic assets.[14] As financial institutions and other investors rush to sell off assets across other segments of the financial markets, asset prices experience further and extreme downward pressures.

To the extent that different parts of the financial system are likely to be impacted by systemic stress in a synchronous way, interdependencies between financial institutions and asset markets are likely to intensify, leading to further significant comovements and volatility in the financial markets. Common risk models used by financial institutions partly explain why banks and investors find it optimal to deleverage and shed higher-risk assets when a shock to one asset class occurs. The procyclicality of credit ratings also serves to amplify this trend. During this phase of the crisis, financial assets become increasingly difficult to value with any degree of reliability. Realized and unrealized financial losses escalate, and weaknesses of institutional balance sheets become more evident.

The second phase in the evolution of a financial crisis is thus marked by distress in financial institutions and their possible failure. At this juncture, mounting credit and market losses, exacerbated by deeper liquidity and funding uncertainties, precipitates increases in insolvencies. This is compounded by the erosion of public confidence that induces runs on healthy banking institutions by both depositors and investors. The crisis has now evolved into a banking crisis. Spillover effects to other financial systems in other jurisdictions also intensify during this period. The collective deleveraging actions across the globe result in the gradual deterioration of global liquidity, further increasing volatility in domestic and international financial markets. Additionally, the withdrawal of

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[14] Charles Kindleberger, *Manias, Panics, and Crashes: A History of Financial Crises* (New York: Macmillan, 1978), in his reinterpretation of Hyman Minsky's work, describes this phenomenon in the financial markets during such a financial crisis. A more contemporary overview of the literature can be found in Franklin Allen and Douglas Gale, *Understanding Financial Crises*, Clarendon Lectures in Finance (Oxford: Oxford University Press, 2009), and Joseph G. Haubrich and Andrew W. Lo (eds.), *Quantifying Systemic Risk* (Chicago: University of Chicago Press, 2013).

financial activities by major internationally active financial institutions in markets in which they perform critical functions intensifies the contagion across borders.

During the Asian crisis, within six months following the waves of the disruptions in the foreign exchange, money, and asset markets, there was widespread financial distress and subsequent failures of financial institutions.[15] In the United States during the 2008 global crisis, it was about eight months following the disruptions in the financial markets before they translated into a banking crisis.[16] In Europe, financial institutions had also been substantially weakened by their exposure to assets related to the subprime crisis. While relative calm in the financial markets had been restored prior to the sovereign debt crisis, the undercapitalization and solvency problems experienced by the European financial institutions has seen more than 100 failures of such institutions since 2008.[17]

It is therefore during the early stages of the crisis that viability tests and stress tests need to be applied to large financial institutions to assess whether they are being confronted with solvency problems.[18] While stress tests and network analysis were extensively applied to provide indicators on the threshold levels that would precipitate severe financial distress in highly connected financial institutions, such tests during the recent global financial crisis were undertaken during the more advanced phase of the crisis, and for institutions that had for the most part already been recapitalized. They nevertheless provided a basis for actions to

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[15] As part of the IMF program, 56 finance companies and 8 commercial banking institutions were required to be closed in Thailand while in Indonesia, 64 banks were closed.

[16] The collapse of Bear Sterns in March 2008 was followed by the collapse of AIG and the Reserve Primary Fund on the following day. By 2012, 465 banks and credit unions had entered into receiverships. Markus K. Brunnermeier, "Deciphering the Liquidity and Credit Crunch 2007–2008," *Journal of Economic Perspectives* 23, no. 1 (Winter 2009): 77–100, and Stephen G. Cecchetti, "Crisis and Responses: The Federal Reserve in the Early Stages of the Financial Crisis," *Journal of Economic Perspectives* 23, no. 1 (Winter 2009): 51–75, extensively discuss this early phase of the U.S. financial crisis. Mishkin, "Over the Cliff," discusses this and the next phase of the crisis.

[17] While a formal Europe-wide database of bank failures is not available, estimates can be found in Open Economics Working Group, "Failed Bank Tracker," data file (Cambridge, 2014); http://www.openeconomics.net/failed-bank-tracker/.

[18] During the Asian financial crisis, Malaysia applied these viability tests to assess the capital position of banking institutions, including their ability to access liquidity and to regularize their liquidity position and to manage their deposit withdrawals. The viability tests included assessments on the structure of the loan portfolio, the trend of delinquencies, and the adequacy of provisions to absorb losses. They also included assessments of future business prospects and the availability of critical talent to execute necessary internal restructuring and recovery plans within the financial institutions.

conserve capital in order to avoid widespread insolvencies and served to shore up confidence in the financial system.

By this phase of the crisis, two further sets of conditions will provide indications of the unfolding of the financial crisis into an economic crisis. The first relates to the level of distress in the household and business sectors, in particular, if these sectors are highly indebted. The second relates to the supply of credit and the potential for its disruption arising from the erosion of bank capital. Evidence generally shows a tightening of lending standards, increased focus on recoveries, and heightened scrutiny on the creditworthiness of borrowers during this period. This is compounded by more difficult access to capital markets. When these threshold conditions are breached, the financial crisis begins to affect the wider economy, which brings us to the next stage of the crisis.

Phase 3: The Onset of the Economic Slowdown

The crisis enters into the third stage when it transitions into a fundamental economic slowdown, and rapidly evolves into an economic crisis. The strong linkage between the financial system and the real economy is reinforced by the increased exposure of the economic sectors to the financial system. Disruptions in financial intermediation amid liquidity and capital constraints and the consequent withdrawals of credit facilities from both businesses and consumers are the early signs of the effect of the crisis on the economy. The negative wealth effect from the significant declines in asset prices also lowers not only the present value of income, but also the value of collateral, thus further limiting the access to financing. Additionally, the stressed conditions of a highly indebted household or business sector will have a dampening effect on spending activities in that sector. Firms affected by the tighter access to credit and the weakening demand will commence to scale back production and thus labor requirements. This will further accelerate the spiral of the economic downturn.

Across borders, this phase of the crisis is transmitted through both the financial and trade channels. While the contagion effects on domestic financial markets and the withdrawal of international credit lines are already evident during this period, these effects are intensified by the increased trade linkages and the more globalized production networks. Not only does lower final demand from the crisis-affected economies directly dampen the export sector, but the prevailing global supply chain also exerts cascading effects on a broader network of economies. The consequent

weaker economic conditions during this period will subsequently feed back to the crisis-affected economies as the trade and cross-border investment channel amplifies the depth of the economic crisis.

During the Asian financial crisis, most regional economies began to experience an economic contraction six to seven months into the financial crisis. The decline in GDP was most severe in 1998, ranging from –5.7 percent in Korea to –13.1 percent in Indonesia. In the recent financial crisis in the advanced economies, the synchronized slowdown in the global economy was experienced after a similar length of time, in late 2008 and early 2009. By the fourth quarter of 2008, real GDP in the United States declined by 5.4 percent, and it declined by 6.4 percent during the first quarter of 2009. By the second half of 2009, unemployment breached the 10 percent level. In Europe, growth started to contract in the second half of 2008. While Asia was affected by the global financial turmoil during this period, most economies in the Asian region still continued to experience growth that ranged from 5.1 percent to 7.3 percent in 2008. However, as the global financial crisis evolved into an economic crisis, the ensuing collapse in world trade resulted in an economic contraction for several of the Asian economies that ranged from –4.6 percent to –1.6 percent in 2009. For the less open economies in the region, growth slowed but did not go into negative territory.

Two reasons may explain the relatively less severe effects of the global financial crisis on the Asian region. While it would be correct to say that Asia had less exposure to the toxic assets of the distressed financial markets in the advanced economies, the surges of capital inflows and their sudden reversals were far larger and more volatile than that experienced during the Asian financial crisis. However, Asia was better able to intermediate these massive and volatile capital flows, thus reducing their effects on the domestic financial system and economy. This followed from the payoffs from a decade of financial reforms and financial market development that were supported by economic restructuring to enhance the role of domestic demand. Therefore, while the increased interconnectivity has not rendered Asia immune to the effects of the global financial crisis, Asian economies have been better able to absorb and manage the consequences of the recent global crisis.

Phase 4: The Crisis Runs Its Course

Policy inaction or inappropriate policy intervention during the early stages of a crisis may contribute toward its further escalation to eventually

exceed thresholds beyond which the crisis will run its course. This phase is characterized by conditions in which asset prices collapse to their lows and incidences of defaults by households and businesses increase sharply. The worsening economic conditions then feed back to the financial sector. Impaired financial institutions become widespread, resulting in a breakdown of the financial intermediation process. These spiral into a self-reinforcing process, leading to the failure of the financial system to function and a further deepening of the economic crisis. As extensive foreclosures and bankruptcies occur, rising unemployment becomes prevalent amid the severe economic contraction.

At this point in the crisis, rating agencies adjust sovereign ratings several notches down, while confidence levels fall to an all-time low. Capital outflows intensify, precipitating capital flight among residents. The exchange rate trends into uncharted territory, recording meaningless levels. Resources become limited, reducing the prospect for any policy flexibility, and international reserves become depleted. At this phase, social unrest sets in, and political upheavals occur—usually involving leadership change. The crisis reaches a stage at which it is not possible for the crisis to get worse. Cases of this stage of the crisis were evident during both the Asian and the European financial crises.

Phase 5: The Aftermath of the Financial Crisis

An economic recovery that begins to take hold marks the fifth stage in the dynamics of a crisis, when the broader economy shows signs of improvements. The strength of the recovery is generally characterized by several developments. First, the deleveraging activities subside, and asset markets recover. Second, financial intermediation resumes as the balance sheet positions of the financial institutions improve. Third, there is lower financial market volatility with the reduced uncertainties while the return of confidence gradually occurs. Fourth, there is a recovery in economic activity in the most-affected sectors. The recovery in the housing sector is particularly important given that activities in this sector have significant spillover effects to other parts of the economy. It also represents the main assets of households. Fifth, there is a recovery in domestic demand conditions. Key to supporting this trend is the status of the balance sheets of the household and business sectors. Sixth, there is a recovery in investment spending. As demand improves the recovery will start to become more broad based and there will be less need for policy support. Seventh are the developments in the conditions in the

labor market. Companies start to replenish their workforce as demand conditions improve. The improvement in employment prospects further supports the recovery in private consumption.

The recovery process during the aftermath, however, remains highly vulnerable to new domestic and external shocks, and risks remain for the potential of a relapse back into a crisis. While there is greater optimism, market confidence remains vulnerable to unexpected setbacks that could undermine the sustainability of the recovery.

The Resolution and Management of the Crisis

What lessons can policymakers draw in the management of financial crisis? The questions relate to outcomes: What will it take to restore stability and bring about a lasting recovery? Why is it that the outcomes are sometimes not within our expectations? Why is it that the recovery has been elusive at times, and not commensurate with the massive policy interventions? Why has the period in the aftermath frequently been plagued by subpar growth and high unemployment? Policymakers are also at times confounded by continual risks to setbacks that change the dynamics of the environment. Then finally, why have the costs of the crisis varied so significantly from crisis to crisis, at times imposing such a significant burden on society?

