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Editorial

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The world is again bullish on India due to the recent reform initiatives taken by the Central Government. Although there are concerns raised on FDI in retail, the market has appreciated the fact that the Government has woken out of policy-slumber and is serious in taking some unpopular steps. In order to continue the momentum and to make the financial sector more competitive, reforms are needed in pension and insurance sector. Another outstanding agenda is the passage of the Companies Bill. Let us hope that this winter sees some more reforms from the Central Government.

The October issue of aṛṛtha has three articles covering equity, credit and bond markets. The first piece introduces a new metric-called *volume synchronized probability of informed trading*- to measure the level of informed trading in a stock. There is always a difference between informed trading and insider trading. While insider trading is always done by an 'insider', the informed trading is done by 'outsiders' as well. The new metric can also help regulator monitor abnormal movement in prices of stocks. The second article analyses a question- whether India was saved from the onslaught of 2007 crisis "because of limited exposure to international banking". The article argues that Indian banks are well capitalized as compared to other emerging market counterparts. The third piece looks at market borrowing through state development loans. The article argues that States need to have borrowing calendar in line with the Central Government.

I hope you'll enjoy reading this edition. Please offer suggestions for further improvement to ashok@iimcal.ac.in

Editor

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PIN – A Metric to measure information-based trading

Prof. Ashok Banerjee



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Recently SEBI and two major stock exchanges (BSE and NSE) had swung into action following large scale sell-off in a host of midcap stocks, amid concerns of possible manipulation of their share prices¹. Typically, the regulator and the stock exchanges react to such price shock by reducing the price band of affected stocks. The model by-laws of SEBI states “The Exchange shall provide adequate and effective surveillance and monitoring mechanism for the purpose of initiating timely and pro-active measures to facilitate checking and detecting suspected or alleged market manipulation, price rigging or insider trading to ensure the market integrity and fairness in trading. For this purpose, the Exchange may, from time to time, apply, adopt, determine and implement various measures, mechanisms and requirements, as may be provided in the relevant Regulations and as may be decided by the Relevant Authority from time to time.” (Chapter 9)

Market makers, in a dealer driven market, deal with both informed and uninformed traders. While informed traders possess insider information or non-public information from which they seek to benefit by trading in bulk, uninformed traders enter the market for various reasons such as the need to rebalance portfolio or to meet immediate liquidity needs. Market makers typically do not have a way to find out in advance whether the trader they are dealing with is informed or uninformed. They need to provide a suitable bid ask spread to cover up for the probable losses they might incur while dealing with informed traders. Indian stock markets are order driven markets and informed traders are less active in order driven markets than in dealer driven markets. Order driven markets have greater trading related information in public domain which can reduce the profitability of traders who thrive on secrecy. Nevertheless, informed traders can be manipulative and may use means such as Disclosed Quantity in order driven markets to hide their true intentions and seek alpha. It is, therefore, equally difficult in order driven markets to identify informed traders.

When traders with private information participate in the market, the trading volume witnesses a sudden upsurge resulting in significant variation in share prices in a short span of time. It is the responsibility of a capital market regulator to identify such abnormal variations in stock prices and trace the manipulators. Unfortunately, majority of actions seen so far are subjective and it appears that the regulators have not yet found out a reliable and effective measure to detect market abuse. It is true that programme trading makes it difficult to identify informed trading as a trade decision is sliced into smaller orders for execution. However, literature in market microstructure provide evidence of a measure, called *Probability of Informed Trading (PIN)*²,

¹ The Indian Express, July 27, 2012

² Easley, D., N. Kiefer, M. O'Hara and J. Paperman, *Liquidity, Information, and Infrequently Traded Stocks*, Journal of Finance 51, 1405-1436, 1996

that can offer early warning that a particular security is about to be overwhelmed by large buy or sell orders.

Probability of Informed Trading (PIN)

The differences in the probability of informed trading across stocks refer to the related level of information asymmetry. The existence of information asymmetry among market participants provides opportunity for profitable trading opportunity mostly in illiquid stocks. Uninformed traders would want to learn from the informed about the true value of the asset, regulators are interested in the evidence of insider trading, and the academics are interested in the behavior of the market participants and the process by which private information is incorporated into prices³. In EKOP⁴, an information event is assumed to occur once per day and the maximum likelihood estimation technique is used to estimate the relevant parameters, including the probability of informed trading, given actual numbers of buys and sells. EKOP compute Probability of Informed Trades using a) how frequently new information i.e. news based event occurs and b) how large is the fraction of orders from informed traders once news based event occurs. On any day, the model assumes the arrival of uninformed buyers and uninformed sellers are determined by independent Poisson process. The model also assumes that the arrival of news to one trader at a time, and his subsequent arrival at the market, also follows a Poisson process with an arrival rate μ . PIN is given by the sum of probabilities that ‘buy’ is information based and ‘sell’ is also information based. PIN is estimated using the following expression:

$$PIN = \frac{\alpha\mu}{\alpha\mu + 2\varepsilon}$$
, where α = Probability of occurrence of an information event, μ = Rate of informed trade arrival, and ε = Rate of uninformed buy and sell trade arrivals.

