

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

Dr. Zeti Akhtar Aziz

1. Introduction

It is my very great honour to be invited to deliver the Per Jacobsson Foundation Lecture to this most distinguished audience here at the 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 that have also become increasingly internationalised and thus internationally integrated. In my career of more than three decades at the Central Bank, I have had the experience of being close to three major financial crises; the first when I was based in London during the ERM crisis in the early 90s, then the Asian Financial Crisis in the late 90s in which I was directly involved in its management, and the third is 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 different stages of the crisis. This lecture will identify the different phases in the evolution of a crisis, each phase demanding for a different policy solution. The paper sets out to suggest the indicative thresholds in the transition of a crisis to its next phase. The aim is to anticipate the next eventuality of the crisis, and allow for its effective management.

The world has continued to experience successive financial crises with its reach now extending both to the emerging and 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 focussed 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 it new challenges for its 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 minimise its costs on the financial system and the economy. This paper therefore takes the crisis as a given and focusses on its management during the different stages of its evolution.

The literature distinguishes between different types of crisis, including currency, banking and debt crisis.¹ To take into consideration the role and implications of interconnectivity in financial crises, I will look at 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 build up of excesses over an extended period of time. These include the build up of financial imbalances such as unsustainable levels of leverage and indebtedness, formation of asset bubbles, or from 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 the legal framework, regulatory and supervisory regimes and incentive systems or in 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 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 provide implications for its effective management.

2. Interconnectivity and Internationalisation

In managing a financial crisis in today's world, an appreciation of the increased interconnectivity in the financial system and the intensification of its internationalisation 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 localised 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 globalisation in this recent two decades, international financial linkages have become an important source of the spread of a crisis across borders. The ramifications of the 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 international contagion;

on the factors underlying the contagion, the channels that facilitate the cross border effects, the consequences of the spill-over effects and the possible policies for mitigating such contagion. For the most part, the literature has focussed on the contagion impact on liquidity conditions, cross-border exposures of financial intermediaries, the co-movements in asset prices including interest spreads and on 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 specialised phases, by outsourcing to other local or international companies or 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 close proximity to larger markets, have reinforced this trend, tightening the economic connectivity between countries.

For emerging economies, the degree of financial interconnectivity will increase as the financial systems become more developed. In the early stages of financial development, financial systems tend to be clearly segmented, characterised by the closer proximity between the origination and retention of risks; the 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 liberalisation – 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 behaviours may also be affected by the assumptions 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. It may also result from irrational and herd behaviour. 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 behaviour 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 other parts of the financial system. Other frameworks developed have drawn on the field of

corporate finance which allows for the assessment of 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 system risks arising from the increased connectivity.⁶

Better data on financial networks are key to achieving a better understanding on the network dynamics following a shock and increase our understanding of how developments are transmitted throughout the financial system. This includes an understanding of the major nodes in the networks where risk propagation is likely to be the strongest both in terms of magnitude and speed. Therein lies the importance of cooperation both at the national and international level to improve transparency and the collection of data on balance sheets of the respective financial intermediaries. In particular, the 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

3. 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 epicentre, following the paths of increasingly complex financial networks. A deeper understanding and awareness of such networks and the associated contagion paths of how a crisis could unfold is vital for the effective management and containment of crises.

In this part of the paper, 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 actions to withstand it.

Phase 1: The Onset of a Financial Crisis

The first phase of the crisis is perhaps the most difficult to recognise. While the manifestation and dynamics of the start of a financial crisis is generally evident in the financial markets, less clear is when a 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 perform in 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 which 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 generalised 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 only able to liquidate 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 an across the board generalised price decline 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 number 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. Behaviours in the markets during such periods shift rapidly, resulting in discontinuous and significant jumps 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 behaviour, risk aversion and herd phenomenon. Incomplete information and increased uncertainty prompts 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% 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 then 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 recognise the developments as the unfolding of a major regional financial crisis.

Similarly, in the United States, following the decline in house prices, 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 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. At this phase of the financial market turmoil, it was also not recognised 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 Europe faced losses arising from their exposure to the assets associated with the subprime crisis. The euribor-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 stabilised prior to this, the financial position of banking institutions had been substantially weakened. By 2010, this deteriorated further. Widespread losses were experienced from exposures to sovereign debt arising from the massive selloff and liquidation of the papers. This was reflected in sharply higher bond yields, further declines in the equity markets and a tightening money market conditions.