The focus of the next part of this lecture is on the management of a financial crisis as it unfolds and an examination of the policy choices, while taking into account the environment of greater interconnectivity, including across borders. While financial crises may differ according to their underlying causes and the circumstances in which the crisis occurs, let me venture to put forward a number of guiding principles for the management of crises that can be drawn from a greater appreciation of the manifestation and dynamics of the crisis in its different stages.

- First, the changing manifestation and dynamics of a financial crisis at its different stages call for different policy interventions. The calibration and timing of the policy mix during the different stages of the crisis will have a significant impact on the overall outcome of the crisis.
- Second, anticipatory policy actions which recognize the next eventuality as the crisis unfolds will be key in preventing a worsening of the crisis and in mitigating its impact in its subsequent stages.

- Third, the focus of policy actions in managing financial distress has to reach beyond the conditions in distressed financial markets and institutions, to actions that address the broader conditions of the affected asset markets and the distressed borrowers.
- Fourth, greater recognition of the escalation in the costs of a crisis at its advanced stages would provide a more balanced and informed evaluation of the trade-offs associated with specific policy interventions at the earlier stages of the crisis.
- Fifth, considering the entire evolutionary path of the crisis will avoid a partial policy response and prompt a more comprehensive and complete solution.

In the following remarks, I will draw on these key principles.

Stage 1: Containing the Onset of the Crisis

The initial policy intervention at the onset of a financial crisis needs to achieve three objectives: to restore stability in the short-term money markets and to ensure access to liquidity, so as to stabilize the conditions in the specific financial markets in which the turmoil originated, and to address the consequent erosion in confidence. The early policy interventions in most financial crises are well known. They have generally involved providing massive liquidity support through wide-ranging facilities, including large-scale asset purchases and expanded international swap arrangements to improve global liquidity conditions.[19]

The provision of liquidity will relieve pressures in the funding markets. But this will likely be temporary if the conditions in the asset markets which are in distress have not been addressed. Early attention to improve conditions in the distressed asset markets is, therefore, equally important. Account must be taken of the exposures of the household, business, and financial sectors to these markets, which will amplify the contagion arising from a further deterioration of conditions. In a financial crisis triggered by developments in the housing market, the response therefore needs to address both the conditions in the distressed housing market and the sectors that have exposures to this market. The mechanisms and schemes for the restructuring of home mortgage loans will be important

[19] The Federal Reserve has on a number of occasions provided dollars to other central banks to ensure dollar liquidity in the international financial system.

to avoid widespread defaults and foreclosures, as will be the programs and incentives to support the housing market.

Similar observations can be made on policy responses during episodes of reversals in capital flows following large-scale liquidation of assets in the financial markets. Policy interventions involve avoiding a collapse in the affected asset markets.[20] In the foreign exchange markets, the most pressing challenge is to restore orderly market conditions. While intervention operations may precipitate a substantial decline in reserves, the costs of sharp discontinuous depreciations beyond which a free fall occurs would be much higher. At the same time, the underlying internal factors that contributed to the unstable conditions in the foreign exchange market, including a deteriorating current account deficit, or high levels of external indebtedness or the pursuit of unsustainable exchange rate policies, would also need to be addressed. This will require a clear understanding of the structural adjustments and reforms by both the public and private sector which will be required to achieve these outcomes.

At this stage of the crisis, recognition of the interlinkages between the depressed asset markets, the depreciated currencies, and the growing uncertainties regarding the growth prospects would provide an indication of the implications for the balance sheets of the business sector and the financial institutions, even before they materialize. Establishing the institutional arrangements and mechanisms at this early stage to address such eventualities will allow for swift actions that would limit defaults and bankruptcies at the subsequent stages of the crisis. Pre-positioning these arrangements to support debt restructuring for the respective sectors would also minimize the rapid deterioration of the balance sheets of financial institutions and reduce the prospect of a systemic threat of widespread institutional failures. It will also give the authorities time to carefully consider appropriate guidelines and conditionalities so as to mitigate moral hazard. Additionally, it can provide a more complete assessment of the costs of such arrangements against the costs at a more advanced stage of the crisis when it has become more severe.

Even if the degree of financial institution insolvency at this stage of the crisis may be minor, assessments based on viability and stress tests will be the basis for early action that will reduce the systemic repercussions of a financial institution failure on other parts of the financial system.

[20] In recent crises, these have included establishing arrangements for outright purchases, reducing restrictions on share buybacks, and more contentiously, changes in accounting classifications on an exceptional basis in order to stabilize rapidly falling prices.

Consistent and credible market-wide institutional stress tests can reduce information asymmetries in the market and so moderate extreme market reactions. And banks can be compelled to take early actions to shore up capital buffers in anticipation of a further deterioration in market conditions. During the Asian financial crisis, however, as part of the IMF bailout package for Thailand and Indonesia, widespread closures of stressed financial institutions were imposed by the program.[21] This precipitated a further deterioration of asset prices and further sharp depreciations of the domestic currencies.

There has been less consensus on the macroeconomic policies needed during the early stage of the crisis. In situations in which monetary policy was tightened, priority was being accorded to addressing inflationary concerns prevailing during the period. In several cases, however, the policies needed to be reversed when deteriorating conditions intensified, and when confronted with the heightened potential of systemic financial failures and the reality of the heavy costs for the economy.[22] To avoid future drastic adjustments, macroeconomic policies would, therefore, benefit from the guidance on the next eventuality in the evolution of the crisis. This would involve the anticipation of further stress in asset markets, and the consequent banking stress and its negative subsequent consequences on the economy.

Similar trade-offs need to be examined in addressing capital outflows. Raising interest rates may not always contain capital outflows and stabilize market conditions when irrational market behavior prevails. The exceptions have, however, been the Republic of Turkey in January of 2014, when interest rates were raised sharply and had successfully slowed the outflows. Another example was India, although increasing interest rates was complemented by other measures. Both economies, however, experienced a moderation in growth. This has to be a judgment call that

[21] In Thailand, the closure of 42 finance companies was announced on August 20, 1997. In addition, taxes were also raised as part of the fiscal austerity program. By December 1997, the number of finance companies closed was 56. In Indonesia, the IMF restructuring program initially involved the closure of 16 banks in November 1997.

[22] During the European exchange rate mechanism crisis, the Bank of England initially raised its minimum lending rate from 10 percent to 12 percent and subsequently to 15 percent in defense of the currency, but six days later, the rate was brought back down to 9 percent, as it became clear that the rate increase did not deter the speculators and stem the sterling's slide. More recently in Europe, the European Central Bank (ECB) had initially raised its main refinancing rate by 25 basis points in July 2008 from 4 percent to 4.25 percent despite the emerging stress in the United States, citing inflation concerns. As the crisis unfolded, however, the ECB reduced the rate sharply. Within a seven-month period between October 2008 and May 2009, the rate was reduced by 325 basis points.

takes into account the next eventuality of the crisis and the balance of costs to the market, the financial sector, and the overall economy.

Collectively, these conditions underscore the importance of a comprehensive approach at the early stage, when the oncoming tidal wave is already on the horizon. Most significant is that stressed conditions in the financial and asset markets may morph into insolvencies on a wider scale and that this would rapidly have implications for the economy. Particular actions directed toward arrangements and mechanisms for the distressed financial markets and intermediaries as well as the stressed borrowers during this stage of the crisis need to be an integral part of the solution.

Stage 2: Repair and Resolution

Should the crisis progress beyond the first stage, with rapidly deteriorating financial and asset market conditions, its management will need to address both the systemic threat of widespread financial institution failures and the intensification of distressed conditions in the household and business sectors. In addition to the restructuring and resolution of distressed financial institutions, the efficient execution of pre-positioned debt-restructuring arrangements for the household and business sectors on a wider scale at this stage of the crisis will also be critical. Acting on two fronts will limit the adverse feedback effects from weakened household, corporate, and financial sectors to the real economy.

For the most part, the focus of attention in the management of a financial crisis that has advanced to this stage has been on the restructuring and resolution of the financial sector. The objective at this stage is to minimize the systemic risk of the failure of financial institutions and to facilitate its efficient resolution through asset carve-outs from distressed banking institutions, the recapitalization of viable institutions, and the orderly unwinding of insolvent institutions. But support to financial institutions in distress can raise the issue of moral hazard. Such concern, although legitimate, should not prevent actions that will avoid disruption to the overall functioning of the financial system. By this stage of the crisis, there would also already be severe limitations on the capacity to achieve private sector solutions. The solution then lies in ensuring adequate safeguards to limit moral hazard and thus minimize the risk of loss to public funds. These could include ensuring that financial assistance is only extended based on commercial terms, with strict adherence to the principle that losses incurred are first borne by the existing shareholders. Appropriately

designed incentives with provisions for sharing in the upside potential of subsequent recovery values can also address some of the valuation challenges involved. In addition, legislative changes may also be needed to manage the problem assets and to achieve enhanced recovery values, while preserving financial discipline among defaulting borrowers.[23]

Current reforms led by the Financial Stability Board on recovery and resolution planning for global systemically important banking institutions will better support the ability of authorities to achieve an orderly unwinding of failed financial institutions while minimizing the loss of public funds.[24] Significant challenges, however, remain with respect to the coordination of the resolution of insolvent institutions with extensive cross-border operations. While there has been some meaningful progress toward improving the processes for monitoring, supervising, and resolving globally systemic banks, the process is far from complete, and continued work in this area at both the national and international levels will remain important.

Stage 3: Supporting the Economic Recovery

The most pressing challenge as the crisis evolves into an economic crisis is to support an economic recovery. A prolonged period of economic weakness even after liquidity conditions have normalized and when credit flows have resumed is likely. First, a significant macroeconomic response may have averted the collapse of the financial system, but it will not, on its own, support an economic recovery. Monetary policy is able to deal with the downside risks, but it is less able to deal with the upside potential of an economy. Second, an economic recovery will also depend on effectively addressing conditions in the asset markets, including the foreign exchange market, and the repair of the balance sheets of the borrowers—namely, the household and corporate sectors, including the small and medium-scale enterprises.

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[23] In Malaysia, the asset management company established in June 1998 distinguished between viable and nonviable loan assets. For the viable loan assets, the management involved restructuring and rehabilitation of the loans, while nonviable loan assets were dealt with through management of the borrower and/or collateral.

[24] Financial Stability Board, "Effective Resolution of Systematically Important Financial Institutions: Recommendations and Timelines," consultative document (Basel, 2011). The ongoing work involves identifying such systemically important financial institutions and requiring resolution and recovery plans for these institutions to enable the authorities to resolve the institutions without systemic disruptions and without exposing taxpayers to significant losses.

