

Approach to regulation and supervision in the post crisis world¹

-Anand Sinha

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2. The Conference is quite aptly themed '*Supervisory Effectiveness in the Post Crisis World*'. The policy makers and supervisors are trying to grapple with the havoc the crisis has wreaked. So much ink has been spilt and so many reams of papers have been used in describing the what, why and how of the crisis. New regulations have replaced old ones and new theories have come to the forefront debunking the old and crisis-battered beliefs. But one question still remains. Have we really come out of the crisis and entered the *post-crisis* world? Is the crisis now a thing of the past and is it firmly behind us? It does not appear to be so. If one looks at the latest IMF update on World Economic Outlook (WEO- Jan 2013), the growth rates have been revised downwards, though marginally, to 3.5% for 2013 and 4.1% for 2014 and it specifically notes that the Euro area continues to pose a large downside risk to the world economy.

3. If we look at the history of financial crises, they have never been far away. The earliest recorded crisis dates back to 13th century when there was a default by England. We have had so many crises in the more recent past such as, Great Depression of 1929, stock market crash of 1987, Asian crisis of 1997, banking crises in several countries in 80s and 90s and the dot com bubble of 2000, etc., the latest being the global financial crisis of 2007 and the very recent and continuing sovereign debt crisis. However, all these crises (other than the global financial crisis) have been of smaller magnitude in comparison to the great depression of 1929. The

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global financial crisis of 2007, certainly, is of a very large magnitude and has had a devastating impact on the global economy. As it is said of peace that it is an interlude between two wars, perhaps, looking at the regularity of crises in the recent times, one would say, a calm period is an interlude between two crises. Such has been the history of financial crises in the past.

How was the global financial crisis different?

4. If the financial history is checkered with crises, then why is it that the current global financial crisis has assumed such a gigantic proportion in terms of coverage and impact? The very famous book *“This time is Different- Eight centuries of financial folly”*, suggests that all crises have, more or less, similar origins and only that we do not take cognizance of them. However, looking at the significantly large and unparalleled dimension of the current crisis, one will have to assume that there must have been other serious contributory factors. In fact, if you recollect, the crisis originated in a small segment of the US financial system- the subprime market - and many were generally sanguine and had even dismissed the crisis initially as a small and localized one which did not have enough potential to spread to, and impact other segments. However, the crisis soon exploded into a major crisis impacting not just the US financial system but the entire globe. Therefore, one could surely agree that there were very many fundamental weaknesses in the system which exacerbated the crisis.

5. Let me give you some details regarding the magnitude of the crisis. I am quoting from Andrew Sheng’s book *‘From Asian to Global Financial Crisis’* where he refers to a text message which made rounds in December 2008. *“1 year ago RBS paid USD 100 billion for ABN AMRO. Today that same amount would buy: Citibank USD 22.5 billion, Morgan Stanley USD 10.5 billion, Goldman Sachs USD 21 billion, Merrill Lynch USD 12.3 billion, Deutsche Bank USD 13 billion, Barclays USD 12.7 billion, and still have USD 8 billion change ... with which you would be able to pick up GM, Ford, Chrysler and the Honda F1 Team.”*. This was the dimension of the crisis which shows how the valuation of banks and financial institutions plunged at the height of the crisis.

6. Economies go through business cycles, i.e. upturns and downturns, or booms and recessions, and come out rather quickly but when they are hit with financial crises, they take longer to come out. History suggests that recessions following

financial crises are bigger than normal recessions with output losses being 2-3 times larger and recovery from recession following financial crises being slower, as we are witnessing now. The core reason for this is the leverage that gets built up in the run-up to the crisis which acts as a drag on the economy and slows down the recovery. It is for this reason that, despite massive quantitative easing by central banks and fiscal stimuli by sovereigns, the global economy is yet to recover significantly from the global crisis.

7. The crisis has impacted the world in a major way, both financially and non-financially. While the financial impact is recorded in terms of huge output losses, increase in unemployment and erosion in wealth, the non-financial impact is no less. Crisis has shaken the very roots of long held beliefs and convictions. Just when we thought we knew all the answers, the crisis posed new questions forcing us to find out new answers. That reminds me of physics, in which I graduated and which remains my favourite subject. During the turn of the last century, physicists came to the conclusion that they had found out all that they needed to know about the laws of nature. All that remained was to apply these rules to find out answers to some of the questions. Then there were two major experiments which changed the entire scenario resulting in the development of radically different theories to explain the phenomena. Similar things have happened in the financial world - may not be of similar magnitude- that have shaken the intellectual foundations and left us groping for answers to new questions. There has been a paradigm shift in the thinking on regulatory philosophy and approach, especially in areas of systemic risk and efficient market hypothesis; on several aspects of macroeconomic thought, for example, role of monetary policy in ensuring financial stability, incorporation of banking and financial system dynamics in macroeconomic models and realising that macroeconomic stability is a necessary but not a sufficient condition for ensuring financial stability.