These experiences suggest for the need to identify the thresholds beyond which market stresses will turn into a full-blown crisis. Rigorous stress tests need to be applied to asset markets under severe scenarios to provide early signs of severe market stress. Such stress tests should provide insights into the potential changes in liquidity conditions in key asset markets by gauging the trends and volatility of key asset prices, 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 banking institutions' liquidity positions, funding concentrations and the strength of contingency funding arrangements.

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 re-evaluating their initial risk perceptions and valuation of assets on a broader scale. A generalised 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 co-movements 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 pro-cyclicality 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. Realised and unrealised 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 distressed 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. Spill-over 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 in global liquidity, further increasing volatility in domestic and international financial markets. Additionally, the withdrawal of financial activities by the 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 were wide spread financial distress and subsequent failures of financial institutions.¹⁵ In the United States, it was about eight months following the disruptions in the financial markets before it translated into a banking crisis.¹⁶ In Europe, financial institutions were also 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 undercapitalising and solvency problems experienced by European financial institutions saw more than 100 failures of since 2008.¹⁷

It is therefore during the early stage of the crisis that viability tests and stress tests need to be applied to large financial institutions to assess whether they were 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 this 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 recapitalised. They nevertheless, provided a basis for actions to 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 household and business sector, in particular, should these sectors be highly indebted. The second relates to the supply of credit and the potential for disruption arising from the erosion of bank capital. Evidence generally shows a tightening of lending standards, increased focus on recoveries and heightened scrutiny of the creditworthiness of borrowers during this period. This is compounded by the 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, which rapidly evolves into an economic crisis. The strong linkage between the financial system and the real economy is further 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 to 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 their spending activities. Firms affected by the tighter access to credit and the weakening demand, will commence to scale back production and thus labour requirements. This further accelerates 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 asset 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 globalised production networks. Lower final demand from the crisis-affected economies not only directly dampens the export sector, but the prevailing global supply chain will also exert 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 crisis. The decline in GDP was most severe in 1998, ranging from -5.7% in Korea to -13.1% in Indonesia. In the recent financial crisis in the advanced economies, the synchronised slowdown in the global economy was experienced in late 2008 and early 2009. By the fourth quarter of 2008, real GDP in the United States declined by 5.4% and by 6.4% during the first quarter of 2009. By the second half of 2009, unemployment breached the 10% 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% to 7.3% in 2008. However, as the crisis evolved into an economic crisis, the ensuing collapse in world trade resulted in an economic contraction that ranged from -4.6% to -1.6% 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 its 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 global crisis.

Phase 4: The crisis runs its course

Policy inaction or inappropriate policy intervention during the early stages of a crisis may contribute towards its further escalation to eventually exceed thresholds beyond which the crisis will run its course. This phase is characterised 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 spirals into a self-reinforcing process, leading to the failure of 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 the sovereign ratings several notches down, while confidence levels fall to an all time low. Capital outflows intensify, precipitating capital flight by 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, 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 are 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 characterised 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 activities 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 reliance on the policy support. Seventh are the developments in the conditions in the labour 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.

4. The Resolution and Management of the Crisis

What lessons can policymakers draw in managing 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 has the costs of the crisis varied so significantly from crisis to crisis, imposing such a significant burden on society?

The focus of the next part of this paper 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 recognise 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 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.
- Fifth, considering the entire evolutionary path of the crisis will avoid a partial policy response and prompt for a more comprehensive and complete solution.

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

Stage 1: Containing the Onset of the Crisis

The initial policy interventions at the onset of a financial crisis need to achieve three objectives: to restore stability in the short-term money markets and ensure access to liquidity, to stabilise the conditions in the specific asset 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. It has 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 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 the market. The mechanisms and schemes for the restructuring of home

mortgage loans will be important to avoid widespread defaults and foreclosures, as will be the programmes and incentives to support the housing market.

Similar observations can be made for 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, 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 on 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 materialise. 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 subsequent stages of the crisis. Pre-positioning these arrangements to support debt restructuring for the respective sectors would also minimise 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 to carefully consider appropriate guidelines and conditionalities to mitigate moral hazard. Additionally, it can provide a more complete assessment of the costs of such arrangements against the costs at the 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. 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 programme.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 on the economy.²² To avoid future drastic adjustments, macroeconomic policies would, therefore, benefit from 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 stabilise market conditions when irrational market behaviour 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 judgement call that 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 on the economy. Particular actions directed towards 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 sector 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 a weakened household, corporate and financial sector 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 minimise the systemic risk of the failure of financial institutions and to facilitate its efficient resolution through asset carve-outs from distressed banking institutions, the recapitalisation 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 minimise 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 minimising 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 towards 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 normalised 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.