Third, delay in macroeconomic policy responses may constrain the recovery. An accurate assessment of the effects of the turmoil in the financial markets on the financial system will provide an early indication that the balance of risks has shifted to the downside. A delayed or insufficient monetary policy response could well prolong the weak demand conditions and result in lasting damage to the productive capacity of the economy, which could then be difficult to reverse.[25] The earlier lowering of interest rates would also reduce the debt-servicing burden of borrowers at a time when incomes are already affected. Given the sizable amplifying feedback loop between the financial and real sectors, monetary policy action during the onset of the crisis can be instrumental in reducing the overall severity of the crisis for the real economy.

During the Asian financial crisis, most affected economies—which had initially raised interest rates to support the exchange rate—began lowering the policy rates to historic lows only ten months into the crisis. Many complemented these actions with reductions in the statutory reserve requirement during the same period to improve liquidity conditions. Similarly, in the advanced economies, monetary policy was only rapidly eased ten months into the crisis in September 2008. Taking into consideration the greater interconnectivity that exists in the financial system and its interlinkages with the economy, the recognition of the next eventuality of the crisis would prompt earlier actions that would avoid the severity in the damage to the economy.

Experience from successive crises has, nevertheless, warned against the overreliance on monetary policy. Not only are there limits to what monetary policy can deliver, but an overreliance on it could also lead to other unintended consequences. Monetary policy also cannot address the structural issues, including the economic rigidities and economic competitiveness. Highly accommodative monetary policy cannot be a substitute for the necessary reforms and structural adjustments. Additionally, a prolonged period of an environment of low interest rates may also contribute toward the buildup of financial imbalances. Monetary accommodation, therefore, would need to be reinforced with the intensification of debt-restructuring efforts for the household and

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[25] Dave Reifschneider, William Washer, and David Wilcox, "Aggregate Supply in the United States: Recent Developments and Implications for the Conduct of Monetary Policy," Finance and Economics Discussion Series (Washington: Federal Reserve Board, 2013), suggest that a more activist role of monetary policy can reduce the depth and length of a recession, thereby preventing damage to the supply side of the economy from becoming entrenched.

business sectors to increase the potential for spending and investment activity. Supply-side policies across economic sectors, including in the labor market, will also be important to the recovery process.

In an environment of weak private sector spending, fiscal measures have an important role in supporting the domestic economy, even though by this stage in the crisis, the policy space may have become limited. There are, however, wide-ranging measures that do not involve significant costs. They range from the provision of incentives to firms to preserve jobs and reduce the shedding of labor to fiscal incentives to promote debt restructuring for viable corporate, small, and medium-scale enterprises and the household sector to support the recovery in domestic spending. In addition, financial policies, including funding schemes, credit guarantee facilities, and special funds established to increase access to financing, have been highly successful in supporting the growth process.

At this stage of the crisis, the redistributive effect of the financial crisis, which disproportionately impacts the poor and the vulnerable, needs to be mitigated. According to a World Bank study, a financial crisis can cause the income of poor households to fall 10 times more than that of the average household.[26] While the management of financial crises has not always given explicit consideration to the redistributive effects of the crisis, there have also been highly successful programs that have been implemented during such periods in several parts of the world. These programs can be grouped into four important areas. The first relates to mechanisms for restructuring small loans, including for housing and for small businesses. Second are the cash transfers that are part of the social safety net to assist poor households in paying for essentials—children's education and programs that support better health outcomes. Third are the programs for skills development and education for the unemployed and to develop entrepreneurial skills. Finally is infrastructure investment, which creates employment opportunities, while also building the foundation for future productivity enhancement.

[26] Bilal Habib, Ambar Narayan, Sergio Oliveri, and Carolina Sanchez, "The Impact of the Financial Crisis on Poverty and Income Distribution: Insights from Simulations in Selected Countries" (Washington: World Bank, 2010), used simulations based on data collected from Bangladesh, Mexico, and the Philippines to show that a financial crisis can cause the income of poor households to fall between 25 percent and 50 percent. In comparison, the average household would only suffer income losses of between 3 percent and 5 percent. Poor households refer to the population in the fourth to seventh deciles of income distribution of the respective countries.

Stage 4: Recovering from the Trough

By the time the crisis reaches the threshold beyond which it will run its course, further policy interventions become limited at best. Amid high tensions, undermined confidence and political upheavals, preserving sociopolitical stability and forging a national consensus become a challenge. Even in cases where international assistance has been sought, it will be important at this stage to gain support for the national economic recovery plans. Earlier-introduced life support measures can no longer provide any breathing space. The focus now has to be on addressing the underlying weaknesses in a gradual and sequenced manner. Harsh conditionalities not only will worsen conditions, but will delay the prospects for a potential recovery and will also increase further the costs of the crisis.

While it will be critical to reexamine the necessary policy interventions, the key focus of the program needs to address the prevailing fundamental weakness. During the Asian financial crisis, IMF programs took the opportunity to address all the areas of weakness, including those not directly related to the crisis. This worsened the crisis and increased substantially its costs to the economy. Diagnosis of the conditions and the balancing of the trade-offs will provide guidance on the sequencing of the priorities. During this period, measures to address the redistributive effects of the crisis become highly important, while communications will be vital to promote a wider understanding that this stage of the crisis now requires urgent private and public sector adjustments that would provide the potential for a better future.

Stage 5: The Unfinished Business in the Aftermath

The management of the crisis in the aftermath is equally important, requiring attention to the risks and vulnerabilities that could threaten the sustainability of the recovery and to the unfinished business that relates to the structural adjustments and reforms that will increase the medium- and long-term potential of the economy. During this period in the aftermath, the country is not out of the woods. In addition, there is the challenge of unwinding the extreme measures that were implemented during the extreme conditions of the crisis. The premature lifting of the life support systems instituted during the earlier stage of the crisis may derail the recovery, while the structural adjustments that will contribute toward future growth potential may also entail costs to growth in the immediate term.

Demand management measures continue to be important in the period of the aftermath to provide support to the recovery and to provide the enabling environment for the implementation of the structural adjustment policies. Other supply-side policies and incentives also need to aim to promote consumption spending and improve the investment climate, while being complemented by measures that would promote financial and economic inclusion. The growth generated by these measures would allow for it to be politically more palatable to address the more challenging structural reforms that involve costs to the economy.

The challenge surrounding the successful unwinding of the extraordinary measures that were introduced during the early stages of the crisis is not unique to monetary policy. In the aftermath of the crisis, when the initial extreme conditions no longer prevail, an effective exit from the unconventional or unprecedented measures is needed to ensure that they do not generate their own set of unintended consequences. Clarity of the objectives of such unconventional measures and an assessment as to whether these objectives have been achieved provide the identification of the indicators that signal the timing for the exit from such policies. Such policy normalization during the aftermath of a crisis has been known to lead to significant shifts in market expectations that could result in significant overadjustments in the financial markets, hence affecting the strength of the recovery.

During the Asian financial crisis, Malaysia implemented measures seen at the time as being highly controversial.[27] Malaysia began lifting capital control measures six months after their introduction, as the measures were judged to have achieved their objectives and were no longer necessary. Macroeconomic and financial stability had been restored, and the economic recovery was well underway. The liberalization of the exchange rate regime, however, took longer. It was after over six years, following the strengthening and development of the financial system—in particular, the development of the domestic bond market and the progressive liberalization of the financial system that provided the preconditions for the effective transition to the floating exchange rate regime.

The implementation of adjustment programs to strengthen the financial system and the economic potential has its best chance to succeed in an

[27] The capital control measures implemented on September 1, 1998, followed waves of sharp depreciation in the currency over an eighteen-month period. The measures aimed to serve as a circuit breaker to further sharp declines in the currency. A day later, following an appreciation of the currency, the exchange rate was fixed against the U.S. dollar.

environment of stable financial markets and the efficient functioning of the intermediation process, and when growth has resumed. The structural adjustments and reform agenda need to address the underlying weaknesses and structural deficiencies that were made visible by the crisis and to strengthen the potential of the economy. The reforms therefore need to extend beyond the financial sector to address issues relating to competitiveness and economic structures and to the education and health sectors. Finally, new legislation and institutions may need to be established in the now-changed and more interconnected economy, while obsolete institutions may need to be dissolved.

At this stage, it is also important to recognize the risks and vulnerabilities that could threaten the sustainability of the recovery. As part of the national risk management framework, a matrix of indicators on these risks and vulnerabilities will provide insights into the unfinished business in the management of the crisis. Given the dynamic nature of the systemic risks to the financial system and the economy, the network analysis framework, including the analysis of broader contingent claims, can illuminate these risks, so that effective actions can be taken. Finally, gradually rebuilding the policy buffers that had been drawn down during the crisis will help to prepare for the management of future shocks.

Financial Crisis and Governance Challenges

The greater interconnectedness within national financial systems, the stronger two-way linkages between the financial sector and the economy, and the new channels through which risks can be transmitted collectively present significant governance challenges for the management of a financial crisis. The internationalization of national financial systems adds a further global dimension to the governance challenges in crisis management. Existing governance arrangements, therefore, need to be reviewed to reflect the new realities of crisis management in this environment. The management of crises is no longer confined to the remit of one authority or an individual country, but calls for collective efforts by multiple agencies and authorities within the country and across countries. The key new feature in the design of governance arrangements arising from the increased connectivity in the world calls for the need for greater effective cooperation, collaboration, and coordination within a country and across borders.

Let me highlight five important issues that will confront central banks in the consideration of these new governance arrangements. The first

relates to the need for effective interface with other agencies, including the government, while avoiding being compromised by the actions that may be taken. Frequently cited reasons are political realities that need to be taken into account. The second relates to the challenges of boundary management. The central bank may be expected to do more than its legislated mandate either due to constraints experienced by other authorities or the lack of clarity and understanding of their integral role in the dynamics of the crisis.

The third relates to the potential erosion of central bank autonomy and independence in such an integrated governance arrangement. This can arise when coordination arrangements involve fiscal costs, such as for the restructuring and resolution of financial institutions. It is frequently maintained that the decision-making process should be led by the government. The fourth relates to the need for speed of action during a crisis. Elaborate governance arrangements across agencies may result in delays or compromises that may not produce the desired outcome. And finally the fifth relates to ensuring consistent and effective communication at a time when there is great uncertainty and when the challenge is made more intense by the instantaneous information flows from alternative market sources on the developments taking place during the crisis.

Clearly defined governance arrangements will enhance the potential for the effective management of the crisis. Such arrangements need to be established at three levels: at the central bank, at the national level across agencies, and at the regional and international level. Central to these arrangements is an agreed framework for the decision-making process, which defines the responsibilities and accountabilities of different authorities, the interagency relationships and the procedures and the protocols to be observed during a crisis.