The problem with this model is that it requires estimation of too many parameters and it can be used at low frequency, which defeats the very purpose of real-time and continuous surveillance. In order to overcome these problems, David Easley, Marcos Lopez de Prado and Maureen O'Hara proposed, in the year 2010, a high-frequency estimate of PIN, which they denominated VPIN (Volume Synchronized Probability of Informed Trading)⁵. VPIN measure is based on volume imbalance and trade intensity. The biggest advantage of this approach is that unlike the previous approach, the intermediate estimation of non-observable parameters using difficult numerical methods is not required. This approach can be implemented in real time for continuous monitoring also. It works on the premise that arrival of new information to the marketplace could have a cascading effect on trade orders leading to volume upsurges. Higher the relevance of the new information, greater is the trade volume it will attract.

³ Ma Tai, Hsieh Ming-hua, and Chen Jan-hung, *The Probability of Informed Trading and the Performance of Stock in an Order-driven Market*, Asia-Pacific Journal of Financial Studies (2007) v36 n6 pp871-896.

⁴ Easley, D., N. Kiefer, M. O'Hara and J. Paperman, *Liquidity, Information, and Infrequently Traded Stocks*, Journal of Finance 51, 1405-1436, 1996

⁵ Easley, D., M. López de Prado, M. O'Hara: *The Microstructure of the 'Flash Crash': Flow Toxicity, Liquidity Crashes and the Probability of Informed Trading*, The Journal of Portfolio Management, Vol. 37, No. 2, pp. 118-128, Winter, 2011

VPIN: VPIN can be computed by dividing the trades into n buckets each of Volume V . If a trade order is large enough to not fit into one bucket, it has been broken up accordingly and put into multiple buckets. The direction of trade i.e whether the trade order is Buy or Sell is also relevant for calculating VPIN. Large number of buys might signify positive news while on the contrary, large number of sells might be indicative of negative news about a stock. VPIN estimation procedure requires a method to split volume into *buys* and *sells*. The expected trade imbalance for K^{th} bucket is $E(|V_k^S - V_k^B|) = \alpha\mu$.

Because all buckets are of the same size, V , it can be shown that

$$\frac{1}{n} \sum (V_k^S + V_k^B) = V = \alpha\mu + 2\varepsilon$$

Earlier we defined
$$\text{PIN} = \frac{\alpha\mu}{\alpha\mu + 2\varepsilon}$$

Therefore, PIN under this approach can be computed using the following simplification:

$$\text{PIN} = \frac{\alpha\mu}{\alpha\mu + 2\varepsilon} = \frac{\alpha\mu}{V} = \frac{1}{nV} \sum |V_k^S - V_k^B|$$

VPIN Tool of the Finance Lab

A software tool has been developed in the Finance Lab⁶ to calculate the volume based PIN value using the trading data for an entire day. To ensure portability of the software, coding has been done using JAVA language. The tool could be used to compute PIN at the end of the day (9:15 AM to 3:30 PM) or at the middle of the day (9:15 AM to 1:00 PM). The tool divides the trade data for the duration 09:15AM to 03:30PM into 50 buckets of equal volumes and the rest of the trades are ignored.

VPIN, as mentioned earlier, requires a proper identification of trade direction to find out the volume imbalance. David Easley et al⁵ had used bulk volume classification to identify *buy* and *sell volume*. We have used the standard *Lee-Ready* classification technique.

The following table provides an example of VPIN estimates of several Indian companies, across sectors, in early June 2010. There is no specific reason for choosing the period- excepting the fact that the period relates to an era when the market was trying to fight consequences of global financial turmoil. Stocks with high PIN value implies higher bid-ask spread and hence lower liquidity. A higher value of PIN also implies that the concerned stock is about to witness large trading volume.

⁶ Singh Vipul and Vikas Vivek, *Computation of Probability of Informed Trades on Indian Stock Exchanges*, Major Research Project, IIM Calcutta 2011.