Third, delay in macroeconomic policy responses may retard 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 have 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 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 sizeable 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 on 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 by 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. From the perspective of the greater interconnectivity that exists in the financial system and its inter-linkages with the economy, the recognition of the next eventuality of the crisis would prompt earlier anticipatory actions that would avoid the severity in the damage to the economy.

Experience from successive crises, has nevertheless, warned against the over-reliance on monetary policy. Not only are there limits to what monetary policy can deliver, but an over-reliance could also lead to other unintended consequences. Monetary policy also cannot address the structural issues, including the economic rigidities and economic competitiveness. It has been acknowledged that the highly accommodative monetary policy cannot be a substitute for the necessary reforms and structural adjustments. Additionally, the prolonged period of a low interest rate environment may also contribute towards the build-up of financial imbalances. The monetary accommodation, therefore, would need to be reinforced with the intensification of the debt restructuring efforts for the household and business sectors to increase the potential for spending and investment activity. Supply-side policies across economic sectors, including in the labour 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 labour, 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 that include 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 that disproportionately impacts the poor and the vulnerable need to be mitigated. According to the World Bank, the financial crisis can cause the income of poor households to fall 10 times more than 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 programmes that have been implemented in several parts of the world. These programmes can be grouped into four important areas. The first relates to the mechanism to restructure small loans, including for housing and for small businesses. Second are the cash transfers that are part of the social safety net to assist the poor households to pay for essentials, children education and programmes that support better health outcomes. Third are the programmes 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.

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 socio-political 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 will not only 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 re-examine the necessary policy interventions, the key focus of the programme needs to address the prevailing fundamental weakness. During the Asian Financial Crisis, the IMF programmes 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 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 the stage of the crisis had now required for urgent private and public sector adjustments that would provide the promise of 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 towards the 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, 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 prevailed, 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 normalisation during the aftermath of a crisis has been known to lead to significant shifts in market expectations that could result in significant over- adjustments 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 the 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 liberalisation 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 liberalisation of the financial system that provided the preconditions for the effective transition to the floating exchange rate regime.

The implementation of the adjustment programmes to strengthen the underlying financial conditions and the economic potential has its best chance to succeed in an environment of stable financial markets, the efficient functioning of the intermediation process and the resumption of growth. 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 reform therefore needs to extend beyond the financial sector to issues relating to competitiveness and economic structures, and to education and health reform. Finally, new legislation and institutions may need to be established in a changed and more interconnected economy, while obsolete institutions may need to be dissolved.

At this stage, it is also important to recognise 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 action 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.

5. 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 internationalisation 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 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 inter-agency 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 mobilise key resources across the organisation 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 mobilising 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 and response to a 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 correspondingly dispersed across multiple agencies. As such, institutions and arrangements need to evolve to take into consideration the implications of greater inter-connectivity. 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 formalised cooperation agreements between authorities. For the coordination of policies for economic management during a crisis, national level councils have been established, chaired by the political leadership to centralise the decision-making process and to ensure the government machinery would facilitate the efficient economic management.

Equally important in the governance arrangements for the management of crisis at the Central Bank and at the national level is the arrangements for communications. An analytical framework that recognises 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 their understanding of the dynamics of the conditions unfolding and an appreciation of the policies being implemented during 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. It can serve as an important basis for the formulation and prioritisation of communication strategies.

At the international level, the global reach of the spill-over effects of the 2007-2008 crisis has highlighted the significance of the international dimension in 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 also brought to the fore the importance for such cooperation and coordination arrangements to be more inclusive. Institutionalised bodies, such as the Bank for International Settlements (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 (FSB) 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 Asian 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 supported by a regional monetary and financial stability committee that was established in 2006. In Europe, progress on the Single Supervisory Mechanism and Resolution Directive³² has similar objectives, but the challenge has been to achieve this during the midst of an on-going crisis.

6. 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 inter-connectivity and contagion had already become prevalent.

The recent Advanced Economies Crisis was marked by its international dimension and the policy responses were international. Coordinated interest rate cuts,

provision of US dollar liquidity facilities by several key central banks, and the 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 minimising the likelihood and impact of future financial crises. The establishment of the Financial Stability Board (FSB) in 2009, together with expansion of the Basel Committee of Banking Supervision, have also been at the centre 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 and policy actions could have widespread global implications. National resolution frameworks would for example result in solutions that would have ramifications to financial stability in other jurisdictions. The second is that international interconnectivity and inter-linkages 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 wrought with diverse backgrounds, ideology and perceptions.