While there may already be existing committees at the central bank to address the mandate of monetary and financial stability, a dedicated group for crisis management will be key to supporting efficient and coordinated information flows and in monitoring the implementation of crisis responses from the different parts of the bank. For this purpose, there has to be great clarity on the objectives to be achieved by the dedicated group. This will provide the strategic focus, while providing the ability to mobilize key resources across the organization to support swift actions. Such a group would be similar to the dedicated group for business continuity that already exists in most central banks. The responsibilities of the crisis management group would involve mobilizing the necessary information, coordinating the diagnosis and assessment

of the risks and the policy choices, making assessments on the timing of policy responses, and ensuring their effective execution. Such a group would also be responsible for coordinating crisis communications and engaging with the markets, the industry and economic sectors.

In most emerging economies, central banks generally have a broader mandate that includes institutional building. The central bank is expected to establish institutions and arrangements that support the effective functioning of the financial system. This may include establishing institutions that have a role in the management of a financial crisis.[28] Additionally, not all the channels of the transmission of risks in the financial system are within the span of direct control and influence of the central bank. Policy instruments for responding to risks to financial stability are frequently dispersed across multiple agencies. As such, institutions and arrangements need to evolve to take into consideration the implications of greater interconnectivity in the financial system. Collaboration across institutions and agencies within the government, in the surveillance of risks and in the implementation of the measures during a crisis, becomes increasingly more important.

Central banks in different parts of the world have addressed this in different ways, including through the establishment of financial stability committees or councils with broader representation,[29] and through more formalized cooperation agreements between the authorities. For the coordination of policies for economic management during a crisis, national-level councils have been established, chaired by the political leadership, to centralize the decision-making process and to ensure the government machinery would facilitate efficient economic management.

Equally important in the governance arrangements for the management of crisis at the central bank are the arrangements for the coordination of communications. An analytical framework that recognizes the differential impact of the crisis on different groups of stakeholders will guide the nature of the communications and engagements that will be needed. Rigorous stakeholder analysis and engagement become highly important to gain stakeholders' understanding of the dynamics of the conditions unfolding and an appreciation of the policies being implemented during

[28] Examples of such institutions include credit guarantee corporations, deposit guarantee corporations, and asset management corporations, and during periods of crisis, mechanisms for debt restructuring and resolution or to introduce special schemes for specific sectors.

[29] In the United States, the council is chaired by the Secretary of the Treasury, while in Australia, the Governor is the chair of the council.

the crisis. It will also enhance the prospects for managing conflicts during such period.[30] Such a framework details the stakeholder network and maps the key relationships and the strength of their linkages to the different parts of the financial system and the economy. Such a framework of the network can serve as an important basis for the formulation and prioritization of the communication strategies.

At the international level, the global reach of the spillover effects of the 2007–08 crisis has highlighted the significance of the international dimension of the crisis and the need for coordination and cooperation arrangements with respect to policy responses and the sharing and exchange of information.[31] The high degree of interconnectivity across financial systems has brought to the fore the importance for such cooperation and coordination arrangements to be more inclusive. Multilateral bodies, such as the BIS and its various committees, have provided important platforms for the sharing and exchange of information among a larger number of central banks. Meanwhile, the establishment of the G20 and the Financial Stability Board has strengthened and broadened the cooperation among ministers of finance, central banks, regulatory authorities, standard setters, and the multilateral agencies. More recently, the Financial Stability Board has also extended further its global outreach through the six regional groups that were formed in 2012.

There has also been significant progress in establishing regional governance arrangements in addressing financial stability risks. Drawing on the experience of the Asian financial crisis, the central banks of the East Asia Pacific economies have come together to develop an integrated framework for crisis management and resolution that outlines the cooperative and coordination arrangements to deal with the cross-border effects of financial crises. The framework details the alert and activation protocols, the arrangement for the assessments of emerging and imminent risks that could threaten regional financial stability, and the operational arrangements for decision making during an imminent crisis. It is

[30] This approach was rigorously adopted with the domestic stakeholders in Malaysia at the time of the 1998 Asian financial crisis. Despite the circumstances of great uncertainty and the implementation of unconventional policies, Malaysia did not experience capital flight. More recently, Witold Henisz, *Corporate Diplomacy: Building Reputations and Relationships with External Stakeholders* (Sheffield, United Kingdom: Greenleaf, 2014), has applied such a framework to offer insights for stakeholder engagement strategies to generate value-enhancing results.

[31] Jean-Claude Trichet, "Central Banking in the Crisis: Concept Convergence and Open Questions on Unconventional Monetary Policy," Per Jacobsson Lecture (Washington: Per Jacobsson Foundation, 2013), reviews the evolution of the global governance and assesses its performance.

supported by a regional monetary and financial stability committee that was established in 2006. In Europe, progress on the Single Supervisory Mechanism and Resolution Directive[32] has similar objectives, but the challenge has been to establish this arrangement during the midst of an ongoing crisis.

International and Regional Responses

The global response to financial crisis has evolved significantly over the decades. Early on, financial crises were mainly confined to national systems and were generally managed at the national level. By the 1990s, financial crises had become more regional in nature as evidenced by the financial crises in Latin America, Europe, and Asia. Nonetheless, they were still managed by the individual crisis-affected country. The global response during this period involved multilateral agencies that dealt directly with the crisis-affected economy, without any policy coordination across countries, although interconnectivity and contagion had already become prevalent.

The recent advanced economies crisis was marked by its international dimension, and the policy responses have been international. Coordinated interest rate cuts, provision of U.S.-dollar liquidity facilities by several key central banks, and concerted fiscal expansion by many countries turned the tide of the global recession. The crisis also set in motion an international process for the fundamental overhaul of regulatory and supervisory frameworks aimed at minimizing the likelihood and impact of future financial crises. The establishment of the Financial Stability Board in 2009, together with expansion of the Basel Committee on Banking Supervision, has also been at the center of the work of the global financial reform. The reforms have largely aimed at strengthening the supervision and resolution frameworks for systemically important financial institutions. Emphasis has also been on enhancing collaboration in the areas of surveillance and risk assessments that take into account the implications of increased connectivity in the global financial system.

Three main challenges confront the international collaborative efforts in crisis management. The first is that national authorities need to accord priority to national considerations even while national developments

[32] The Single Resolution Mechanism, Bank Recovery and Resolution Directive, and Deposit Guarantee Schemes Directive, put forward by the European Commission in June 2012, were approved and adopted by the European Parliament on April 15, 2014.

and policy actions could have widespread global implications. National resolution frameworks would, for example, result in solutions that would have ramifications for financial stability in other jurisdictions. The second is that international interconnectivity and interlinkages are less well understood and appreciated. The third relates to the leadership that is required to build regional and international consensus in an environment that is fraught with diverse backgrounds, ideology, and perceptions.

The global dimension of crisis has drawn significant responses by the multilateral organizations. So far these responses have focused on efforts to improve the effectiveness of risk surveillance capabilities and in the provision of financial safety nets. There is now greater emphasis on global surveillance and stress-testing frameworks and on assessments of macrofinancial and systemic risks, including contagion spillovers both within domestic and across national borders. The focus of the IMF's Financial Sector Assessment Program and Article IV consultations is now better aligned with these approaches. Liquidity facilities have also been augmented.[33] Much less progress, however, has been made in developing the mechanism for restructuring of sovereign debt, a vital requirement for addressing the consequences of a sovereign debt crisis. Building the consensus to achieve this has been less successful given that the solution would impinge on the sovereignty of countries. Such restructuring would avoid defaults that could have more pervasive implications at the global and regional levels.

Regional collaborative efforts have also intensified, particularly in regions that have become more integrated and cohesive. In Europe, an important initiative is the financial safety net arrangements with the European Stability Mechanism, which is the largest existing regional arrangement. In Asia, a regional financial safety net, the Chiang Mai Initiative Multilateralization, was established in the aftermath of the Asian financial crisis. It is now the second-largest regional financial safety net in the world, and it is supported by regional surveillance mechanisms to assess risks confronting the region. Additionally, an integrated regional crisis management framework has also been put in place.

[33] The IMF's Precautionary and Liquidity Line, introduced in November 2011, is aimed at providing liquidity to all countries that are threatened by contagious shocks, even countries that have sound economic fundamentals. In addition, the IMF also, through a program in collaboration with the European Commission and the European Central Bank, has provided support to several distressed countries.

While these international and regional responses go a long way toward addressing crisis conditions, they do not obviate the more encompassing need for a more robust international monetary system. The ongoing reforms of the international monetary system will continue to remain a challenge. Moreover, when a crisis becomes more than a liquidity crisis, resources provided in existing international financial safety net arrangements are likely to be insufficient. Multilateral agencies also need to recognize the complementary role of regional groupings in achieving the common cause. Such an interface between the multilateral institutions and regional groupings needs to be based on the relative strengths of respective regions and that of the multilateral agencies. To maximize the benefits of these complementary roles, cooperation can be based on where the concentrations of expertise, experience, and the knowledge base reside. Such increased scope for regional and international cooperation can strengthen the existing international and regional responses to financial crisis that increasingly has an international dimension.

Conclusion

Policies and reforms that have followed successive financial crises have contributed significantly toward strengthening the resilience of financial systems and economies across the world. Going forward, financial crises will, however, continue to happen. Our efforts will not be sufficient to prevent the next mega–tidal wave. Moreover, the next tidal wave that surges onto our shores is unlikely to be identical to those experienced previously. The exact manifestation of a future financial crisis will be different amid the vast and rapidly changing terrain in our landscape. The lesson to be drawn is that crisis prevention, while important, will not be sufficient. Policymakers need to enhance the capability for the effective management and resolution of such future financial crisis.

To quote Mark Twain, "History does not repeat itself, but it does rhyme."[34] Key then are the lessons that might be drawn for the effective management of financial crises. An appreciation of the increased interconnectivity in the world, at both the national and international level, together with an understanding of the manifestations and dynamics of a financial crisis as it progresses from one stage to another, will enable policymakers to anticipate the next oncoming eventuality in the evolution

[34] The quote can be traced back to Mark Twain's novel *The Gilded Age: A Tale of Today*, published in 1873.

of the crisis. This will address shortfalls that may arise in a diagnosis that focuses on any single period or on a specific aspect of the crisis during its evolution. Reactive policy responses to the unfolding conditions will also be avoided, and it will allow for preemptive and forward-looking policy solutions that will be better able to arrest the crisis at its early stages. If a financial crisis cannot be avoided, being preemptive in the management of its systemic consequences will enhance the potential for minimizing its costs and thus the degree of severity of the crisis.

The perspectives and approaches to policymaking in these circumstances will need to evolve with the changing environment. The central bank will also need to transform itself into an enduring organization that will best deliver its mandates in this new environment. This requires new institutional and governance arrangements with new capabilities in crisis management in a world that continues to be highly unstable. Treacherous waves will be before us, and we need to be highly suspect of the calm before the storm. Great forces of change and the rapid shifts taking place will remain our challenge. Similarly, this will also be the challenge for the other agencies in the public and private sectors. The central bank, however, cannot just lament the inertia of the others. The central bank needs to exercise influence to gain consensus on the necessary collective action to deliver the needed outcomes. Greater engagement and effective collaboration supported by the necessary governance arrangements need to be in place—both in normal times and, in particular, during times of crises. The intensification of international financial integration and the significant implications of policy spillovers across borders have also surfaced new considerations on the current global governance arrangements.