Table: VPIN Estimates

Company	Sector	1/6/2010	2/6/2010	7/6/2010	8/6/2010	9/6/2010	10/6/2010
Bharti Airtel	Telecom	0.39	0.34	0.28	0.26	0.26	0.25
Exide	Automobile	0.57	0.52	0.58	0.41	0.47	0.48
GAIL	Oil & Gas	0.28	0.25	0.28	0.33	0.25	0.35
Grasim	Textile	0.32	0.28	0.37	0.39	0.29	0.59
ICICI Bank	Financial Services	0.26	0.15	0.2	0.26	0.2	0.18
Infosys	Software	0.37	0.24	0.28	0.3	0.28	0.24
Manappuram Finance	Financial Services	0.56	0.79	0.89	0.67	0.79	0.7
Maruti	Automobile	0.27	0.28	0.22	0.43	0.29	0.29
ONGC	Oil & Gas	0.29	0.27	0.23	0.25	0.29	0.26
Reliance Industries	Oil & Gas	0.21	0.16	0.27	0.29	0.24	0.31
Shriram Transport Finance	Financial Services	0.67	0.61	0.78	0.98	0.94	0.86
Tata Motors	Automobile	0.18	0.14	0.24	0.13	0.16	0.19
Tata Steel	Steel	0.15	0.15	0.26	0.18	0.17	0.16
Ultratech	Cement	0.82	0.63	0.81	0.82	0.84	0.62

Note: Computations done by Mr. Souma Mazumdar, System & Quantitative Analyst, Finance Lab

The figures in the table clearly demonstrate that certain stocks possessed larger information asymmetry. The PIN estimates of Shriram Transport Finance, Munappuram Finance and Ultratech are significantly higher than other stocks. These high-PIN stocks would indicate higher informed trading during this period. For example, in case of Ultratech (and a few other cement companies) a probe initiated by the Competition Commission of India (CCI) revealed recently that these companies did form cartel in 2010 and extracted abnormal profits. The company, however, has challenged the allegation. This information was not known to everyone.

Trading strategies have been devised based on PIN⁷. Studies have shown that a zero-investment portfolio which is size neutral, but long in high pin stocks and short in low pin stocks earns a significant abnormal return.

Lee-Ready Algorithm:

If a trade takes place at a price which is greater than the mid-quote (average of bid and ask prices), it is classified as a *buy*. If a trade takes place at a price which is lower than the mid-quote, it is classified as a *sell*. Tick test has been used for classification of trades that take place at the midpoint of bid and ask prices.

⁷ Easley, D., Hvidkjaer, S., M., O'Hara, 2005, *Factoring Information Into Returns*, Journal of Financial and Quantitative Analysis / Volume45 / Issue02 / April 2010, pp 293-309

Has limited globalization of banking system saved India during the hey-day of the Financial Crisis? : Some Recent Findings

Prof. Partha Ray



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When it comes to globalization, sentiments often dominate over logical thinking. Globalization of banking is no exception. Thus, to the caricatured left what saved India during the hey-day of global financial crisis is limited exposure of the Indian banking system to the global products and practices. To the corner rightist position, on the other hand, despite India's limited capital account and financial liberalization, global financial crisis impacted India through trade, financial and confidence channel. Thus, the positions are often seen as follows (a) India was saved from the onslaught of 2007 crisis "because of limited exposure to international banking"; or (b) despite having limited exposure to international banking global crisis affected India. Notwithstanding such polemics, it is by far well-established that India did not experience the worst of the global financial crisis. Why?

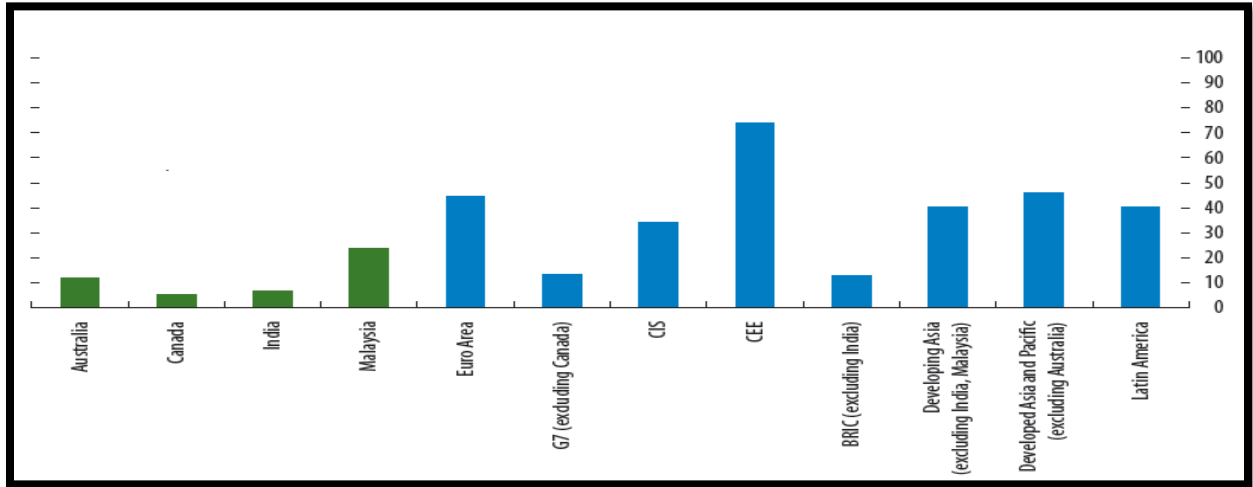
It is in this context, that the forthcoming *Global Financial Stability Report* (GFSR, October 2012) of the International Monetary Fund (IMF) whose analytical chapters were released on September 25, 2012, makes interesting reading. An issue that was raised in the *GFSR* is that: *while "Australia, Canada, India, and Malaysia have a relatively low degree of exposure to international banking and also avoided the worst of the effects of the global financial crisis", is there a connection?*