The global dimension of crisis has drawn significant responses by the multilateral organisations. So far these responses have focussed 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 on macrofinancial and systemic risk assessments, including the contagion spillovers both within domestic and across national borders. The focus of FSAP and the IMF Article IV consultations are 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 a 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 (ESM) which is the largest existing regional arrangement. In Asia, a regional financial safety net, the Chiang Mai Initiative Multilateralisation, 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. An integrated regional crisis management framework has also been put in place.

While these international and regional responses go a long way towards 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 need to recognise the complementary role of regional groupings in achieving the common cause. This interaction with the multilateral institutions needs to be based on the relative strengths of respective regions and that of the multilateral agencies. To maximise the benefits of these complementary roles, cooperation can be based on where the concentrations of the expertise, experience and knowledge base reside. Such increased scope for regional and international cooperation can strengthen the existing international and regional responses.

7. Conclusion

Policies and reforms that have followed successive financial crisis have contributed significantly towards strengthening the resilience of financial systems and economies across the world. Going forward, financial crises will however be an eventuality that will still continue to happen. Our efforts will not be sufficient to prevent the next mega tidal wave. Moreover, the next tidal wave that surges on to 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 rapid changing terrain in our landscape. The lesson to be drawn is that crisis prevention, while important, will not be sufficient. Policymakers need to be prepared for the effective management and resolution of such 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 of the crisis. This addresses shortfalls that may arise in the diagnosis that focuses on any single period or on a specific aspect of the crisis during its evolution. This will also avoid reactive policy responses to the unfolding conditions and will allow for pre-emptive 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 pre-emptive in the management of its systemic consequences will enhance the potential for minimising 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 needs to transform itself into an enduring organisation 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. This will also be the challenge for the other agencies in the public and private sectors. The Central Bank however cannot just lament on the inertia of the others. The Central Bank needs to exercise influence to gain the 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 integration and the significant implications of policy spill-overs 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 centre of managing a crisis need to have courage, nerves of steel and be steadfast in the endeavour. Therefore, it is my sincere hope that my thoughts presented in this paper, on the manifestation and dynamics of a financial crisis and the policy choices during the unfolding of a crisis, will contribute towards the on-going dialogue that is so important in guiding us in navigating the raging waves to safer shores.

Dr. Zeti Akhtar Aziz was Governor of Bank Negara Malaysia from 2000 to April 2016. She had an important role in successfully managing the repair and resolution of Malaysia's financial system during the Asian financial crisis and the consequent strong recovery of the Malaysian economy. In the decade that followed, she also had an important role in the reform and transformation of the Malaysian financial system, including overseeing the modernisation and enactment of ten major pieces of legislation for the financial sector. This period also saw the progressive liberalisation of the Malaysian financial system.

In the Asian region, Dr. Zeti had been actively involved in strengthening cooperation and financial integration. In 2006, she chaired the taskforce of the Executives' Meeting of East Asia-Pacific Central Banks that prepared the report for the future direction of central bank financial cooperation in the region, which continues today. 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.

Dr. Zeti has also had an extensive role in the global development of Islamic finance, being part of the group of Governors that established the Islamic Financial Services Board and the International Islamic Liquidity Management Corporation. She headed a taskforce that prepared a report identifying the building blocks that would further strengthen the institutional arrangements for stability in the Islamic financial system.

Endnotes

- *. Dr. Zeti's speech was delivered at the Per Jacobsson Foundation Lecture in Basel, Switzerland on 29 June 2014. SEACEN thanks Dr. Zeti and the Per Jacobsson Foundation for permission to reprint the speech.
1. Claessens and Kose (2013) provides an extensive review of the analytical and empirical explanations of the different types of financial crisis.
 2. Arregui et. al. (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.
 3. Forbes (2012) and Forbes et. al. (2013), discuss the evolution of the factors underlying interdependence and contagion which have increased considerably over the recent years, as well as the effectiveness of various policies in mitigating contagion.
 4. Haldane (2009) elaborates on the value provided by the network analysis to enhance our understanding of financial systems and crises. These 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. Gray, Merton and Brody (2008) have developed a contingent claims framework for the national level that illustrating how sectoral contingent claims in the balance sheets for the respective sectors can be constructed to provide forward looking market based set of indicators to measure the vulnerability of various respective sectors in the financial system and the economy.
 6. Yellen (2013) discusses in detail the reforms in the banking and the OTC derivatives market aimed at reducing the systemic risks to the financial system arising from the complex interconnectivity by the financial system.
 7. Caruana (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.
 8. In Malaysia, the daily money market rates increased from 7.5% to 40% in July 1997. In Korea, the monthly average money markets rates rose sharply in November that year to peak at 26% the following year. In Indonesia, money market rates rose from 16% to 65% in one month between July and August 1997. In Thailand, it increased from 8% in March to 24% in September 1997.