It is often said that the evolution of a crisis is better understood and becomes clearer only in hindsight. Indeed, the encounters with crises have demonstrated that the level of uncertainty that prevails as a crisis unfolds cannot be underestimated. Even while timely information is scarce, there are strong pressures for policymakers to respond swiftly and decisively. Policymakers at the center of managing a crisis need to have courage and nerves of steel and to be steadfast in the endeavor. Therefore, it is my sincere hope that my thoughts presented in this lecture, on the manifestation and dynamics of a financial crisis and the policy choices during the unfolding of a crisis, will contribute toward the ongoing dialogue that is so important in guiding us in navigating through the raging waves to safer shores. Thank you.

Questions and Answers

Following the formal presentation, a panel discussion was held, moderated by BIS President Jaime Caruana. Participating in the panel along with Dr. Zeti were Jacob Frenkel, Chairman of JPMorgan Chase International and former Governor of the Bank of Israel; Stefan Ingves, Governor of Sveriges Riksbank, the central bank of Sweden; and Per Jacobsson Foundation Chairman Guillermo Ortiz. Dr. Zeti and the other panel members then took questions from the audience.

GUILLERMO ORTIZ: Thank you very much, Dr. Zeti. You have given us a true tour de force, an extremely comprehensive analysis, and what I would suggest is that we proceed immediately to the panel and that the questions addressed to Dr. Zeti can be done within the panel. Thank you very, very much again, Dr. Zeti.

JAIME CARUANA: I'm very grateful to Jacob Frenkel, Stefan Ingves and to you, Mr. Chair of the Per Jacobsson Foundation, because you have accepted to take part in this panel discussion. So I will propose that each of you make comments for, say, about 10 minutes. I will start in alphabetical order by surnames. I will start with you, Jacob, and then Stefan, and then you, Guillermo. So maybe you can also use the opportunity, if you so wish, to make comments on the two previous sets of remarks, if there is anything that you wish to say, of course. Then I will turn to Governor Zeti for maybe some reaction, and then we start the discussion and the interaction with the floor. Jacob, the floor is yours.

JACOB FRENKEL: Thank you very much, Mr. Chairman. It's a great privilege and honor to be here again having not missed a single meeting since 1987. So I'm really delighted to be here.

The presentation by our good friend and colleague, Governor Zeti, is so rich and the subject is so complex that one cannot actually do full justice in this kind of a discussion. So I'll just touch here and there.

What we saw here—and it was already described as tour de force—is a combination of using Governor Zeti's vast experience and huge knowledge together with a little dose of good judgment to produce that great forest. And while she presented it to us, along the way, I don't know if you have noticed, she succeeded in refuting a very important theorem by Albert Einstein.

And you know, in a meeting that brought together practitioners and theorists, Albert Einstein is allegedly supposed to have said that in theory, we know everything, but nothing works. In practice, everything works and we don't know why. He went on to say that in this meeting in which we bring together theorists and practitioners, we find out that nothing works and we don't know why.

Then came Governor Zeti and showed us that when she combines practice and theory, everything seems to work, and we seem to know why. So if you feel that you did not fully get the message yet, I urge you to look at her complete dissertation, which will be distributed hereafter.

One of the main points of Governor Zeti's conception is that crisis is not a snapshot. It's not a static concept. It's a process. It's dynamic, and she uses the four concepts: the concept of stages, the concept of phases, the concept of dynamism, and the concept of threshold. Now, if you have something that moves like that, then time is important.

And if time is important, then timing is important. And if timing is important, then it's very important to know who does what and when, and as you move from one phase to the other, can you skip some or not? Crises that started with some slow dance that may have been cyclical, if they were not addressed quickly enough, they may have become structural. And so on and so forth.

And in footnotes, she mentions something about labor markets, where indeed training, education, and unemployment that really may have started being cyclical are now really a structural issue. So there are a lot of lessons from there. And crises, while we know they will come, we don't know exactly when.

You know, I see some of you came from London. So I lived a few years in London, and I remember the notion of London buses. You stand and wait for London buses, you know, and guess that buses will come. They never come. And when they arrive, they arrive in triplets. And then you go on them, and they don't always go to where you thought they will.

So this is the notion of the crisis that we have here, and I think that it's important to recognize it. But this brings to the fore a real question

of, What is the definition of success? You know, if a crisis was a fire, then we know what the definition of success is. You extinguish it. If you succeeded, it's over and out. And since there is no future because you don't worry about it, you don't care if when you put water in the house, the carpets were destroyed. The fire is extinguished or not.

But if you have a dynamic context, then the way in which you extinguish the fire is important. Did you reduce or increase the likelihood of the next crisis? And if you want to come back to live in this very same home, will you have carpets or not? So the way in which you do things becomes important. The incentive system, which is not the story of fires and carpets but really of human behavior and memories and anticipation, becomes much more important. Moral hazard becomes key, and the issues are becoming more complex. So it sounds like philosophical remarks, but they are all, in a way, stimulated by the points that were made by Governor Zeti.

And when I listened this afternoon to Jaime Caruana's fantastically interesting presentation on stepping out of the shadows of the crisis,[35] then I realized, this is really the concept. A crisis is a phase. We need to step out of it. He did not say "getting out," but "stepping out." It's a process, and how you do it is important. And in this regard, unconventional monetary policy, we need to know: Is it temporary or not?

And when we started it, I was not governor at the time. When you started it, it was supposed to have been temporary, and every one of you looking in the mirror, you know, you did not expect in 2008 to meet here in 2014 and to ask, Why do they worry when I mention the word "tapering"? So in other words, temporary has become or had received ingredients of a new paradigm. And if you don't want it to be a new paradigm, you must emphasize even more that it is temporary.

And if you have to emphasize without sacrificing the strategy, then at least you have to communicate what you mean by "temporary," and it does not need to be time dependent. It has to be functional dependent. But clarity, communication—and that's where Governor Zeti's emphasis on communication rang such a sympathetic bell. Because otherwise, we will have what the BIS told us. When you have real interest rates negative for such a long period of time in most countries, and they are necessary given the circumstances, you still need to lose some sleep at night. And

[35] Jaime Caruana, "Stepping out of the Shadow of the Crisis: Three Transitions for the World Economy," speech delivered at the Annual General Meeting of the Bank for International Settlements, Basel, June 29, 2014.

especially that you know that in the past such episodes did not always end up so well and easy.

So this requires transparency, and remember that transparency is the state of affairs in which what you see is what you get, because what you don't see gets you. So that's basically, in one, very simple to say. But then comes Governor Zeti and says, "Yes, but remember it is not a problem of any single country." We have, in her words, connectivity, integration, internationalization, transmission. So the question is how do you, whether a small or a large country, deal with this fact that some things happen there and they affect you?

The temptation is to break the line and cut the transmission, but then you forego all the benefits from globalization. And we don't need to look far to see that in 2009, the year in which trade within the world has collapsed, is the very same year in which we all want to forget, in which growth all over the world practically collapsed.

So how do you deal with it?—and she introduces the concept of circuit breakers. That occasionally maybe you need to do some things—and people that experienced the Asian crisis know very well that they held their hands on their nose. They took some measures; they did not like what they did, but they knew this was the only thing they could do. And why did they succeed? Because they came back to normal before it became the new paradigm.

And that's really the key. You deviate; that's okay. But then you have to have the benchmark, otherwise the concept of deviation is not logical, and therefore, you need to think about going back. Known normalization becomes very important.

How come Latin America and Asia and I would say also Israel in this regard spared themselves from the worst scenario of these crises? Well, one simple answer—and it is saying a lot—is they were lucky to have their crisis earlier on. Earlier on, before esoteric instruments were developed, and they understood very well that capitalizing the banks is important. That leverage is a problem. That irresponsible budget is a problem. That structural measures are important. That supervision is important. Regulation may be important.

And then, when the things came, they were more ready. It doesn't mean that they spared themselves from the problem, because trade did collapse at some stage.

I said "supervision" and "regulation" in this order because I want to underscore, again, a point that Jaime made today,[36] and early on in

[36] Caruana, "Stepping out of the Shadow of the Crisis."

the crisis in the BIS report, it was emphasized but not known enough outside. The problem when every country ran and raced in to having new regulations and fast regulations which were so politically attractive, the question of why didn't the existing regulations, why hadn't there been full enforcement of them, why the supervision was not as strong, was left aside. And I think it's very important that Jaime brought it back to us.

So there are some issues and, okay, Mr. Chairman, I will only say, you know, Tolstoy said that all happy families live happily alike and all unhappy families live unhappily each one in its own way. So there are a lot of commonalities, but there are situations that are particular to countries and to regions. Governor Zeti did not mention much about Europe.

But I think that there is an issue that is still an open one, and I just want to put it on the table. The fact that spreads within the euro zone shrank to practically zero for such a long period of time, leaving the impression that sovereign debt is sovereign debt wherever you are, is consistent with two hypotheses. And I think it's extremely important that we find the answer as to which one of them is correct.

Is it the case that risk was practically mispriced? Markets failed, risk was mispriced, the crisis gave us a wakeup call and now spreads are more realistic. Or is it the case that markets did not misprice risk? And they did incorporate the fact that the no-bailout clause was not to be taken seriously. And if it is not to be taken seriously, one of the original things was the demise of the Stability and Growth Pact early on.

Those are issues that need to be addressed as we talk about the Tolstoy, everyone lives happily together. I have still a lot of notes but I will leave them aside. Thank you very much.

JAIME CARUANA: Thank you. Thank you very much, Jacob. I must say that I noted carefully the London buses to be added to the lists which in my own files start with the taxi at the station. So if anybody has a story about trams, I'm happy to give them the floor. Stefan?

STEFAN INGVES: Thank you, and thank you so much for giving me the opportunity to first listen to this very interesting reflection on crisis management and giving me the opportunity to reflect on that.

Crisis management is basically to have the capacity to deal with the unknown, because if everything were to be known, ideally you would fix the problem kind of early on. And I very much like Governor Zeti's kind of flow description on how you actually do this. So in terms of a longer

timeline going through what you actually have to do at the different stages, I find it very reasonable.

But let me add to that a few reflections of my own which are not at all that dissimilar to what we have heard, because I also think when it comes to dealing with crisis, we always say that this time is different. But there are always, almost always, when you deal with the financial sector, common parts to it. So it's really a combination.