Three measures are used to quantify the extent of globalization of the banking system of a nation:

- a) the ratio of foreign bank assets to total bank assets;
- b) banks' foreign assets as a percent of total assets or GDP;
- c) international financial claims and liabilities, both in percent of total assets.

While (a) and (b) are potential measures of foreign banks' presence (Chart 1 and 2), (c) can be conceived to be a metric for global interconnectedness (Chart 3). A look at Charts 1 to 3 confirms two facts. First, irrespective of the measure, India's exposure of global banking has been rather limited. Second, India is not alone in this regard. While Australia and Canada are comparable to India in terms of foreign banks presence, as far as international positions are concerned, India seems to be least globalized. Admittedly, in terms of direction of global interconnectedness, India is more globalised than Malaysia.

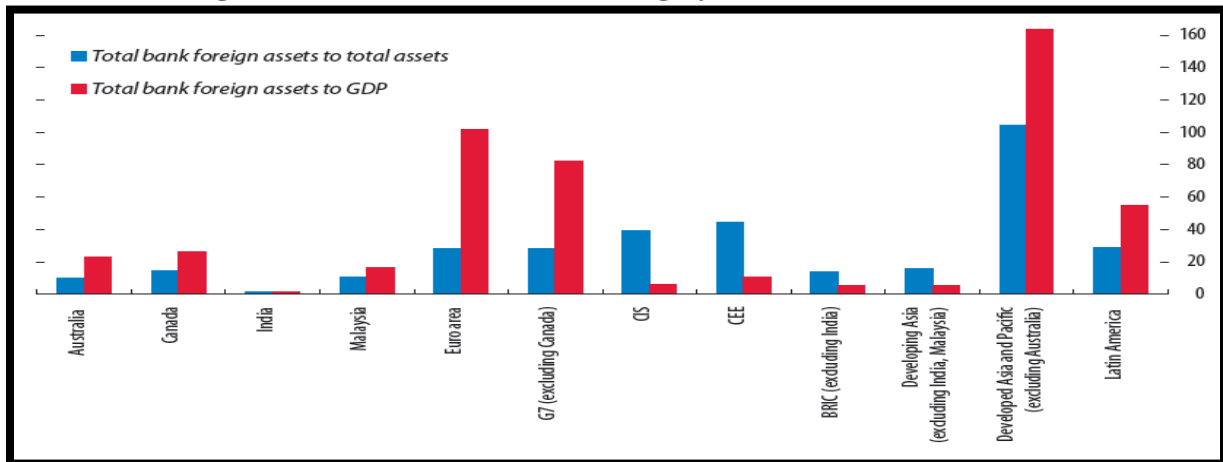
Chart 1: Degrees of Globalization in Banking Systems – Foreign Bank Presence
 (% , ratio of Foreign Bank subsidiary and branch assets to total banking assets)



Note: (1) Data are as of December 2011.

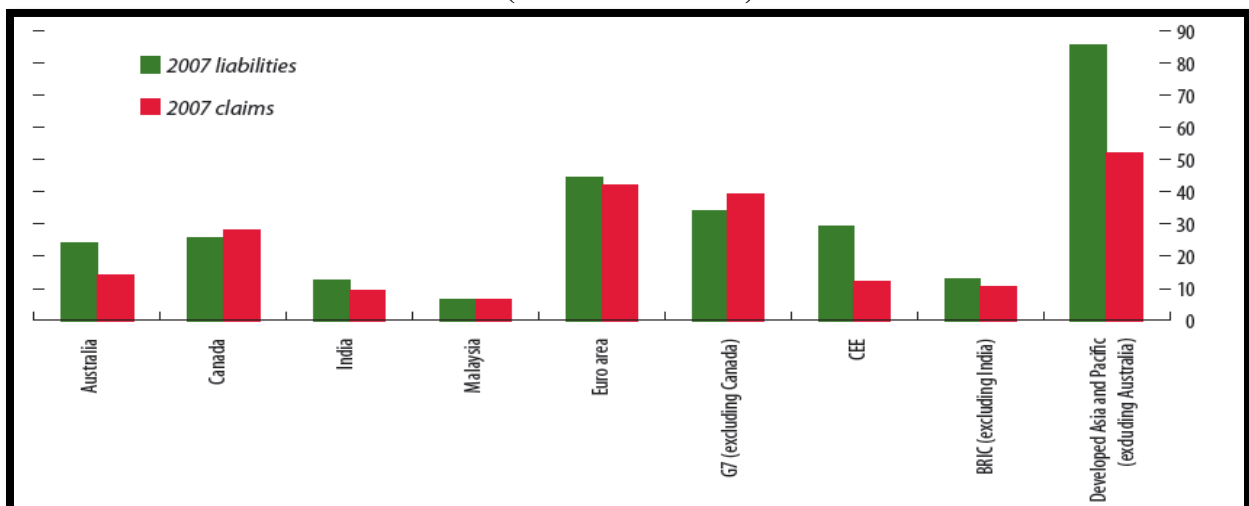
(2) Legends: CIS = Commonwealth of Independent States; CEE = Central and Eastern Europe.

