*The Framework for Pre-Empting Systemic Financial Risks**

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For all the like-never-before-and-hopefully-never-after financial, fiscal, economic and social costs of the Global Financial Crisis, the one perverse benefit of it, nevertheless, has been that it has tellingly focussed attention of global law and policymakers and head honchos of finance and banking industry, also like never before, on risk and the risk management imperative as also compelled a cathartic reappraisal of how risk should be defined and measured! As someone has famously said, what you cannot see, you cannot measure and what you cannot measure, you cannot manage. For such is the insidiousness of risk that its under-pricing is perceived as low, or no risk, and, therefore, policymakers, regulators, supervisors, economic agents including banks, business and industry are caught unawares and blind-sided when risk suddenly eventuates. However, before I take forward the subject-matter of risk identification, (under-)pricing, management, and prevention of future crises, it would only be appropriate that I deal, in some detail, with the genesis of the crisis.

2. The recent financial crisis has thrown into sharp relief, as never before, the critical and important role of 'asset price' inflation/asset bubbles also, as opposed to that of shop floor/products/services inflation alone, as a key variable, in monetary policy response. For what happened was unprecedented in that with monetary policy focussed only on traditional CPI, interest rates were kept low in spite of exploding prices of assets like real estate/property, credit assets, equity and commodities. And this was all made possible because of huge current account surpluses in China and other emerging market economies (EMEs), and huge private capital inflows into EMEs in excess of their current account deficits, getting recycled back as official capital flows into government bonds of reserve currency countries, especially the USA, resulting in compression of long-term yields which, in turn, translated into lower long-term interest rates even for the riskier asset classes mentioned above. This chasing of yield, due to global savings glut, in turn, led to a veritable credit bubble, characterised by unprecedented underpricing of risk as reflected in the all-time-low risk premia with junk bond spreads becoming indistinguishable from investment grade debt, and thus, to paraphrase Jim Grant, the riskiest of assets effectively offering return-free risk! All this while, the US growth story stayed non-inflationary due primarily to cheap imports from China, Asia and EMEs which, only perversely, reinforced the continuation of the loose monetary policy, focused, as I just said, as it was on the shop-floor-price inflation to the complete exclusion of the broader 'asset price' inflation!

3. Such a low interest rate environment, coupled with luxuriant supply of liquidity, created enabling environment for excessive leverage and risk taking so much so that American household debt exceeded the country's GDP. In fact, in the US, in particular, the financial sector, instead of being a means to an end of sub-serving the real sector, ended up being an end in itself. Interestingly, in this context, Satyajit Das, a world renowned expert in derivatives, in his characteristic breezy and racy style, describes the financial syndrome as 'too much' and 'too little' – too much liquidity, too much leverage, too much complex financial engineering, too little return for risk, too little understanding of risks'. This syndrome of too much of arcane rocket science and financial alchemy in the financial sector, almost entirely for its own sake to almost complete exclusion of the needs of the real sector, created a massive 'financial sector – real sector imbalance' which, being, intrinsically unsustainable, culminated eventually into the now-all-too-familiar

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apocalyptic denouement, entailing cumulative global write-downs and credit losses aggregating US$ 2 trillion by banks and financial firms.