In the early days—and this we have seen again and again before the crisis—bankers, investors, authorities, politicians all have incentives to procrastinate. Say this time is different and you always go through a phase of denial. And during that denial phase it's very good to have institutions like the IMF and others who say, well, you know, the numbers don't look good. So the probability of this thing holding together is kind of on the low side. And I think that there needs to be somebody with that role in the world, either at the global level or at the regional level.

Now, once the crisis has arrived, the issue is always the same. You need to go for a Band-Aid in one form or the other. Usually, it ends up being the central bank providing that Band-Aid. Ideally, you would like to see the central bank being the lender of last resort. Sometimes it ends up the other way around: the central bank ends up being the lender of first resort. And that is usually a huge problem, when you have to deal with the aftermath of that.

In these early stages, it's also very, very tempting to grant a lot of forbearance hoping that the problem will go away. Because if we do nothing, we say, things will improve a few years from now anyway, but usually when you say that and when you grant forbearance, that will come back to haunt you later. And sooner or later, somebody has to face the music and basically conclude that this stuff was worth 100 yesterday but it's only worth 35 today. And what matters is whether it's worth 25 or 45 tomorrow. But it certainly is not going to be worth 100. That's usually the issue that one has to deal with.

And when you get to that stage, then that's when you have to do a triage of the banks in one form or the other. This is what nowadays is called AQR [asset quality review] and stress testing. But in terms of the elements that you actually deal with, looking at the assets, figuring out what things are worth, it's pretty much the same thing that has happened many times in the past in different parts of the world.

And in the meantime, when this is going on, one needs to find a way of stabilizing the system, because it's very often forgotten that there are

physical constraints to how long it takes to do a proper, with stress on the word "proper," due diligence of a large bank. And that takes actually many, many months to do, and in the meantime, somebody has to hold the whole thing together.

Now, part of this crisis management, and this is also part of the lecture that we have heard, is that you try to limit contagion. You try to minimize the overall cost to society as best as you can, and in order to ensure that that actually happens, you have to put the pieces back together in such a way that you maintain the vital functions in the banking sector in one form or the other.

Because I do think that history has taught us over the years that if we don't deal with the bad loans, we end up first with zombie banks, and then we end up with zombie corporations. And in both instances, that will hamper growth for years to come. So you are actually better off trying to deal with this, facing the music in one way or the other.

And once you start doing that, basically, the rest of it is kind of corporate finance, because when you start restructuring banks and restructuring companies, that is essentially what you do, and you have to convince people that you thought you had debt but it is actually equity. And once that is understood, then people can sort of behave properly again, because then it's in everybody's interest to try to maximize the return on the equity holdings that you never expected to hold in the first place. And then they take it from there, and things usually improve.

We also heard about the importance of communication: very, very important. If you say that there is no reason to panic, then people usually will panic. So in that sense, you have to come up with a better story line than that. And it's kind of producing a type of weather report when it's raining, and then the content of the weather report has to be such that you say that the sun is going to shine tomorrow provided that we do the following 50 things that you won't like.

And that's really the key to it. And then you actually have not only to communicate but to be ready to deliver what you have said that you will deliver. And once that is gradually realized—that these people are actually doing what they said they would do—then people would conclude, well, we're actually digging ourselves out of this hole. And then, that means that things will gradually improve.

Now, what we also heard in this very good lecture is that when you add cross-border aspects to this, things get more difficult, because you have more people involved and you have more people involved in losing

money across borders. And you have more issues dealing with who's going to pay for this whole thing, and that makes it more complicated.

In my corner of the world, we have done kind of war game exercises many times dealing with cross-border issues, and it works kind of okay among the central banks, but once it ends up in the finance ministries, it collapses. Because that's when you have to deal with the real-money part of the whole thing, and that's when it really gets difficult.

But what we also have seen many, many times before—and that's as well included in this excellent lecture—is the fact that it's actually very difficult to engineer an isolated financial crisis. Then you really have to focus on doing bad things in a few banks. Normally, a financial crisis comes in combination with macroeconomic imbalances, all sorts of fiscal problems, and exchange rate problems of various kinds.

And then, on top of that, you normally also end up with various political problems that you have to deal with. And that means that whatever it is that you have to do, it is rarely clean, because you have to deal with many different aspects of all of this at the same time.

So I've been dealing with crisis management now in one form or the other for almost twenty-five years. And what is remarkable is that some of this stuff actually stays the same, and we seem to have difficulties actually remembering what happened in the past, so we do this over and over and over again. But on the other hand, I do think that we have seen some serious and substantial movement when it comes to international conversations and international discussions on this, because we have more globally agreed rules today than in the past. We have discussed more than in the past how to deal with crisis prevention and crisis management. And I think that that is helpful for everybody, because to have at least some ex ante guidance is always better than having absolutely nothing despite the fact that no fire is—that two fires are never the same. But at least, if you know what the hose is supposed to look like when you start extinguishing that fire, that's helpful. Thank you.

JAIME CARUANA: Thank you very much, Stefan. What you said about what happens when some issues come to ministries of finance reminds me that there might have been a rationale behind the old standing rule that existed in this building that it was absolutely prohibited for ministry of finance officials to come through the door. And I myself experienced my—I think four years ago when I was in the ministry of finance and I wanted to have a discussion and ask advice to somebody in the BIS—that I had to organize a meeting outside the tower.

So that was for real. Anyway, Guillermo, will you wish to take your turn and kindly comment on everything you've heard, especially on Zeti's presentation?

GUILLERMO ORTIZ: Okay, there have been over the years a number of Per Jacobsson Lectures dealing with financial crisis. I did a lecture in 2002 basically focusing on the emerging market crisis. Then last year, Jean-Claude [Trichet] in his Per Jacobsson Lecture had mentioned the advanced economies crisis, and now, Dr. Zeti has given us a really comprehensive view of both the emerging and the advanced crisis.

So let me try to be brief. I think that there's a big difference between the crisis that happened in the emerging markets, as Jacob was saying, in the nineties and the early part of 2000 and the global financial crisis that we've seen today.

But perhaps we should start with a definition: you know, what is a financial crisis? And I think that conceptually what we call a financial crisis are macroeconomic stock disequilibrium or macro-balance-sheet imbalances, you know, as opposed to flow-type, the second. But of course, the stocks are just the integral flows, so we have to set a time framework. It's usually three to four years.

If you remember that was more or less the duration of an IMF program back in the eighties and nineties. So let's take that as a number. So almost by definition, stock disequilibria involve a situation in which a judgment is required as to whether a liquidity or a solvency crisis is being faced.

As we know by now, there is always a gray line between both situations, and a solvency problem can be the result of an initial liquidity crisis mismanaged. And that has happened more than once. This is why the IMF faces an almost existential malaise to get involved in the management of stock disequilibria, since its mandate is close to preventing it from financing insolvent countries.

I will skip all this; I had a section on what happens during the crisis but this has already been exhausted. So since Dr. Zeti talked about the Asian crisis, let me argue that the Mexican crisis in 1994–95 was the first, really, I would say, balance sheet crisis that emerging markets faced. And the approach that was taken by the authorities, by the IMF and so on and so on, became kind of the cookie-cutter solution for the crises that followed both in Asia and in Brazil, in Turkey and so on and so forth in the later part of the nineties and the early 2000s.

The Mexican crisis—I would not also describe it because you know very well—started when Mexico opened up its financial sector. It started

with NAFTA [the North American Free Trade Agreement]. There was a lot of enthusiasm about the prospects of Mexico. So we got huge capital inflows—I mean, measured by the standards of the time—and these were intermediated through the financial system, obviously with currency mismatches and maturity mismatches and everything.

So the trigger of the crisis was both political—because we had the assassination of a presidential candidate—and also it was in 1994 that the Federal Reserve raised interest rates from 3 to 6 percent. So that was the trigger.

And the Mexican case was a classic case of sudden stop. I remember that, you know, Michel Camdessus, who was the [IMF's] Managing Director at the time, told me that he had never really seen the disappearance of a market almost overnight. And that had really modified the approach to tackling financial crisis in emerging markets.

It used to be the case, and Jacob knows this very well, that disbursements from the IMF were always timed through an extended period of time to allow countries incentives to do the right thing and so on and so forth. But in this case, obviously, there was an overshooting both in adjustment and in finance.

And this proved to be successful. I mean it was hugely costly, but it was solved in a very short period of time. And again, I think that the IMF developed a huge expertise in dealing with emerging market prices that was applied in the cases that I mentioned. I know that Dr. Zeti is very skeptical of the IMF interventions in Asia, and she mentioned in her remarks that the IMF overextended its mandate and dealt with a number of structural issues that were outside the scope of the crisis. But anyway, the whole point is that the concept of crisis management changed.

Let me turn briefly now to the case of advanced economies which, as Jaime and Claudio [Borio, Head of the BIS Monetary and Economic Department] were saying this morning,[37] they exhibit many features as in emerging economies. But the challenges to overcome them are different in many respects, underscoring the need for a much more robust financial system.

To the extent that the financial crisis reflects the unraveling of stock disequilibria that build over time, it is the expression of a deep malfunctioning of financial markets. It is easy to understand why emerging

[37] Caruana, "Stepping out of the Shadow of the Crisis"; Claudio Borio, "The Financial Cycle, the Debt Trap and Secular Stagnation," presentation at the Annual General Meeting of the Bank for International Settlements, Basel, June 29, 2014.

markets got in trouble. They were opening their capital accounts, you know; capital flows were being internationalized, and domestic financial intermediaries just amplified the role.

But that such a crisis would have also taken place in advanced economies came as a huge intellectual surprise. Supposedly, in well-functioning financial markets, not only are resources allocated to the most productive use, but risk is managed correctly. So how is it possible that U.S. financial markets could not manage more adequately the credit boom associated with the savings glut of the nineties, as [former Federal Reserve Chairman Ben] Bernanke pointed out.

How was it possible that European financial markets ignored the sovereign risk involved in huge transfers of resources from northern to southern countries? Of course, after the fact, we have a plethora of explanations, and I'm not going to go into that. But I think that fundamentally, the sudden explosion of financial crisis in good economies reflects the enormous complexity of financial markets: the intellectual difficulty of understanding their functioning and the daunting challenges of regulating unified worldwide financial markets through essentially national policy issues, which were well covered in Dr. Zeti's presentation.

So I think it's important to understand why the crisis in developed economies was different from the episodes of the nineties and what it entails for the global financial system. There are three differences that stand out mainly, and I'll just enumerate them.

Obviously, emerging market crises were mainly regional in scope, whereas the advanced economies crisis was global. The advanced economies crisis was different because global GDP synchronization resulting from common financial shocks spread expeditiously, as Dr. Zeti said, across the globe and led to systemic banking and in some cases debt crisis.

Crisis management in the emerging markets was largely influenced, as I mentioned, by the IMF. This was obviously not the case in the case of the Great Crisis. At first, the response was totally unsynchronized, and it was actually the Fed, the first factor, that put together a dollar liquidity facility, and it was only when the crisis threatened to become a Great Depression that the IMF and the G20 [Group of Twenty] got together and coordinated policies.