8. A lot of work was initiated in the aftermath of the crisis to address risks that were identified to have caused or exacerbated the crisis. The approach to regulation and supervision has changed in a significant way drawing lessons from the crisis. Before I expound on the revamped approach to regulation and supervision in the post crisis world, let me step back a little and briefly touch upon the genesis of crisis. This not only helps in putting things in perspective, but as we deliberate on the reasons underlying the crisis, the solutions would automatically flow.

The genesis

9. Several factors were responsible for the crisis. However, at the core of the crisis was the inadequate understanding and measurement of risks and funding of assets with shorter term liabilities on a large scale. There was aggressive easing of monetary policy in the US after the bursting of dotcom bubble leading to very low interest rates. The long term yields in the US were also depressed on the back of global imbalances as the huge reserves built by countries, specifically China, found their way back to the US treasuries. An era of Great Moderation followed: there was steady growth in advanced economies and accelerated growth in emerging market economies along with low and stable inflation. This resulted in policy makers believing that they had found the holy grail of high growth with low inflation. Underlying this belief was the notion that markets had become mature and sophisticated and had the wherewithal to distribute risks and provide efficient hedging instruments to those who needed. Low interest rates triggered a massive search for yield which led to financial innovation that was socially suboptimal. The innovation was aided by the progress in quantitative finance and modelling and technological developments. While we cannot disregard the utility of financial models- they are certainly very useful- overreliance on such models proved to be disastrous. The financial models, in contrast with the models used in physics, are not governed by immutable laws of nature but by the human behaviour- the herd mentality, irrational exuberance and pessimism, greed and fear, which cannot be modelled with any accuracy. Hence, these limitations need to be factored in while using the models.

10. Low interest rates prior to the crisis enabled build up of leverage. In fact, if we observe closely, leverage happens to be the major contributing factor to most crises. Let me explain in brief. When times are good, there is a feel good factor, there is plenty of liquidity which is cheap, the asset values and collateral values are high and the banking system losses are low, leading to lower provisioning and lower capital requirements. These factors lead to higher demand for credit from the households and corporates. From banks' perspective, as the provisioning and capital requirements are lower, they have surplus capital and raising of capital is also easy. This leads to a greater incentive to lend and expand the balance sheet. Therefore, the increased credit demand from the borrowers and the increased incentive to banks to lend, results in the build up of leverage. When the cycle turns,

pessimism sets in, losses increase, value of assets and collaterals diminish and liquidity dries up and becomes costlier. These erode the financial health of banks, households and corporates who become risk averse. The demand for credit by households and corporates as also the supply of credit by banks slows down. Banks also deleverage to preserve their capital. All these exacerbate the downturn. Leverage is an amplifier in as much as it amplifies the profits during upturn and exacerbates losses during the downturn: higher the leverage, more severe is the downturn. This amplification is also called procyclicality. Prior to the crisis, the regulatory policies did not effectively address the systemic risks arising out of procyclicality and interconnectedness.

11. Lack of appreciation for systemic risks and the absence of suitable regulatory framework to address such risks was one of the major reasons for exacerbation of the crisis. The thinking prevailing prior to the crisis was that strong individual institutions make a strong system, which did not turn out to be true. The crisis brought home the fact that even when the institutions are individually strong, when each one of them tries to pursue and preserve their own self interest, their actions could lead to instability of the system.

12. The credit risk transfer mechanism was also highly flawed. Securitisation, which was once considered to be a very useful financial innovation in enabling efficient transfer of risk- and I still think it is a very useful tool- was not handled properly as perverse incentives took over.

13. There were also serious gaps in the regulatory and supervisory framework and philosophy. Let me quickly go through some of the regulatory and supervisory gaps that contributed to the crisis. Most importantly, the capital maintained by banks, was inadequate both in terms of quantity as well as quality. Liquidity buffers were also insufficient as financial institutions operated on the assumption that markets would continue to provide liquidity at all times and hence they financed their long term assets with much shorter term liabilities. The outstanding Repurchase Agreements (repos) tripled between 2001 and 2007 with particularly rapid growth of overnight repos. The financial firms were also excessively leveraged, with the leverage for many commercial and investment banks significantly going up from 2003 onwards. High leverage could be built up by financial institutions while being compliant with the capital adequacy requirement, pointing to serious deficiencies in

risk measurement methodologies and models. For example, two large Swiss banks, which were among the best capitalised, also came under stress during the crisis.