4. As I observed in my speech, 'Identifying Systemic Risk in Global Markets – Lessons Learned from the Crisis: Asian Regulators', views on what have they done to contain the building up of systemic risk and to prevent the recurrence of future crisis', delivered at the 2nd Pan-Asian Regulatory Summit at Singapore, in September 2011, systemic risks in global markets can be best identified and measured by looking at some select key parameters which, between them, indicate the extent of asset bubbles and the corresponding under-pricing of risks and, therefore, it is not so much high volatility, which is the 'effect', that should be a cause for concern, as persistent and excessively low volatility, which is the 'cause' and was the hallmark of the pre-crisis period. In particular, it is very instructive to look at the readings on parameters such as (i) US T-bill and Eurodollar future contract (TED) Spread (3M LIBOR – 3M Treasury Bill), (ii) 3M LIBOR – 3M OIS, (iii) 3M LIBOR – Effective Fed Funds Rate, (iv) Volatility (VIX) Index and (v) Credit default swap (CDX) Crossover index. Pre-crisis, these were at historically low levels. This was the time when there was a veritable bubble across credit and equity markets and global policymakers were already warning about huge under-pricing of risks in the run-up to the crisis. But unfortunately, nothing, in terms of pre-emptive, proactive and credible policy response, other than these warnings, was delivered. If one looks at the recent readings, there is incontrovertible evidence that there is yet again a huge under-pricing of risks in the financial system and, therefore, it is not a question of if, but when, generic asset bubble caused by manifold increases in balance sheets of central banks will burst. Specifically, currently the global liquidity has become a bigger concern than it was in the pre-2007 period what with ultra-low and near-zero policy rates and major central banks' balance sheets 1.50 to 3 times their pre-2007 levels, adding about US$ 4 trillion in incremental central bank liquidity. Worse, US banks are reportedly keeping excess reserves of US$ 1.5 trillion with the Fed rather than lend to small businesses and households. Alongside, non-financial corporations in the US are reportedly sitting on cash and liquid assets worth US$ 2 trillion which they do not know what to do with! In this background of huge deluge of global liquidity, there are unmistakable signs of asset bubbles inflating again in almost a replay of the last global financial crisis. As the Table shows, as of 27 January, 2012, the over-valuation of gold – what we can also call gold bubble – with reference to 7 competing asset classes varied from 78 per cent against highly

TABLE

Asset/Index	Avg. of daily gold to asset price ratio (Mar. 2000-Feb. 2010)	Current ratio as on Jan 27, 2012	Levels as on Jan 27, 2012	Implied price of gold as on Jan 27, 2012	Over-valuation as on Jan 27, 2012	Over-valuation as on Sep 14, 2011	Over-valuation as on Oct 27, 2010
	(1)	(2)	(3)	(1)x(3) =(4)	(5)	(6)	(7)
CASE- SHILLER US National Home price index	3.57	13.34	130.39	465.49	274%	292%	169%
DXY	6.24	22.04	78.90	492.34	253%	280%	174%
CDX IG*	5.50	18.21	95.48	525.14	231%	251%	149%
Dow Jones	0.05	0.14	12660.46	633.02	175%	224%	138%
JP Morgan US Treasury 7-10 yr bond index	1.27	2.66	654.73	831.51	109%	123%	78%
LMEX	0.26	0.46	3753	975.78	78%	84%	34%
WTI	10.76	17.47	99.56	1071.3	62%	90%	50%

(closing spot gold price as on Jan 27, 2012 was at US$1739.07) (Source- Bloomberg)

* The earliest CDX IG data are available from September 24, 2004. The average value of series 3 has been used as a proxy for CDS from March 1, 2000. The CDX spread-based index values have been converted into price-based values so that the ratio of gold price and implied CDS price can be worked out on a 'comparing apple- with–apple basis'.

** CASE-SHILLER US National Home price index is published quarterly. The latest one is available up to quarter ended September 2011. The level of the index was compared with quarterly average of daily gold price since April 2000.

correlated metal prices proxied by London Metal Exchange (LMEX), 62 per cent against WTI crude, 109 per cent against US Treasuries proxied by JP Morgan index, and roughly 230-275 per cent against Credit Default Swap index, Dow Jones, the US dollar index, DXY and the US home price Case-Shiller index. (To detect an asset bubble (gold in the present case), fair value/price of gold with reference to competing asset classes like US dollar, US stock market, crude oil, the US treasuries, credit risk, base metals, and US house prices, proxied, respectively, by the DXY (Euro, Pound Sterling, Japanese Yen, Swiss Franc, Canadian Dollar and Swedish Krona), the Dow Jones Industrial Average (DJIA), WTI spot, J.P. Morgan Bond Index, CDX IG, a CDS Index for Investment Grade US bonds, London Metal Exchange (LMEX) (nickel, tin, alluminium, copper, zinc and lead) and S&P CASE-SHILLER index, has been computed. The Table I is self-explicit. This intuitively appealing methodology of computing fair value is reasonably robust and rigorous based as it is on the assumption that any investor will have this maximum investment opportunity set to choose from to allocate her portfolio).