Emerging markets were generally faster to recover investor confidence, while some advanced economies allowed initially liquidity problems to morph into solvency issues. Jacob was mentioning Europe. In Europe, the policies implemented to rescue banking systems were incompatible with fundamental competitive imbalances.

Denial, as was mentioned with respect to the degree of insolvency, distorted rescue packages and resulted in recurring debt restructuring, draconian structural adjustment, and Great Depressions in at least five countries: Greece, Portugal, Spain, Italy, and Ireland.

In conclusion, if the characteristics associated with the advanced economies crisis are to become a regular feature due to the increased role of capital flows in transmitting shocks across borders, I think that two main challenges have to be addressed, and I will conclude with that.

First is the IMF. The advanced economies crisis has shown that global factors will continue to be significant determinants of countries' macroeconomic dynamics. This is especially true for transmission channels related to capital flows, which have the potential to create difficult policy dilemmas even under orthodox macroeconomic frameworks.

Given the sense of the one incorporative trust in the world economic scene and the informal nature of the G20, the IMF emerges as the only institution able to lead international global cooperation. But its analytical framework, mandate, and mechanics have not been fully adapted to the new circumstances.

As Dr. Zeti pointed out, large and generalized macroeconomic effects from capital flows, the widespread use of unconventional monetary policies, and the growing popularity of macroprudential and capital flow management measures have created new channels of transmissions for financial and economic shocks and increased the role of cross-border spillovers in policymakers' reaction function.

So what's needed is a really strong IMF. And we haven't even gotten to the first base yet, because the quota thing has not been resolved. And a few years ago, Jacob, Stan Fischer, and myself within the G30 [Group of Thirty] published the paper on the reform of the IMF. I will not go into the conclusions of that paper except to say that in addition to increasing the analytical capabilities of the Fund, the mandates of the Fund to deal with capital flows should be extended.

And finally, let me make a comment on the implementation of the full global financial regulative reform. I will only say that, you know, great progress has been made but, of course, this remains incomplete. Implementing the Dodd-Frank legislation as well as the new Basel rules has been controversial and slower than initially thought. Combined with historically lax monetary policies of advanced economies, the situation will surely lead to excessive arbitrage in the financial sector.

And this is something that Jaime and that everybody here knows very well. So while financial regulation should not be so restrictive as to

this incentive, the effort to achieve greater financial inclusion and more complete markets, I cannot stress enough the importance of having the new rules of the game vary, as transition periods only help to exacerbate uncertainties, potentially leading to unintended adverse consequences. Thank you very much.

JAIME CARUANA: Thank you very much, Guillermo. I thought that perhaps you give a little bit too much responsibility to Mexico in history. I would have thought that at least the first recorded crisis, financial crisis, took place in Athens, which was a developed economy at the time in 387 Before Christ, when there was a huge—

GUILLERMO ORTIZ: We're talking about modern times.

JAIME CARUANA: Okay, because there was a huge speculation on the wheat market, which eventually led to supply shortages leading to overpricing, et cetera, et cetera.

Anyway, do you [Dr. Zeti] want to react to some of the remarks that have been made or add something that you would feel important to point out before we turn to the audience?

ZETI AKHTAR AZIZ: Well, I thank very much the panel, with its tremendous wisdom. All the members of the panel have at some point been involved in the management of crises. And there's a consensus here that our future is going to be plagued with such financial crises. As many of the panel members have mentioned, these crises are going to be more complex not only because of the significant transformation that has taken place in our financial systems, especially in the developed world, but also due to the increased international dimension of such crises.

A particular point that I would like to comment on is the fact that the focus of attention has mainly been on the financial institutions, although there has been discussion also on the malfunctioning of the financial markets. And I believe this is what the focus in the future needs to be on. A lot of the focus now is on the repair, resolution, and recovery planning. So addressing the functioning of the financial markets and its regulation needs to be undertaken in parallel with all the very good work that is being done on the institutions—and I note the tremendous progress this work has achieved.

And the final point I would like to make is about the role of the IMF. Perhaps the IMF hasn't progressed as fast as it should to take into account all the changes that are taking place. And indeed, I would agree fully that the IMF is the only institution that has this capability to provide a more significant role in managing financial crises given the extensive consequences. Of course, there is also the work that is done by the BIS that is so vital for the financial sector.

As a multilateral organization, the IMF has a global perspective and coverage. In my paper, I did discuss that one of the ways that the IMF might enhance its role is to leverage on the knowledge and expertise that reside in the respective regions—in Europe, in Latin America, or in Asia—who have put together different ways in which to successfully manage financial crises. Thank you.

JAIME CARUANA: Thank you very much indeed and especially on your remark on the importance of regulation of financial markets. I cannot agree more. I think all the work that is being done and, for instance, on the derivatives market is probably as important as what has been done or is being done on institutions.

Now, I'm ready to give the floor to questions from the audience. Yes, one there.

QUESTIONER: *Thank you. I really want to thank Dr. Zeti; I've been working with her for many years particularly in the areas of Islamic finance, where she has done a tremendous job, and together we have really created an environment which is much more stable than the conventional areas. Although she has not elaborated today on that, I fully agree with her that countries that are some of the small and open economies, we need to really build up defenses in advance rather than in responding to the crisis.*

We, in Bangladesh, have done our bit in terms of inclusive financing. And this has been a good instrument in promoting output stability and financial stability, because we have diversified our asset portfolios and deposit bases of financial institutions, which has given us a bit more stability.

Another issue on the small and open economies is, we have very little capacity of influencing the funds inflows or outflows, which has been mentioned here. But again, we opted for limited openness and management of the foreign exchange, which Dr. Zeti too indicated, but we are scared. Even talk about tapering really destabilizes our economy. So we thought there would be effective global coordination, with the global liquidity group appropriately tethered to global output growth.

I really don't know what is the progress on, or if at all there is an effective coordination between these two, the global liquidity and global output. Any of the panelists could respond to that. Thank you very much.

JAIME CARUANA: Thank you very much. Global liquidity, global output. Maybe I can take a couple of other questions and then we have one tour in the panel. That will be more efficient. Yes, one there.

QUESTIONER: *Yes, thank you very much. I thank all the panelists and Governor Zeti, I really appreciated your remarks. I'd just like to ask whether, in your opinion, Governor Zeti, we might not be spending too much time on preventing the next crisis, which as [BIS Economic Adviser and Head of Research] Dr. [Hyun Song] Shin told us this morning,*[38] *we may not know where that one's coming from. And not enough time in the central banking community in managing the next crisis, taking into account, as Governor Ingves said, that that has to do with managing the unknown. Thank you.*

JAIME CARUANA: Thank you very much. Managing the next crisis, that's a good theme, or preparing to manage the next crisis maybe. The last question, somewhere, yes, madam? The microphone is coming.

QUESTIONER: *Measures for stability undertaken by regulators in important and large market segments like the Fed do not necessarily lead to global stability. On the contrary, they may cause the opposite reaction and even destabilize international conditions, such as the introduction of quantitative easing in United States, and last year, the announcement of its tapering.*

Is this conclusion selfish and short-sighted from a small, open economy?

JAIME CARUANA: Thank you very much. That's a core question: Do monetary policy strong reactions lead to helping the global economy or to making it more difficult for some parts of the global economy? Who wants to start? Jacob, you pick up those questions you wish.

JACOB FRENKEL: Well, okay, I'll do it very, very quickly. Most of the questions had the same theme, which is, There is a storm; what can I,

[38] Hyun Song Shin, "The Changing Face of Financial Intermediation," presentation at the Annual General Meeting of the Bank for International Settlements, Basel, June 29, 2014.

little country, do? You create storms, don't be selfish, whatever way you could look at it.

You know, last time I visited the fisherman in Dorf, I saw the fisherman. He was extremely worried, and he told me there was going to be a huge storm. And I asked him, So what are you going to do? Why don't you pray to stop the storm? He says, well, I tried it before. It doesn't help much.

So what is left for you? I can either take my family and move out of Dorf, which I do occasionally when there is a big tsunami, or I can build a dam, but normally I start doing it a little too late and by that time I cannot do much. Or I can strengthen my boat so that when a storm comes, a normal storm at least, we will just withstand the storm. And I think that what is correct for this fisherman is correct for most countries.

It's not that it is the easiest thing, but it's probably the most practical one. We cannot avoid the foreign storms. We can try and do the best, that's why the issue of the IMF was important and all the rest. But the only practical recipe is—and it sounds like an IMF dictum—is to strengthen your own boats as much as you can, and that's it.

You know, when we speak about a perfect storm, it's a poetic way to describe something which is normally failure of various kinds of policymaking. We did not do the structure, we did not do the fiscal, we did not do the monetary, we did not do trade, and we have a perfect storm. So let's translate it back to the policy.

Let me make one last remark, because everyone talked about monetary policy: of course, we are at the BIS; what else should we talk about? But I think we should worry about it. One should worry about being the only game in town when one knows that the real issue in town is from a very different area.

And I would worry much about it, and I'll just leave with you one principle which I strongly believe in. And at my age, I can even speak in this way. It is called the pottery shop principle. The pottery shop principle is, when you go to a pottery shop, there is a big sign there: Don't Touch; You Break, You Own.

And you know, monetary authorities occasionally are extremely responsible. There is a vacuum. The country is in challenge. Fiscal policy, we know Washington is not functional, so let's step in, because we have the ability to do something quickly with our instrument. Which is correct, but before long, you fall into the fallacy of owning the things that you

do not have instruments to deal with. So it doesn't mean that you do not need to do it, but it does mean that you need to be very explicit publicly about why you do things that do not belong to your day-to-day mandate and why it must be done elsewhere.

And you really give breathing space to do the thing, because if you don't, if you give the breathing space and things are not being done, then you are worse off rather than better off. Then you are really in the world of the debt where Jaime showed us what happens,[39] and the decline in productivity which you saw today in the charts, they never make the *Wall Street Journal* or the *Financial Times*. That's big news. That's the extraordinary cost of what had been happening, and we should really highlight this. Thank you.

JAIME CARUANA: Thank you very much, Jacob. Stefan?

STEFAN INGVES: From a small, open economy perspective, if you are sailing in a small boat on the ocean, you'd better know how to sail.

JAIME CARUANA: That's great. Sounds great. Guillermo?

GUILLERMO ORTIZ: Well, I think that what was mentioned this morning by Jaime and Claudio is a real question.[40] I think that somehow financial markets have in a way declared that the crisis is over. If you look at the VIX [Chicago Board Options Exchange Market Volatility Index] indicators, spreads and so on and so forth, one would think that things are moving along smoothly. But maybe the perfect storm is starting to breathe. And I think that the only sensible recommendations are the ones that we heard this morning, which are basically that the transmission mechanism is in the financial sector. So we have to finish this. This is the financial sector agenda.