14. Lack of transparency in the OTC markets was another major factor which led to build up of risks in the system. Information about the position building was not available even with the regulators, leave alone the counterparties. The insurance giant, AIG wrote huge credit protection (to the tune of USD 400 billion) collecting huge premium in return, believing that it would not be required to settle claims of protection buyers. The quantum of protection sold by AIG was not known to the market participants due to which they went on buying credit protection from AIG. When the system came under severe stress and AIG was required to post higher margins, it found itself in deep trouble and had to be eventually bailed out by the Federal Reserve.

15. Burgeoning under/unregulated shadow banking system added to the forces which exacerbated the crisis. In the run up to the crisis, there was rapid growth in the shadow banking system. In the US, at the peak of credit boom, financing from this sector was much larger than that from the regulated banks. In many advanced economies including the US, the shadow banking system is still larger than the regular banking system. The hands-off approach to the shadow banking system from a regulatory perspective was based on a few assumptions and beliefs. One, the touching faith in market discipline and self regulation, - It was believed that shadow banks would be constrained by market discipline i.e. discipline imposed by banks and other market participants, and also by their own self regulation. Two, it was believed that only banks were important from the financial stability perspective as they held deposits and were at the core of the payment and settlement systems. Three, it was assumed that if banks' exposure to shadow banking system was regulated, it was easy to contain risks in the shadow banking system. Four, it was also believed that regulation of shadow banking system would be very costly, reduce innovation and impede risk transfer.

16. The compensation structure in financial institutions was also seriously flawed as it encouraged perverse incentives and, therefore, was another major reason attributed for the outbreak of the crisis. Participants were paid large bonuses on the basis of short term performance even though the embedded risks could be high which would crystallise later. The compensation structure encouraged private sharing of profits while socializing the losses by taxing the exchequer.

17. The entire regulatory approach in the pre-crisis period was veering towards light touch regulation. There was a touching faith in the efficient market hypothesis which made many believe that markets are self correcting. This belief ignored the well known herd and irrational behaviour of the financial markets. If we look at any risk distribution, there are always fat tails which are on account of irrationality. The negative fat tails are due to excessive pessimism while the positive fat tails are due to exuberance.

18. As far as supervision is concerned, it had its own share of flaws in the pre-crisis period. The role of supervision is to ask questions, when things are going very well. When the financial system or individual entities are not doing well, supervisors will obviously intervene. But supervisors need to be proactive and ask questions when the going is good. It must be confessed, however, that asking questions during good times is difficult as you will be seen as a spoilsport. It is a difficult task. Supervisors have unenviable job on hand. With commercial banks having some smart people, regulators need to be smarter to question them and that is where the issues of skills and technology come in. In the run-up to the crisis, it was observed that the supervisors were staying on the sidelines and not intruding sufficiently into the affairs of participants. They were not being proactive in dealing with the emerging risks and in adapting to changing environment. There was a lack of capacity to identify, or to act on identification. For example, supervisors could not see the risks building up when banks started dealing in very complex products or when banks started relying excessively on short term funding sources for their operations. Supervision was not comprehensive and even when supervisors found some anomaly, it was not taken to conclusion.

19. The effect of crisis on India was, however, relatively muted, as there was no direct exposure to sub-prime assets and the indirect exposure to failed institutions and stressed assets was very small. The Indian growth was largely driven from within based on domestic demand and, more importantly, some of the features of macroprudential regulations were already in place. We have been alert to dealing with systemic risks, both procyclicality and interconnectedness, at least 4-5 years prior to the global crisis. We had also put in place robust OTC market infrastructure and central counterparty mechanisms. We were lucky to have put in place some of the regulations, based on our own perception, that have now been designed

internationally. The approach to these issues today is, however, much more structured.

Review of regulatory framework

20. After giving you a background of what caused the crisis, let me now turn to the reforms in regulation put in place globally, drawing lessons from the crisis. Every weakness and flaw that I have mentioned has been tried to be corrected. The Basel III regulations stipulate enhanced quality and quantity of capital. The component of tier I capital as part of total capital has been raised to 6% (out of total 8% CRAR), requirement of equity capital has been raised very substantially to 7 % (including 2.5% of capital conservation buffer) from the earlier 2%. There was no concept of capital conservation buffer earlier, though there is something similar in pillar II of Basel II. Pillar II deals with two kinds of risks: (a) the pillar I risks which are not covered under pillar I such as concentration risk and interest rate risk in the banking book, and (b) the impact of a stress situation on banks and estimation of additional capital required for banks to withstand the stress.