Chart 2: Degrees of Globalization in Banking Systems: International Positions (%)



Note: Data are as of December 2011 and 2010 selectively.

Chart 3: Direction of Interconnectedness – International Claims versus Liabilities: 2007
 (% of bank assets)

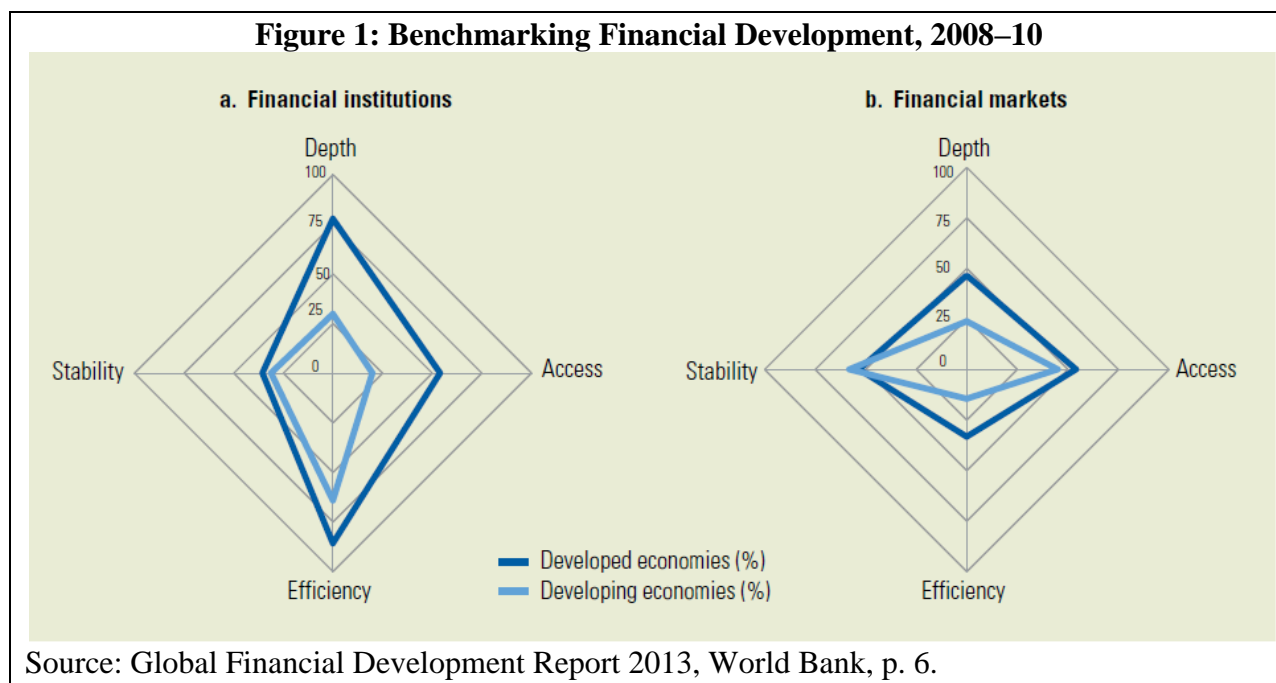


Source: Global Financial Stability Report, IMF, October 2012.

Interestingly, the regulatory regime in Australia and Canada effectively prohibited mergers among the major domestic banks with a view to ensure competition among the banking system. Consequently, banks of these two countries did not emerge to be too big to fail. Furthermore, in Canada no single shareholder (domestic or foreign) can own more than 20 percent of voting rights in a big bank and in Australia, any buying of share by any bank (domestic or foreign) exceeding 15 percent of its voting rights require special approval.

Do not entry barriers to foreign banks effectively lessen completion in domestic banking? The answer to this question is somewhat complicated. In a recent debate held by *the Economist* magazine, two renowned Professors of Finance expressed diametrically opposing views about the role of bank competition.⁸ Franklin Allen from the Wharton School went on to say that, “more competition does make banking more dangerous.” On the other hand, Thorsten Beck from the Tilburg University, argued that “competition in banking is not dangerous per se”; it is the regulatory framework in which banks operate and which sets their risk-taking incentives that drives stability or fragility of banking.