5. In fact, in my speech 'Genesis, Diagnosis and Prognosis of the Current Global Financial Crisis', published in BIS Review 34/2009, I had mentioned that there was significant risk that the then monetary policy environment of very low interest rates and unprecedented deluge of liquidity may yet again engender another bubble in the not too distant future! Indeed, we almost had a commodity bubble which, to all intents and purposes, was caused by this very huge deluge of liquidity but burst due to the enveloping global economic downturn, in general, and countercyclical measure of New York Mercantile Exchange (NYMEX) raising cash margins on crude oil futures and Commodity Futures Trading Commission (CFTC) checking speculative positions, in particular. Perhaps, if this swamp of liquidity and monetary easing are not unwound appropriately, and in an orderly, and timely manner, the next crisis might well be a veritable 'financial and economic nuclear winter'! Thus, you will see that we almost had a bubble which burst and now we are heading towards another one, shades of which, contextually, we experienced recently on August 4, 2011, and post Federal Open Market Committee (FOMC) meeting on September 20, 2011, when almost in prophetic confirmation of my prognostication, based on the aforesaid analysis, crude oil and global stock markets slumped by around 5 per cent and gold, after touching its all-time-high of US$ 1,920 slumped to US$ 1,530 per troy ounce on Chicago Mercantile Exchange raising cash margins on gold futures by 20 per cent!

6. As regards prevention of the building up of such systemic risks, the answer is addressing the 'cause' and which is again there in my same speech. At the risk of being repetitive, it must be noted that even if global imbalances and accommodative monetary policy provided an enabling environment for excessive leverage and risk taking, it was still the responsibility of regulators and supervisors to have taken appropriate counter-cyclical macro-prudential measures, pre-emptively, decisively and proactively, rather than reactively, But, unfortunately, this broad-spectrum and generic failure of an inertial regulatory and supervisory system worldwide, especially in the West, precipitated the unprecedented global financial crisis. The most no-holds-barred acknowledgement of this, though it came much later only recently, was when Donald Kohn, former Vice Chairman of the US Federal Reserve apologised by saying, 'The cops were not on the beat, resulting in the worst economic recession and loss of millions of jobs'! This regulatory and supervisory inertia to unprecedented build-up of risk globally, typical and characteristic, of the hunky-dory and gung-ho financial environment of the pre-crisis days, is most graphically epitomised by what Mark Twain said 100 years ago: 'It ain't what you don't know that gets you into trouble; it is what you know for sure that just ain't so!'. This is precisely what the insidiousness of risk is all about! Specifically, based on the financial parameters for detecting asset bubbles and under-pricing of risk, delineated in the paragraph 4 above, regulators/policy-makers need to deliver sector-specific counter-cyclical prudential measures like selectively increasing capital charge for riskier categories of assets by increasing risk weights for asset classes where bubbles exist, or are in the process of building. In addition, they need to