21. During the crisis, it was observed that the losses in the trading books of banks were several times the losses as computed by the VaR models. As regards the counter party credit risk, it was found that most losses arose from the mark to market losses due to deterioration in the credit quality of the counterparties rather than due to outright default. The Basel III regulations have, therefore, expanded the risk coverage, specially, in the trading book and of risks relating to counterparties.

22. As regards liquidity, a global framework has been built for the first time in several years, both in terms of the requirement for banks to have adequate high quality liquid assets to withstand a stress situation over a 30 day horizon and also from the perspective of avoiding asset liability mismatch by requiring banks to fund long term assets with stable funds.

23. In my view, the most important lesson from the crisis is the recognition of systemic risks and the development of a framework to deal with that. I would touch upon these issues briefly, as there is a full session on systemic risk during the course of your conference. Systemic risk has two dimensions – procyclicality that I have explained a little earlier, and interconnectedness. One interesting feature of interconnectedness which is different from knockout effect (impact from one interconnected institution to others in the system), is that it can play simultaneously,

or near simultaneously on a large number of institutions through common exposures to an asset or an asset class. For example, if multiple institutions have exposure to an asset and if one of the institutions begins a fire sale of the asset, say, due to a temporary liquidity stress, the consequent fall in the asset prices would force other participants, who are otherwise liquid and solvent, to sell that asset to avoid market losses. This would lead to further erosion in the value of that asset resulting in further losses and more fire sales. Therefore, the rational actions of individual institutions to preserve their self interest could turn out to be a collectively irrational action.

24. As regards procyclicality, since banks face large losses which crystallize during downturn, they have to make larger provisions and provide additional capital. This would constrain their lending activities which in turn would have an adverse impact on economic recovery. Basel committee has, therefore, prescribed building up of countercyclical capital buffers. Banks are expected to build capital buffers during the upturn which could be used during downturn so as to maintain their lending activities which would cushion the impact of a downturn on the economy.

25. Basel Committee has suggested 'credit to GDP' ratio as a metric to calibrate countercyclical capital buffers. The model assumes that deviation from the trend is cyclical and hence should trigger buildup (or release) of buffers. While this model could work for advanced economies, it may not work effectively for emerging market economies like India since, in our context, the deviation in the 'credit to GDP' ratio may not only be cyclical but may have large structural components. EMEs have large segments of population which are still financially excluded. Financial inclusion initiatives which are being taken in these economies would bring a large segment of such populace into formal banking fold, which would result in a sharp jump in the credit to GDP ratio, which could be misinterpreted as cyclical deviation. Further, especially in India, we had taken a big leap in transforming from an agrarian economy to a service oriented economy. With the current initiatives to invigorate manufacturing and infrastructure sectors which are highly credit intensive and are employment generating, the credit to GDP ratio would show a sharp spurt, not necessarily indicating any cyclical trend. We have been, therefore, following a sectoral approach, as a countercyclical policy, modulating risk weights and provisioning requirements for certain sensitive sectors which show signs of overheating. Our approach has been fairly successful, though not equally well in all

the sectors that we targetted. While the Basel Committee has not considered the sectoral approach, the Bank of England has considered it as one of the tools in formulation of its macroprudential policies. In the foreseeable future, the Reserve Bank, in all likelihood, would continue to follow the sectoral approach for dealing with procyclicality. This deviation from the prescribed methodology would be permissible within the Basel Committee's 'comply or explain' framework. However, the downside here is that the deviation from the laid down methodology may be interpreted by markets as non-compliance. To guard against this, we will have to improve and sharpen our communication.

26. Building up of provisioning buffer during good times based on expected loss methodology to deal with procyclicality is another important regulatory construct under Basel III. However, the progress in this area has been very slow and it is still work in progress. As an interim measure, we propose to implement a provisioning methodology similar to the Spanish 'dynamic provisioning', shortly.

27. The countercyclical policies assume a lot of importance, more so for developing countries like India because of the economic conditions of these countries. While the gains from growth take longer time to percolate to all strata of the society, the pains of instability permeate and percolate immediately. Also, costs, in terms of increase in poverty are higher if output falls, than the gains from reduction in poverty for an equivalent rise in output. Financial stability, therefore, assumes great importance for emerging markets. Perhaps this is the reason why macroprudential policies have been practiced in EMEs well before the advent of crisis while the advanced economies have only now begun to practice these policies in the wake of Basel III regulations. I would also like to mention here that while the Reserve Bank is complimented for steering the country safely out of the crisis, it is also, often considered to be very cautious. I believe that we cannot afford to be less cautious as we do not have the wherewithal to sustain or absorb the high costs of misadventure. That is the reason why we became alert and started implementing countercyclical policies much before the onset of the crisis and do not encourage use of exotic financial products.