But the Indian case, where the banking sector is dominated by the state-owned banks, could be slightly more complicated. In the spirit of revisiting the older questions, the latest the *Global Financial Development Report 2013 (WFDR 2013)* of the World Bank, probed into this issue of role of state in Finance in the current context. Concentrating on four factors, ‘depth’, ‘stability’, ‘access’ and ‘efficiency’, the Report’s main message seems to be that, while state ownership could foster stability and access to some extent, in terms of depth and efficiency there are serious costs. Expectedly, in terms of most of these four parameters, the *WFDR 2013* found considerable differences between the developed and developing nations (Figure 1). However, when it comes to stability both financial markets and financial institutions of the developing countries are fairly comparable to those in the developed countries. But does it then imply trade-offs between these four parameters? If so, a nation needs to arrive at desired levels of these parameters; e.g., how much efficiency can be sacrificed in lieu of depth? In Indian context, such trade-offs are also inherent in the relationship between the state and financial sector.



⁸ Available at <http://www.economist.com/debate/days/view/706>

Traditionally, after every crisis, there is clamour for renewed regulation and for questioning the established wisdom. Global financial crisis, which has questioned a number of orthodoxies / settled issues in economics and finance, is no exception. Ownership of banking sector is one such key issue. Often the straight jacket line of reasoning of “*when A is not true*” “*not A must be true*” may lead to fallacious conclusions. When new light is being thrown on issues, such as presence of foreign banks in India or efficacy of state ownership of banks in India, one need not lose sight of such fallacies. However, one becomes much cynical when one is reminded of what Professor Kaushik Basu recently said, “According to studies a left- and a right-wing person made to read the same set of facts will feel even more confirmed in her original views”.

Market Borrowing through State Development Loans*

Dr. Golaka C. Nath



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State Funding Realignment with Market: Historically federal States in India depended heavily on the Central Government to provide substantial amount of funding. To reduce the high interest burden of the States, Central Government formulated a Debt Swap Scheme realizing the mounting burden of interest payments on the states, and to supplement their efforts towards fiscal management. The scheme was in operation from 2002-03 to 2004-05 and the scheme capitalized on the low interest regime prevailed for few years before the financial crisis. The purpose of the scheme was to enable States to prepay expensive loans contracted from Central Government, with low coupon bearing small savings and open market loans through issuance of State Development Loans (SDL). The scheme covered outstanding high cost loans with interest rate of 13% and above. An amount of `106076 crore was prepaid to Central Government by the States from small savings loans and open market borrowings. Central Government disintermediated from the borrowings of State Governments from 2005-06 onwards following the recommendations of the Twelfth Finance Commission (TFC), resulting in a sharp decline in the inflows of loans from the Centre in the subsequent years. State Governments have been increasingly borrowing from the market in the form of SDL from 2007-08 onwards. Unlike Government of India borrowings, States have to get their Memorandum of Understanding with Reserve Bank of India to manage their borrowings. Though, States have been increasingly issuing bonds in recent times, very little reforms have taken place in SDL issuance process. The only saving grace is the auction mechanism – moving towards a yield based auction from pre-fixed coupon auctions. Currently most of the SDLs are 10 year securities though some of the States have started raising funds using short term securities. Since bulk of the funds through SDLs were raised by States from 2007-08, the redemption pressure is likely to be relatively low until 2017-18.

Large Number of Small Value SDLs: The TFC’s recommendation for the States to increasingly finance their deficits through issuance of SDLs was intended to expose the States’ fiscal health to greater market scrutiny, with differential interest rates signaling the perceived credit worthiness of a State. A State having low perceived credit quality is likely to pay higher coupon while borrowing funds from the market. As of Aug’12, there were 1430 SDLs issued by various States with an outstanding debt of `789136.56crores as against 1382 SDLs with an outstanding borrowing of `647703.99crores in Aug’11 – recording a growth of above 21%. The average coupon also increased from 7.80% in Aug’11 to 7.93% in Aug’12. Most of the States maintained their borrowing market share though few medium size States like Assam, Chhattisgarh and Orissa have reduced their market borrowing. Some of the States like Kerala,

** Personal views of the author only and not the views of his organization*

Karnataka, Gujarat, Haryana, etc. have increased their borrowing by over 30%. Higher level of borrowing of these Governments also led to significant rise in the cost of these borrowings. The correlation between the Growth of Debt and the difference in coupon payment was found to be 90% justifying the notion that States borrowing at higher than the national average paid relatively higher cost for such borrowing. States like Kerala Gujarat and Karnataka have seen their average coupon rising by 29-30bps while the average coupon increase for the year was only 13bps. However, the yields at which funds are raised by a State not only reflect the relative perceived credit quality of the but also reflect the prevailing liquidity conditions at the time of borrowing and the size of borrowings being undertaken by each State. Further, the substitutability of SDLs as statutory liquidity ratio (SLR) securities indicates that lower emphasis is given to the relative credit quality of the individual States. This goes against the spirit of the TFC's aim to expose the State Governments to increasing market scrutiny and discipline.

