

*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**

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In my considered opinion, systemic risks in the 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. In other words, 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) TED Spread (3M LIBOR – 3M Treasury Bill), (ii) 3M LIBOR – 3M OIS, (iii) 3M LIBOR – Effective Fed Funds Rate, (iv) volatility index (VIX) and (v) Crossover index (CDX). Pre-crisis these were about 48 bps, 12 bps, 27 bps, 24 per cent and 154, respectively. 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 (from September 2010 to July 2011) on these five parameters, on parameter No. (i) at 13 bps, we were at almost quarter the level, on parameter No. (ii) at 9 bps, we were almost there, on parameter No. (iii) at 11 bps, we were less than half, on parameter No. (iv) at 14.62 per cent we were roughly at half and on parameter No. (v) at 146, we were at slightly lower level. There is, thus, 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 bubbles 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 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 it ! 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 I shows, as of September 14, 2011, the over-valuation of gold – what we can also call gold bubble-with reference to seven competing asset classes varied from 84 per cent against highly correlated metal prices proxied by LME, 90 per cent against WTI crude, 123 per cent against US Treasuries proxied by J.P. Morgan index, and roughly 250-300 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 (LME) (nickel, tin, aluminium, copper, zinc and lead) and S&P Case-Shiller*

*Address by Shri V. K. Sharma, Executive Director, Reserve Bank of India, at the 2nd Pan-Asian Regulatory Summit organised by Thomson Reuters at Singapore, on September 28-29, 2011.

Table I

Asset/Index	Avg. of daily Gold to Asset Price Ratio (Mar 2000-Feb 2010)	Current Ratio as on Sep 14, 2011	Levels as on Sep 14, 2011	Implied Price of Gold as on Sep 14, 2011	Over-Valuation as on Sep 14, 2011	Over-Valuation as on Oct 27, 2010
	1	2	3	(1)x(3) = (4)	5	6
DXY	6.24	23.68	76.83	479.42	280%	174%
CASE-SHILLER US National Home Price Index	3.57	13.98	130.12	464.53	292%	169%
Dow Jones	0.05	0.16	11246.73	562.34	224%	138%
CDX IG*	5.50	19.32	128.88	518.10	251%	149%
JP Morgan US Treasury 7-10 yr Bond Index	1.27	2.84	641.65	814.90	123%	78%
WTI	10.76	20.47	88.91	956.67	90%	50%
LMEX	0.26	0.48	3795.30	986.78	84%	34%

(closing spot gold price as on Sep 14, 2011 was at US\$1819.63)

* 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 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 June 2011. The level of the index was compared with the quarterly average of daily gold price since April 2000.

index, has been computed. 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).

2. 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 future 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

Table II

	Pre-Sub-prime Crisis (1st Apr 07- 1st week Aug 07)	Post-Lehman Crisis (Oct-Dec 08)	Since Last One Year	As on Sep 14, 2011
	1	2	3	4
CBOE VIX	23.67	80.86	14.62 (Apr 28, 2011)	34.60
TED Spread	0.48	4.64	0.13 (Sep 29, 2010)	0.35
3M LIBOR- 3M OIS	0.12	3.64	0.095 (Sep 10, 2010)	0.28
3M LIBOR- Effective Fed Fund Rate	0.27	4.03	0.07 (Nov 17, 2010)	0.26
CDX Cross over 5 yr	153.47	650.00	146.50 (July 7, 2011-Series 11)	252.80(Series 11)
CDX Investment Grade 5 yr	34.08*	285.55	49.87 (May 2, 2011- series 12)	128.88 (Series 16)
iTraxx Crossover 5 yr	206.83*	1,116.76	353.20 (May 2, 2011- Series 14)	740.60(Series 14)
iTraxx Main Europe 5 yr	23.04*	206.55	88.00 (Apr 8, 2011 - Series 14)	186.00(Series 14)
WTI	61.47	145.29 (on July 3, 08)	72.66 (Sep 22, 2010)	88.91
US Treasury 10 yr	5.29	2.05	3.74 (Feb 8, 2011)	1.98
Dow Jones	14,000	7552	12,811 (April 29, 2011)	11,247
Implied Value of Dow Jones	15,038	27,542	23,116 ((Feb 8, 2011	47,099
DXY	80.08	88.19	72.93 (Apr 29, 2011)	76.83

* Data pertain to May 1, 2007. The data for the entire period (April 1, 2007 to 1st week of August, 2007) is not available.