28. To deal with the cross sectional dimension of systemic risk i.e. the issue of interconnectedness, the Systemically Important Financial Institutions (SIFIs) have been brought into focus. Global Systemically Important Financial Institutions (G-SIFIs) and Domestic Systemically Important Financial Institutions (D-SIFIs) are the

entities that could potentially create larger negative externalities to the financial system if they were to get into trouble and fail. Therefore, it is necessary to stipulate greater loss absorbency for these entities, subject them to more intense supervision and put in place stronger resolution regime. SIFIs are identified based on a metric which takes into account factors such as their global activity, their size, interconnectedness with other segments of the system, their substitutability and the complexity of their operations. G-SIFIs have to maintain additional capital in a range of 1% to 2.5% depending upon their systemicity. The reason for stipulating higher capital is twofold. One, the higher loss absorption capacity would reduce the probability of G-SIFI's failure and in the event of their failure, reduce the impact of their failure. Second, higher capital requirements would act as an inbuilt incentive for G-SIFIs to reduce their systemicity. The framework for D-SIFIs is similar but less structured and with larger national discretion.

29. For any regulatory regime to be effective, robust supervisory framework is absolutely necessary. Increasing the intensity and effectiveness of supervision for SIFIs in particular is a key component for reducing the moral hazard and negative externalities posed by these institutions. Towards this, the Basel Core Principles (BCPs) on Effective Supervision- the global standards against which supervisors are assessed as part of the IMF-World Bank Financial Sector Assessment Program (FSAP) - have been recently revamped. The Joint Forum has published Principles for supervision of financial conglomerates. Several other issues i.e. model risk, management, enhanced scrutiny of Boards and senior management, more emphasis on adoption of strong controls by SIFIs, horizontal review, stress testing, supervisory colleges, macroprudential surveillance and examination of risks associated with business models are being addressed.

30. Resolution framework for SIFIs is another critical aspect that is under development. A robust resolution framework needs to be put in place with a view not to burden the Government with the task of bailing out large and systemically important institutions, if they were to fail. A well defined resolution regime enables separation and continuation of core activities from non-core activities followed by an orderly resolution. In this context you must have heard of living wills. FSB is also consulting on guidance on recovery and resolution planning for making operational the '*Key attributes of effective resolution regimes for financial institutions*' which it

has published earlier. In the US, under the Dodd-Frank Act, an orderly resolution framework has been put in place.

31. There is also a serious debate on revamping the banking models especially in the context of concerns regarding systemically important and complex institutions. There is an increasing realization that the retail part of the banking system, which offers core services to the people in terms of deposits and retail credit, should remain safe. There are three well known reports in this regard; Vickers' report in the UK proposes ring fencing the retail business from the investment banking activities. The Volker rule under the Dodd-Frank Act in the US proposes restrictions on proprietary trading with some exceptions and puts limitations on banks sponsoring Hedge funds, Venture Capital funds and Private Equity funds. A recent addition is the Liikanen report for the Euro zone which is on somewhat similar lines.

32. The need to provide oversight to the shadow banking system is another major lesson from the crisis. The shadow banking system grew phenomenally in the run-up to the crisis and overshadowed the regular banking system in many jurisdictions. The risks originated in the lightly, or unregulated shadow banking system, spread to the regular banking system and exacerbated the crisis. Oversight/regulation of shadow banking system was, however, not immediately taken up by the Basel committee as the Committee was preoccupied with the work related to banking regulation which itself was very onerous. With the work regarding revamping of banking regulations largely complete, the FSB and the Basel committee have now focused on putting in place a robust framework for oversight/regulation of the shadow banking system. Improving the oversight/ regulation of the shadow banking system assumes all the more importance with the tightening of banking regulations as the widened regulatory gap between the two systems would lend a scope to increased regulatory arbitrage with risks flowing from the more regulated banking system to the less regulated shadow banking system.

33. Regulating shadow banks poses a dilemma. It may not be appropriate to impose bank like regulation on them as it may stifle flexibility and innovation which the sector is known for. At the same time, having widely divergent approach towards this sector which performs bank like credit intermediation would create huge arbitrage opportunities and give rise to systemic risks. There is a two pronged approach that is recommended in this regard: casting the net wide to gather data on all non-bank credit intermediation activities and then narrowing the focus on those

non-bank credit intermediaries that have the capacity to pose systemic risk on account of maturity/liquidity transformation and leverage. There are broadly four graded approaches for oversight/regulation of credit intermediaries. One, indirect approach which involves regulating banks' exposure to shadow banking system. Second, a direct approach where macroprudential measures are taken to address risks in securities lending and repo transactions. The third approach is regulation of shadow banking activities through disclosure obligations and restrictions on activities and the fourth approach is the regulation of shadow banking entities, i.e. imposing bank like regulation on these entities, limiting maturity transformation and leverage. FSB has published the '*Initial Integrated set of recommendations to strengthen oversight and regulation of shadow banking*' and the related responses received. When the final standards are brought out, which is likely in the near future, countries will have to take cognizance of that and build their systems for dealing with shadow banks.