be complemented by fixing the maximum absolute leverage (not allowing for risk weights for assets) in addition to risk-weighted asset-based capital prescription. Contextually, it is instructive to note the comments of the legendary investor Warren Buffett who, contemporaneously with the roll-out of Basel I in the late 'eighties, tellingly remarked that he did not like banking stocks where assets were 20 times equity, translating into common equity to total assets ratio of 5 per cent, which is roughly 1.67 times the Basel III prescribed minimum common equity to total assets ratio of 3 per cent (leverage of 33.33 times)! Be that as it may, these regulatory measures obviate the need of monetary policy tightening which is a blunt tool indiscriminately affecting all sectors of the financial markets and the real economy, although, significantly, I am separately setting out in this Speech how monetary policy tool can also be deployed alongside as a complementary companion tool to credibly and effectively address the build-up of systemic financial risks. Besides, significantly, the credit crisis has also thrown into sharp relief a 'strong connect' between 'liquidity risk' and 'opaque off-balance sheet exposures' of whatever description. The appropriate supervisory and regulatory response to these risks would, therefore, be to insist on full disclosure and transparency of off-balance sheet commitments/exposures and supervisory insistence on an appropriate mix of 'stored' and 'purchased' liquidity and appropriate capital charge for liquidity risk; the higher the 'purchased liquidity' component, the higher the capital charge and the higher the 'stored liquidity' component, the lower the capital charge. Thus, banking supervisors and regulators need to be more hands-on and pro-active in focusing supervisory attention on this critical risk category than has been the case so far. (In fact, in India the Committee on Financial Sector Assessment almost presciently focused on this critical risk in the month of May itself, much before the liquidity and credit crunch of August 2007).

7. In refreshing contrast, in India, we have had remarkable financial stability, not fortuitously, but thanks to pre-emptively and pro-actively delivered counter-cyclical prudential measures like increase in risk weights for exposures to commercial real estate, capital market, venture capital funds and systemically important non-deposit accepting Non Banking Finance Companies (NBFCs). These pre-crisis prudential regulatory measures of Reserve Bank of India represented what now are famously known as 'countercyclical prudential measures' and have been strongly commended for adoption by various recent Working Groups/Committees of international regulators. Indeed, in the aftermath of the global financial crisis and resulting economic recession, these counter-cyclical prudential measures were rolled back to cushion the adverse impact of the crisis to considerable beneficial effect to the Indian economy. Not only that, in equally refreshing contrast, post-Basel II, the Reserve Bank, unlike in the West, did not allow banks in India to reduce their capital and prudentially mandated that banks continue to hold the then existing absolute capital. As a result, we, in India, are in a happy situation where banks have a common equity to total assets ratio of more than 7 per cent which is already 'more-than- twice' Basel III compliant on this critical parameter. Significantly, recently again, to contain potential systemic liquidity risk, the Reserve Bank has capped banks' investments in Fixed Income Mutual Funds to 10 per cent of their net worth.

8. I now turn to what I said before, in the paragraph 6, about how monetary policy tool can also be deployed alongside the counter-cyclical prudential regulatory measures as a complementary companion tool to credibly, effectively and decisively address the build-up of systemic financial risks. In my considered opinion, the famous Taylor rule can be modified suitably to include, alongside inflation and GDP, additional terms representing systemic financial conditions based on the financial parameters for detecting asset bubbles and under-pricing of risks, already delineated in the paragraph 4 of my Speech. Although, while for now this challenge is a work-in-progress for me personally, I would strongly encourage discerning researchers to pursue and take this idea forward. I am convinced that once the modified version of the Taylor rule is in place, it will provide the much-needed conceptually robust, and

technically rigorous, analytics content to monetary policy-making with a view to pre-emptively, pro-actively and decisively addressing potential asset bubbles.

9. To sum up, my message to this learned and discerning audience is that the build-up of systemic financial risks needs to be pre-emptively, credibly and decisively addressed by deploying monetary policy tool based on the proposed modified version of the Taylor rule and counter-cyclical prudential regulatory measures. While I wish the Workshop all success it so very much deserves, I do hope that the Workshop will shine light on the newer and unconventional, but conceptually robust, and technically rigorous, alternatives of modeling risk, possibly shorn of its innate insidiousness. But at the end of the day, at the most basic and fundamental level, most un-euphemistically speaking, it all boils down to summoning courage to remove – this phrase was very common in similar policy debates in the 1980s – the 'punch bowl' when the party is on! For the problem is not not knowing the problem, but knowing it and dithering, agonising over choices, temporising, procrastinating and doing nothing credible, timely, tangible and decisive about it. In other words, paraphrasing John Ruskin, what finally matters is not knowing what must be done but actually doing what must be done and doing it when it must be done.