'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-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 slumped to US\$ 1,530 per troy ounce on Chicago Mercantile Exchange raising cash margins on gold futures by 20 per cent!

3. As regards mitigation 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 macro-prudential measures, pre-emptively, decisively and proactively, rather than reactively. But unfortunately broad spectrum and generic regulatory and supervisory failure 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!'

4. As is invariably the case with any major crisis, the global financial crisis has unleashed a passionate debate over the design of a new global financial and regulatory architecture. However, the trouble has been not so much with the existing, inter-temporally evolved, global financial regulatory architecture as really with how it was actually worked in practice. Huge losses at global banks running to about US\$ 2 trillion were not because existing best practices, risk management and

internal controls failed but because those responsible for implementing, and enforcing them, failed them! From 1990s to 2011 and from Nick Leeson of Baring Brothers to Hamanaka of Sumitomo Corporation to Kerviel of Societe Generale to Adoboli of UBS AG, the underlying story has remained just the same! After all, of all risks to regulators and regulatees alike, human resources risk is by far the most serious as it is the source of all risks as confirmed by the recent financial cataclysm. The crux of the matter is what we need is not more or less regulation and governance but good regulation and governance which simply means actually doing what must be done! This has been the undoing of both regulators/supervisors and financial firms/banks alike. By way of example, in the USA, the traditionally very healthy AAA-rated AIG and mono-line bond insurers municipal bond insurance association (MBIA) and Ambac changed their business model from insuring only their staple products and strayed into insuring collateralised debt obligations (CDOs) and ABS and writing credit default swaps (CDS). While this went unnoticed by insurance regulators, Pershing Square, a hedge fund, spotted trouble and started shorting both equity and credit risk of these two companies. But even after this, regulators failed to take notice and corrective action with the two companies being eventually downgraded several notches and AIG having to be bailed out by the Fed and US government. The same is true of financial firms and banks where independent directors on the boards, much less ask right questions, apparently didn't even understand the arcane world of modern finance and banking and according to a column in the Financial Times, after the crisis, one leading global bank ran an advertisement inviting applications for board positions from experienced professional bankers! Besides, rather than take timely notice of, and act on, early warning signals coming from financial markets, like stock and CDSs markets, regulators chose instead to shut themselves to these early warning signals themselves by banning short selling which act effectively amounted to shooting the messenger for the unpalatable message it had to convey!

5. Another development that portends build-up of systemic risk is a rather rapid growth of ETFs with US\$ 1.5 trillion in assets under management (AUM) which

has close parallels, in terms of complexity and opacity, with the CDO market, including its 'squared' and 'cubed' variants. Financial Stability Board and Financial Services Authority have already raised concerns what with emergence of synthetic ETFs, inverse, or short, ETFs and leveraged ETFs. In particular, there are concerns with synthetic ETFs which depend upon a swap with parent bank to track return of an index against collaterals which considerably deviate from the index being tracked. This gives rise to the possibility that banks may be using ETFs to finance their riskier and illiquid assets cheaply than they would be able to do in a standard repo market. The synthetic ETFs also introduce counter-party risk not present in plain vanilla ETFs. However, that leaves out the non-ETF financialised commodities as a significant component of the total global financial assets worth US\$ 242 trillion (banking assets : US\$ 104 trillion, equity : US\$ 47 trillion and bonds: US\$ 91 trillion), of which there is no estimate in the Global Financial Stability Report of IMF; above-ground gold itself is worth about US\$ 10 trillion at current prices!

6. Specifically, regulators/policy-makers need to deliver 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. 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. 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 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. 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.