34. In India, about 50 per cent of the shadow banking system consists of Non-Banking Financial Companies (NBFC) which is regulated by the Reserve Bank. The other components largely include insurance and mutual fund participants which are regulated by other regulators i.e. IRDA and SEBI respectively. The regulation of the NBFC sector has been progressively tightened over time. Initially, the regulatory focus was confined to deposit taking NBFCs. But in 2005-06, the focus shifted to non-deposit taking NBFCs which are systemically important due to their interconnectedness. The regulatory regime for such NBFCs was made significantly vigorous. We believe that the tighter regulation of NBFC sector did stand us in good stead during the crisis though it is difficult to argue counterfactually.

35. Improving transparency in the OTC market, standardization of OTC products and their migration to Central Counter Parties (CCPs) to contain the risk of interconnectedness are major reform agendas. The criticism of this initiative is that by migrating OTC products to CCPs, there is a possibility of warehousing all risks in a few entities leading to systemic risk buildup and adding more 'too important to fail' entities. There is also a serious debate over whether the CCPs that have become systemically important need to be provided central bank liquidity support. While there are strong arguments for providing such facilities to them given their criticality in the financial system, the issue of moral hazard needs to be adequately addressed while

providing such support. There are also quite a few areas where work is in progress such as counterparty credit risk, capital for exposures to CCPs, etc.

Some dilemmas and debates

36. Having given a broad overview of regulatory reforms, let me now touch upon some of the concerns, misgivings and apprehensions over the implementation of new regulations. The most important concern relates to the adverse impact of higher capital requirements on growth, more so in the case of EMEs. This is a very valid concern. As the capital requirements go up, the cost of operations would increase because equity is costlier. Banks can react to this situation in many ways and in various combinations. They may sell off non-core businesses, reduce their balance sheet by selling off assets, reduce lending operations and increase the cost of lending, etc. Some banks may enhance their operational efficiency and improve their competitiveness by absorbing the higher cost of capital. But most likely, the reaction by the majority of banks would be to cut down on lending and increase the lending rates which would adversely impact economic growth.

37. The Basel Committee had set up a Macroeconomic Assessment Group (MAG) to assess the impact of regulations on growth. The Group after an extensive study involving about 100 simulations had concluded that if Basel III requirements are implemented over a longer period of time (35 quarters), the impact on growth would be minimal (0.03 per cent per annum below its baseline level during this period) and there would be recovery in growth towards baseline after this period. This is considered to be affordable because the long term benefits of stability will far outweigh the costs of instability. That is the reason why the implementation period is so long (6 years).

38. Let me now turn to a few structural issues. One issue that is being debated is the optimal level of financial activity. We found that, prior to the crisis the financial world had acquired a life of its own, dissociated from the real sector. There was too much of complexity. The lessons from the crisis emphatically point to the fact that finance should serve the needs of the real sector and be subservient to the needs of real economy. There have also been concerted efforts to reduce the complexity of financial products. One such measure is the moving of OTC products to exchanges by standardizing them and settling them through central counterparties (CCPs).

While there would always be a place for customized (OTC) products, regulators and supervisors will have to ensure that these products do not become unduly complex.

39. There is another line of research that is gaining prominence in the recent times. The issue is whether too much of finance is good for growth. Recent analysis shows that at low levels a larger financial system goes hand in hand with higher productivity growth but there comes a point where more banking and more credit are associated with lower growth. This happens essentially due to the diversion of resources- physical and human- away from the real sector to the financial sector.

40. Another issue relates to the dilemma whether we need larger banks. The lesson from the crisis is that very large institutions (SIFIs) pose significant risks to the financial system. But some argue that to remain competitive, banks need to grow larger to achieve the benefits of economies of scale and scope. Therefore, the question is of the optimal size a financial institution should be allowed to grow to. How large is really large? I do not think anyone has a categorical answer to that. One alternative could be to focus not on size but on the structure of the institutions and discourage complex structures. The problem I find with the metric used for measuring the systemicity of financial institutions is that it is not an absolute metric but a relative metric. It calculates the systemicity of a bank in relation to the global sum of various metrics. In this relative approach, there is always a possibility that a bank, despite growing rapidly, and becoming riskier, might escape the SIFI regulation, if the entire banking system also becomes riskier due to which its 'score' remains unchanged. I must add that the methodology devised by the Basel Committee is the best available at the moment. To take care of the developments in the banking system, such as the one I have mentioned, the methodology provides for periodic review every three years. However, having a metric that computes systemicity as an absolute measure would be much better and is an area that needs further research.