Table – 1: Market Share of Borrowing of States with Coupon Difference over Aug'11

State/Union Territory	Market Share in Aug'12	Market Share in Aug'11	Change in Market Share	Coupon Difference	Growth of Debt
Andhra Pradesh	10.36%	10.45%	-0.09%	0.18%	20.77%
Arunachal Pradesh	0.09%	0.10%	-0.02%	0.05%	2.38%
Assam	1.30%	1.71%	-0.40%	-0.03%	-6.76%
Bihar	2.59%	2.68%	-0.09%	0.18%	17.56%
Chhattisgarh	0.25%	0.37%	-0.12%	-0.17%	-16.62%
Goa	0.40%	0.40%	0.00%	0.23%	22.72%
Gujarat	8.47%	7.71%	0.76%	0.29%	33.90%
Haryana	3.04%	2.82%	0.22%	0.26%	31.29%
Himachal Pradesh	1.40%	1.40%	0.00%	0.24%	21.54%
J&K	1.81%	1.85%	-0.04%	0.20%	19.49%
Jharkhand	1.13%	1.25%	-0.12%	0.18%	10.08%
Karnataka	4.04%	3.72%	0.32%	0.30%	32.43%
Kerala	5.45%	4.81%	0.63%	0.29%	37.86%
Madhya Pradesh	3.62%	3.79%	-0.17%	0.19%	16.29%
Maharashtra	11.45%	11.43%	0.02%	0.18%	22.02%
Manipur	0.29%	0.31%	-0.02%	0.15%	14.64%
Meghalaya	0.26%	0.28%	-0.03%	0.11%	10.23%
Mizoram	0.21%	0.24%	-0.03%	0.06%	4.63%
Nagaland	0.45%	0.48%	-0.03%	0.17%	13.95%
Orissa	0.59%	0.92%	-0.32%	-0.48%	-21.04%
Puducherry	0.29%	0.28%	0.02%	0.11%	29.82%
Punjab	4.95%	4.72%	0.23%	0.23%	27.79%
Rajasthan	5.17%	5.38%	-0.21%	0.19%	17.07%
Sikkim	0.16%	0.19%	-0.03%	0.01%	2.05%
Tamil Nadu	8.44%	8.16%	0.28%	0.21%	25.98%
Tripura	0.24%	0.27%	-0.03%	0.14%	10.05%
Uttar Pradesh	10.34%	10.93%	-0.59%	0.14%	15.30%
Uttrakhand	1.05%	1.21%	-0.16%	0.08%	5.77%
West Bengal	12.15%	12.14%	0.01%	0.20%	21.94%
Total	100.00%	100.00%		0.13%	21.84%

Typically, SDLs of many States are bunched together for issuance as individual States raise a small amount vis-à-vis the conventional borrowing by Government of India. Most of the auctions see the low spreads at which SDL are raised by various States but still a significant portion of debt is raised by States at market-related yields rates rather than at administered rates. In a recent auction on Sep 18, 2012, about 9400crores were raised by 12 States. The States paid an average coupon of 8.88% while Gujarat State could raise funds at a very low rate of 8.6805% while West Bengal paid 8.9074%. The average spread of SDLs over 10-year Government securities works out to be about 60bps as on Sep 18, 2012.