9. The TED spread jumped from an average of around 40 basis points before 7 August 2007 to 240 basis points by 20 August 2007.
10. Mishkin (2011) highlights that even at the onset of the financial crisis during the summer of 2008, there were discussions at the FOMC 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 Heider et. al. (2009) and Lane (2009)
12. The 3-month euribor-onia swap spread, a standard measure of the interbank market tensions, rose to almost 100 basis points in end 2007 from an average of five 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 non resident participation in domestic markets, the degree of external indebtedness of the different sectors and the volatility of the international reserve level.
14. Kindleberger (1973) in his reinterpretation of Hyman Minsky's work describes this phenomenon in the financial markets during such a crisis. More contemporary overview of the literature can be found in Allen and Gale (2009), and Haubrich and Lo (2013).
15. As part of the IMF programme, 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 entered into receiverships. Brunnermeier (2009), Cecchetti (2009) extensively discuss this early phase of the US financial crisis. Mishkin (2011) discusses this and the next phase of the crisis.
17. While formal Europe-wide database of bank failures are not available, estimates can be found in the publication of the Open Economics Working Group (2014).
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 regularise 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. It 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.

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.
20. In recent crises, these have included establishing arrangements for outright purchases, reducing restrictions on share buy-backs, and more contentiously, changes in accounting classifications on an exceptional basis in order to stabilise rapidly falling prices.
21. In Thailand, the closure of 42 finance companies was announced on 20 August 1997 while taxes were also raised as part of the fiscal austerity programme. By December 1997 the number of finance companies closed was 56. In Indonesia, the IMF restructuring programme initially involved 16 banks in November 1997.
22. During the European Exchange Rate Mechanism (ERM) crisis, the Bank of England initially raised its minimum lending rate from 10% to 12% and subsequently to 15% in defence against the currency, but six days later, the rate was brought back down to 9%, as it became clear that the rate increase did not deter the speculators and stem the sterling's slide. More recently in Europe, the ECB had initially raised its main refinancing rate by 25 basis points in July 2008 from 4% to 4.25% 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 to May 2009, the rate was reduced by 325 basis points.
23. In Malaysia the asset management company established in June 1998, distinguished between viable and non-viable loan assets. For the viable loan assets, the management involved restructuring and rehabilitation of the loans, whilst non-viable loan assets were dealt with through management of the borrower and/or collateral.
24. Financial Stability Board (2011) The ongoing work involves identifying such systemically important financial institutions and requiring for resolution and recovery plans (RRP) for these institutions to enable the authorities to resolve the institution without systemic disruptions and without exposing taxpayers to significant losses.
25. A recent paper by Reifschneider, Wascher and Wilcox (2013) suggests 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.

26. World Bank (2012) used simulations based on data collected from Bangladesh, Mexico and Philippines to show that a financial crisis can cause the income of poor households to fall between 25% and 50%. In comparison, the average household would only suffer income losses of between 3% and 5%. Poor households refer to the population in the 4th to 7th decile of income distribution of respective countries.
27. The capital control measures implemented on September 7, 1998, followed waves of sharp depreciation in the currency over an eighteen month period. It aimed to serve as a circuit breaker to the 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.
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 US, the council is chaired by the Secretary of Treasury, while in Australia, the Governor is the chair of the council.
30. This approach was rigorously adopted with the domestic stakeholders 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 Henisz (2014) has applied such a framework to offer insights for stakeholder engagement strategies to generate value enhancing results.
31. Trichet (2013) reviews the evolution of the global governance and assesses its performance.
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 15 April 2014.
33. The Precautionary and Liquidity Line was introduced in November 2011, aimed at providing liquidity to all countries that were threatened by contagious shocks, even countries that had sound economic fundamentals. In addition, the IMF also, through a programme in collaboration with the European Commission and the European Central Bank provided support to several distressed countries.
34. The quote can be traced back to Mark Twain's novel, "The Gilded Age: A Tale of Today", published in 1873.

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