41. The role of monetary policy in dealing with asset bubbles is another actively debated issue. Earlier the prevailing notion was that monetary policy neither had the mandate nor the ability to contain asset bubbles. All that it was expected to do was to mop up the debris after the bubble burst. But post crisis, there is an increasing consensus that monetary policy does have a more symmetric role in dealing with asset bubbles and it must work in tandem with the macro prudential policies for ensuring financial stability. Since both monetary policy and the macroprudential

policies work towards ensuring similar outcomes and they both affect the same variables i.e., the volume of credit and the price of credit, the cost to the economy would be higher, if both the policies were to work at cross purposes with each other. Pure inflation targetting which was the prevailing orthodoxy prior to the crisis is getting modified and now it is accepted by many that pure inflation targetting is not the ideal approach in the context of financial stability. The debate, however, by no means, is fully settled.

42. Another question that crops up in this context is that who should have the mandate for financial stability. Should it be the central bank or should it be the government or should it be an independent outside agency. Post crisis, several models have evolved and most of them are collegial, with participation from the central bank, the government and other regulators. There is another view that supports vesting the financial stability responsibility with central banks. This is the case with some countries, for example, UK and Malaysia. The reasons are not very difficult to see. As I mentioned earlier, monetary policy and macroprudential policies need to work in tandem to ensure financial stability. Monetary policy is the domain of central banks. Further, central banks, by virtue of their mandate for conducting monetary policy, have a handle on macro economy and financial markets. Central banks have fair knowledge of the financial institutions also to a large extent, even in cases where they are not the regulators and supervisors. Therefore, Central banks appear to be the ideal choice for ensuring financial stability or at least play a vital role in a collegial approach.

43. Unlike inflation targetting where a single number is fixed to measure the effectiveness of the policies, there is no such thing in macroprudential policies. The success of the macroprudential policies cannot be established based on counterfactuals. Therefore, to ensure proper accountability, a clear communication of objectives and methodology for fixing accountability is extremely necessary.

44. As regards liquidity risk, while the framework for Liquidity Coverage Ratio is in place, there are issues regarding interaction between LCR and monetary policy. These issues are being examined.

45. The implementation of Basel III itself is generating a debate. It was earlier planned to be implemented from 1st January 2013. Though our financial year commences on 1st April, for the sake of converging our implementation schedule with the international schedule, we had proposed to implement it effective 1st January

2013. But the two most important jurisdictions viz., the US and the Euro zone that are expected to be in the forefront in implementing Basel III, could not adhere to the schedule. We have, therefore, shifted our implementation date to April 1, 2013 which suits us better. I feel that for smoother implementation of Basel III, it would be helpful if the US and the Eurozone could announce a firm date for commencement of implementation with no change in the final date of implementation i.e. December 31, 2018.

46. The increasing complexity of regulations has raised an interesting debate as to whether more complex regulations are necessarily more effective and whether they achieve their regulatory objectives. There is an interesting paper by Andrew Haldane, Executive Director of Bank of England, '*The Dog and the Frisbee*' which makes the point that the increasing complexity of regulations is actually counterproductive. He has argued that simple leverage ratio has been a more effective predictor of stress in the system during the crisis than the complex risk weighting system and therefore simple risk measures should be preferred over complex measures for regulatory purposes. Another problem with risk weighting is that similar or identical portfolios are found to show very divergent capital requirements reflecting the fallibility of risk models. My personal view in this regard is that since financial systems have become very complex, simple risk measures may not suffice. Further, no single metric would be sufficient as it would likely be gamed. My conjecture is that if the evidence shows that the simple leverage ratio was a more effective predictor of stress in banks, it could, perhaps, be because it was not a closely watched metric. The moment regulations are built around one metric, there would be incentive to game it. Further, the downside of simple leverage ratio is that there would be strong incentive for banks to have riskier portfolios for a given amount of capital. The solution, therefore, would lie in combining the leverage ratio with risk based measures and making the models more robust and transparent.