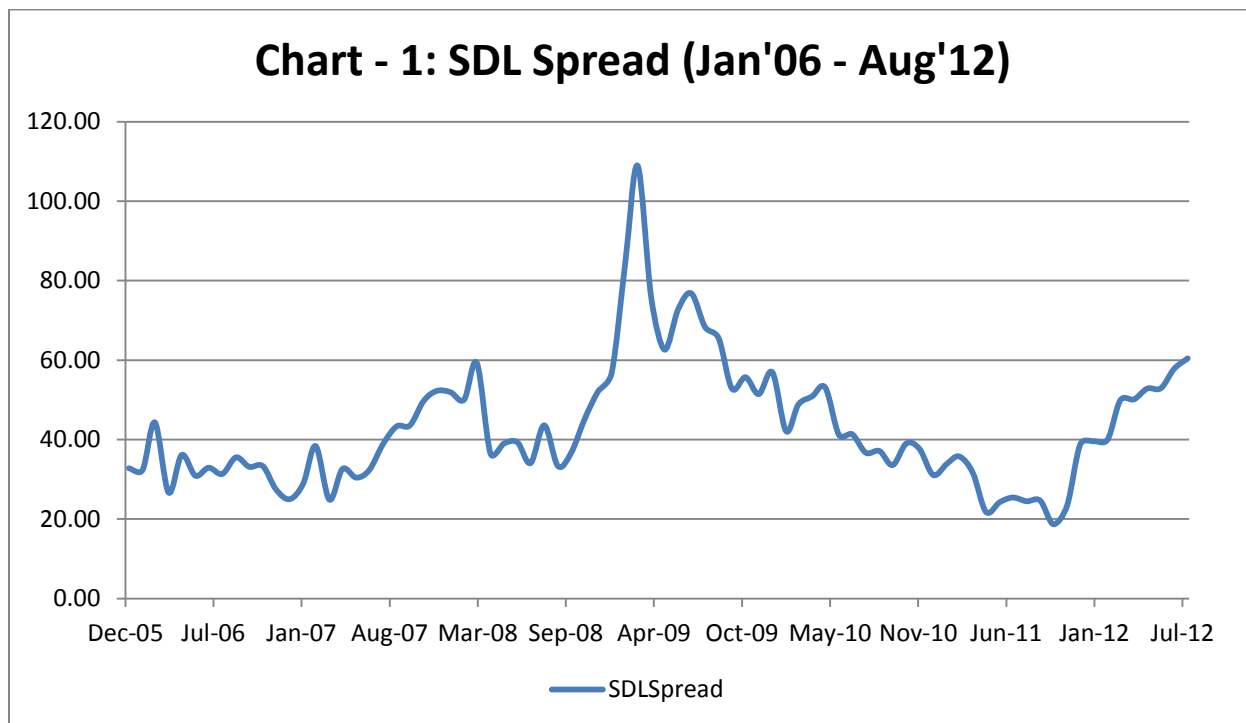
No	State	Notified Amount (`Crore)	Amount Accepted (`Crore)	Tenor (Year)	Cut-off Yield (%)	Weighted Average Yield (%)
1	Andhra Pradesh	750	750	10	8.89	8.8743
2	Goa	200	200	10	8.87	8.8600
3	Gujarat*	600	800	4	8.7	8.6805
4	Himachal Pradesh	200	200	10	8.91	8.8835
5	Maharashtra	2000	2000	10	8.9	8.8889
6	Manipur	50	50	10	8.92	8.9200
7	Punjab	500	500	10	8.91	8.8991
8	Rajasthan	500	500	10	8.9	8.8895
9	Sikkim	35	35	10	8.92	8.9200
10	Tamil Nadu*	1500	1875	10	8.9	8.8894
11	Uttar Pradesh	1000	1000	10	8.91	8.8984
12	West Bengal	1500	1500	10	8.92	8.9074
	Total	8835	9410			

*Gujarat and Tamil Nadu retained additional `200 and `375crores

Historically, SDL trade at a spread of 40-50bps over comparable Gilts. Recently the spread have increased a bit due to uncertainties.

Mean	43.07
Standard Error	1.75
Median	38.99
Standard Deviation	15.68
Kurtosis	3.20
Skewness	1.41
Minimum	18.69
Maximum	108.93
Observations	80

During financial crisis period, the spread increased dramatically and reached above 100bps level.



Secondary Market: SDLs constitute a very small percentage of total secondary market deals and the situation has not improved since the States started borrowing after the debt swap scheme. Though SDLs provide for higher yield vis-à-vis the comparable Government securities, these securities are still not popular in secondary market trading. Most of the secondary market trading in SDLs happens in recently issued SDLs and very little amount of liquidity exists in older SDLs. This pattern need to reverse if a reasonably good secondary market is to develop. Hence, it is required to consider active or passive consolidation of SDLs of States along with re-issuance of the SDLs on regular basis.

Table – 4: Security Type Analysis - Market Share (%)

Year	Constituent Deals			Market		
	GSEC	TBILL	SDL	GSEC	TBILL	SDL
2007-08	81.03	14.80	4.17	88.75	10.39	0.86
2008-09	83.83	13.85	2.32	90.52	7.89	1.59
2009-10	72.26	23.38	4.35	85.14	12.47	2.39
2010-11	73.39	21.33	5.28	88.90	9.58	1.52
2011-12	72.49	22.21	5.31	88.85	9.90	1.25

Need for SDL Reforms: In order to have efficient SDL secondary market, few reforms are need of the hour. First, the States need to have borrowing calendar in line with the Central Government. Second, there are too many securities with small denominations making the limited level of floating stock availability in the market. Hence, an active consolidation through an SPV mechanism is required to be thought of so that the stocks can be consolidated into small numbers. Third, States should reissue the stocks rather than issuing new securities so that floating stock increases in the market and this will help increasing liquidity.