And as Stefan mentioned, you know, if you're a small, open economy, you'd better put additional buffers in your boat.

JAIME CARUANA: Thank you very much. So we have to strengthen the boat. We have to learn to sail better. Zeti, what more?

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[39] Caruana, "Stepping out of the Shadow of the Crisis."

[40] Caruana, "Stepping out of the Shadow of the Crisis"; Borio, "The Financial Cycle, the Debt Trap and Secular Stagnation."

ZETI AKHTAR AZIZ: Indeed, I think they have said it all, because the country where I come from, we're also a small boat and in a big ocean. And therefore, we need to address our vulnerabilities, strengthen our fundamentals, develop our financial systems, and have at our disposal a wider range of instruments to address a financial crisis.

Then we need to know how to better manage it—and I tried to cover the considerations that need to be taken into account for this in the lecture—and to be equipped with the potential to do it. And the other aspect is, when we have a calm on the horizon, we should look at all the possible things that could go wrong, and this is part of the national risk management. We have to look at every aspect that could go wrong. Well, the next crisis could be related, for example, to pension funds. And if that happens, it will have significant and widespread consequences. These are some of the things that could possibly go wrong.

The final thing that I just wanted to add is that, yes, we (central banks) cannot do everything, and I think Jean-Claude Trichet's lecture in 2013 highlighted this point as well.[41] And that, as central banks, we can only provide the breathing space that will allow for other policies and reforms that need to be implemented.

But I believe that because management of a crisis needs to be integrated across the whole government, the central bank has to exercise its influence and not just say that our mandate and focus is only on monetary policy. Our mandate is, of course, to also safeguard financial stability. Additionally, we can also exercise influence, because a central bank has—certainly in emerging economies, but I would hope in the developed world as well—a positive standing in the public sector and in the country.

Thus, the central bank can have this role of exerting its influence to address inertia or indecision on the part of the other public policymakers. Thank you.

JAIME CARUANA: Well, thank you very much for these short words of conclusion and answers to the questions, which I found remarkably convergent and clear. Thank you very much to the four of you for taking part brilliantly in this panel, and I enjoy that very much. And I propose that we thank the panelists together. And before I conclude this meeting, I have to announce that the next session on BIS financial services has been postponed to 4:45. So we are on time. Let's go. Thank you. Thank you very much.

[41] Trichet, "Central Banking in the Crisis."

Zeti Akhtar Aziz

Appointed Governor of Bank Negara Malaysia in 2000, Dr. Zeti Akhtar Aziz had an important role in successfully managing the repair and resolution of the financial system during the Asian financial crisis and the consequent strong recovery of the economy in Malaysia. In the decade that followed, she also had an important role in the financial reform and transformation of the Malaysian financial system, including overseeing the modernization and enactment of ten new major pieces of legislation for the financial sector. This period also saw the progressive liberalization of the Malaysian financial system.

In the Asian region, Dr. Zeti has been actively involved in strengthening cooperation and regional financial integration. In 2006, she chaired the regional task force that prepared the report for the future direction of central bank financial cooperation in the region. A founding member of the Bank for International Settlements (BIS) Asian Consultative Council, she was also the first Co-Chair of the Financial Stability Board Regional Consultative Group for Asia. She is currently the Chair of the BIS Central Bank Governance Group. Dr. Zeti has also had an extensive role in the global development of Islamic finance.

Dr. Zeti received her Ph.D. in economics from the University of Pennsylvania.

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2012 *China's Monetary Policy Since the Turn of the Century.* Lecture by Zhou Xiaochuan (Tokyo).

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2011 *The IMF and the International Monetary System: Lessons from the Crisis.* Lecture by Axel A. Weber.

What Financial System for the Twenty-First Century? Lecture by Andrew Crockett (Basel).

2010 *Navigating the New Normal in Industrial Countries*. Lecture by Mohamed A. El-Erian.

Markets and Government Before, During, and After the 2007–20XX Crisis. Lecture by Tommaso Padoa-Schioppa (Basel).

2009 *Growth After the Storm? A Longer-Run Perspective*. Lecture by Kemal Derviş (Istanbul).

2008 *The Role and Governance of the IMF: Further Reflections on Reform*. Symposium panelists: Stanley Fischer, Trevor Manuel, Jean Pisani-Ferry, and Raghuram Rajan.

The Approach to Macroeconomic Management: How It Has Evolved. Lecture by Lord George (Basel).

2007 *Balance of Payments Imbalances.* Lecture by Alan Greenspan.

2006 *Asian Monetary Integration: Will It Ever Happen?* Lecture by Tharman Shanmugaratnam (Singapore).

Competition Policy and Monetary Policy: A Comparative Perspective. Lecture by Mario Monti (Bern).

2005 *International Financial Institutions: Dealing with New Global Challenges*. Lecture by Michel Camdessus.

2004 *The U.S. Current Account Deficit and the Global Economy*. Lecture by Lawrence H. Summers.

Some New Directions for Financial Stability? Lecture by C.A.E. Goodhart, CBE (Zurich).

2003 *The Arab World: Performance and Prospects*. Lecture by Abdlatif Yousef Al-Hamad (Dubai).

2002 *The Boom-Bust Capital Spending Cycle in the United States: Lessons Learned*. Lecture by E. Gerald Corrigan.

Recent Emerging Market Crises: What Have We Learned? Lecture by Guillermo Ortiz (Basel).

2001 No lecture took place due to the cancellation of the Annual Meetings of the IMF and the World Bank.

2000 *Ten Years On—Some Lessons from the Transition.* Lecture by Josef Tošovský (Prague).

Strengthening the Resilience of Financial Systems. Symposium panelists: Peter B. Kenen, Arminio Fraga, and Jacques de Larosière (Lucerne).

1999 *The Past and Future of European Integration—A Central Banker's View.* Lecture by Willem F. Duisenberg.

1998 *Managing the International Economy in the Age of Globalization.* Lecture by Peter D. Sutherland.

1997 *Asian Monetary Cooperation.* Lecture by Joseph C.K. Yam, CBE, JP (Hong Kong SAR).

1996 *Financing Development in a World of Private Capital Flows: The Challenge for International Financial Institutions in Working with the Private Sector.* Lecture by Jacques de Larosière.

1995 *Economic Transformation: The Tasks Still Ahead*. Symposium panelists: Jan Svejnar, Oleh Havrylyshyn, and Sergei K. Dubinin.

1994 *Central Banking in Transition.* Lecture by Baron Alexandre Lamfalussy (London).

Capital Flows to Emerging Countries: Are They Sustainable? Lecture by Guillermo de la Dehesa (Madrid).

1993 *Latin America: Economic and Social Transition to the Twenty-First Century.* Lecture by Enrique V. Iglesias.

1992 *A New Monetary Order for Europe.* Lecture by Karl Otto Pöhl.

1991 *The Road to European Monetary Union: Lessons from the Bretton Woods Regime.* Lecture by Alexander K. Swoboda (Basel).

Privatization: Financial Choices and Opportunities. Lecture by Amnuay Viravan (Bangkok).

1990 *The Triumph of Central Banking?* Lecture by Paul A. Volcker.

1989 *Promoting Successful Adjustment: The Experience of Ghana.* Lecture by J.L.S. Abbey.

Economic Restructuring in New Zealand Since 1984. Lecture by David Caygill.

1988 *The International Monetary System: The Next Twenty-Five Years.* Symposium panelists: Sir Kit McMahon, Tommaso Padoa-Schioppa, and C. Fred Bergsten (Basel).

1987 *Interdependence: Vulnerability and Opportunity.* Lecture by Sylvia Ostry.

1986 *The Emergence of Global Finance.* Lecture by Yusuke Kashiwagi.

1985 *Do We Know Where We're Going?* Lecture by Sir Jeremy Morse (Seoul).

1984 *Economic Nationalism and International Interdependence: The Global Costs of National Choices.* Lecture by Peter G. Peterson.

1983 *Developing a New International Monetary System: A Long-Term View.* Lecture by H. Johannes Witteveen.

1982 *Monetary Policy: Finding a Place to Stand.* Lecture by Gerald K. Bouey (Toronto).

1981 *Central Banking with the Benefit of Hindsight.* Lecture by Jelle Zijlstra; commentary by Albert Adomakoh.

1980 *Reflections on the International Monetary System.* Lecture by Guillaume Guindey; commentary by Charles A. Coombs (Basel).

1979 *The Anguish of Central Banking.* Lecture by Arthur F. Burns; commentaries by Milutin Ćirović and Jacques J. Polak (Belgrade).

1978 *The International Capital Market and the International Monetary System.* Lecture by Gabriel Hauge and Erik Hoffmeyer; commentary by Lord Roll of Ipsden.

1977 *The International Monetary System in Operation.* Lectures by Wilfried Guth and Sir Arthur Lewis.

1976 *Why Banks Are Unpopular*. Lecture by Guido Carli; commentary by Milton Gilbert (Basel).

1975 *Emerging Arrangements in International Payments: Public and Private.* Lecture by Alfred Hayes; commentaries by Khodadad Farmanfarmaian, Carlos Massad, and Claudio Segré.

1974 *Steps to International Monetary Order.* Lectures by Conrad J. Oort and Puey Ungphakorn; commentaries by Saburo Okita and William McChesney Martin (Tokyo).

1973 *Inflation and the International Monetary System.* Lecture by Otmar Emminger; commentaries by Adolfo Diz and János Fekete (Basel).

1972 *The Monetary Crisis of 1971: The Lessons to Be Learned.* Lecture by Henry C. Wallich; commentaries by C.J. Morse and I.G. Patel.

1971 *International Capital Movements: Past, Present, Future.* Lecture by Sir Eric Roll; commentaries by Henry H. Fowler and Wilfried Guth.

1970 *Toward a World Central Bank?* Lecture by William McChesney Martin; commentaries by Karl Blessing, Alfredo Machado Gómez, and Harry G. Johnson (Basel).

1969 *The Role of Monetary Gold over the Next Ten Years.* Lecture by Alexandre Lamfalussy; commentaries by Wilfrid Baumgartner, Guido Carli, and L.K. Jha.

1968 *Central Banking and Economic Integration.* Lecture by M.W. Holtrop; commentary by Lord Cromer (Stockholm).

1967 *Economic Development: The Banking Aspects*. Lecture by David Rockefeller; commentaries by Felipe Herrera and Shigeo Horie (Rio de Janeiro).

1966 *The Role of the Central Banker Today*. Lecture by Louis Rasminsky; commentaries by Donato Menichella, Stefano Siglienti, Marcus Wallenberg, and Franz Aschinger (Rome).

1965 *The Balance Between Monetary Policy and Other Instruments of Economic Policy in a Modern Society.* Lectures by C.D. Deshmukh and Robert V. Roosa.

1964 *Economic Growth and Monetary Stability*. Lectures by Maurice Frère and Rodrigo Gómez (Basel).

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