47. Consolidation is another issue that is extremely important but has not received adequate focus so far. Specifically, while dealing with SIFIs, a consolidated/group based approach is adopted to assess the overall risk but the crisis has shown that laws relating to consolidation have been inadequate. In most jurisdictions, consolidation is based on accounting rules and the accounting rules need not be the best solution for prudential requirements. Based on the lesson from crisis, there was a need to better align the accounting rules for consolidation with the

prudential objectives. In fact, the IASB has revised the consolidation standards through IFRS 10. Even though IFRS 10 has been introduced, much work needs to be done from a prudential perspective framing consistent consolidation guidelines. Let me briefly touch upon major changes in the new accounting guidelines related to consolidation. The definition of control has been redefined in the revised accounting guidelines. So far, control was being largely defined in terms of having more than 50% of voting power through equity holdings or otherwise. In IFRS 10, control is defined from a different perspective in recognizing the possibility that even an investor holding less than a majority of the voting rights could have control. Illustratively, IFRS 10 recognizes a situation where an investor with less than a majority of voting rights may have the practical ability to direct the relevant activities of the investee unilaterally if the size of his/her vote-holding is *relatively large* in comparison to the other vote-holders and the vote-holding of the others is so widely dispersed that several of them would need to act together to outvote this investor.

48. Large exposures is another important area where Basel committee has set up a working group. The regulatory practices regarding large exposures are quite divergent. For example, many jurisdictions allow for collateral adjustment while computing the exposure while others, including India do not. The exposure limits also vary considerably. There is a need to set standards.

49. Let me now deliberate on supervision and the recent thinking and changes in this area. Supervision has to be central to any effort to make the financial system safer and has to be effective for any regulatory initiative to succeed. Writing rules (regulation) is tough, but it is tougher to make the financial institutions adhere to those rules, for which a very effective supervisory mechanism is needed. What are the important components of effective supervision? Let me quote from an IMF Staff Position Note² which very lucidly explains the attributes of effective supervision. Good supervision has to be intrusive. As I mentioned earlier, supervisors need to ask the right questions when the going is good. Good supervision has to be skeptical but proactive, implying that the supervisor should not take things for granted. Good supervision is comprehensive: while dealing with a bank, supervisors need to look holistically at the group level. Good supervision is adaptive: as the financial system is very dynamic and fast moving and innovations happen all

² The making of good supervision: Learning to say 'No'; Jose Vinals and Jonathan Fiechter, IMF Staff Position Note, SPN/10/08

the time, supervisors need to be alert to the developments and be updated. Good supervision is conclusive: supervisors need to take their findings to logical conclusion through further probing or deliberations and discussions. On top of these attributes, the IMF note mentions two features that signify good supervision. One, the ability to act and second, the will to act. Ability to act is based on the legal authority and the necessary resources both in numbers as well as quality. Availability of skills is an extremely important factor. This requires an efficient HR planning in terms of skill building and good compensation policies. Ability to act also hinges on effective working relationships with other regulators especially for supervising entities that have cross border presence. The willingness to act, on the other hand, hinges on factors such as a clear and unambiguous mandate, operational independence, accountability, a healthy relationship with the industry etc.

50. The other actively debated issue about supervision is whether it should be vested with the central bank. Different jurisdictions have different practices. There are jurisdictions where supervision is the sole responsibility of Central bank, while there are other jurisdictions where the responsibility is shared among multiple agencies and in some other cases, supervision is fully outside of central bank. FSA model which was based on unified approach to supervision outside of central bank gained a lot of respectability in the period prior to crisis. However, our own experience and the experience gained during the crisis have driven home the point that there is a lot of merit in vesting the supervisory responsibility for the banking system in the central bank. The carving out of Prudential Regulatory Authority (PRA) from the FSA in UK and the PRA becoming a subsidiary of the Bank of England is a case in point.

51. Post crisis, there has been a shift towards risk based supervision (RBS) away from the erstwhile CAMELS approach. CAMELS is essentially a scorecard based approach which is more of a backward looking methodology and transaction testing model operating with a lag. The RBS, on the other hand, is a forward looking approach inasmuch as it assesses the risk buildup in banks. RBS also enables conservation of supervisory resources. I am a votary of a combined approach. I feel that even while following the CAMELS approach, the distribution of risk and its direction should be assessed which would result in a more comprehensive assessment of banks. Under the RBS, supervisors essentially rely on the inputs provided by banks' risk management systems. Therefore, the RBS can only be as

effective as banks' risk management systems. The RBS can be supplemented by thematic assessments which can address risks arising through common exposures and common causes. Supervisory methodology is under considerable focus and it needs to be constantly evaluated and improved upon to make the financial system safer as only framing regulations will not suffice.

52. Lastly, let me mention the importance of stress testing. The risk models have their own limitations, due to behavioural aspects, as I have mentioned earlier. Stress testing is an important risk management tool to enable the supervisors to know what happens in the tails.

53. I would end my address by a quote I came across recently *"In every crisis there is a message. Crises are nature's way of forcing change--breaking down old structures, shaking loose negative habits so that something new and better can take their place"*³. Let us carry the message and lessons offered by crisis and move forward in building a more robust and resilient financial system.

Thank you.

³ Susan L. Taylor

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