

# A Newsletter of Finance Lab

October, 2012

Volume 1, Issue 3



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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 prices<sup>3</sup>. In EKOP<sup>4</sup>, 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  $\lambda$ . 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:

$$PIN = \frac{\lambda \alpha}{\lambda \alpha + \beta}$$
, where  $\alpha$  = Probability of occurrence of an information event,  $\beta$  = Rate of informed trade arrival, and  $\lambda$  = 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)<sup>5</sup>. 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 mon

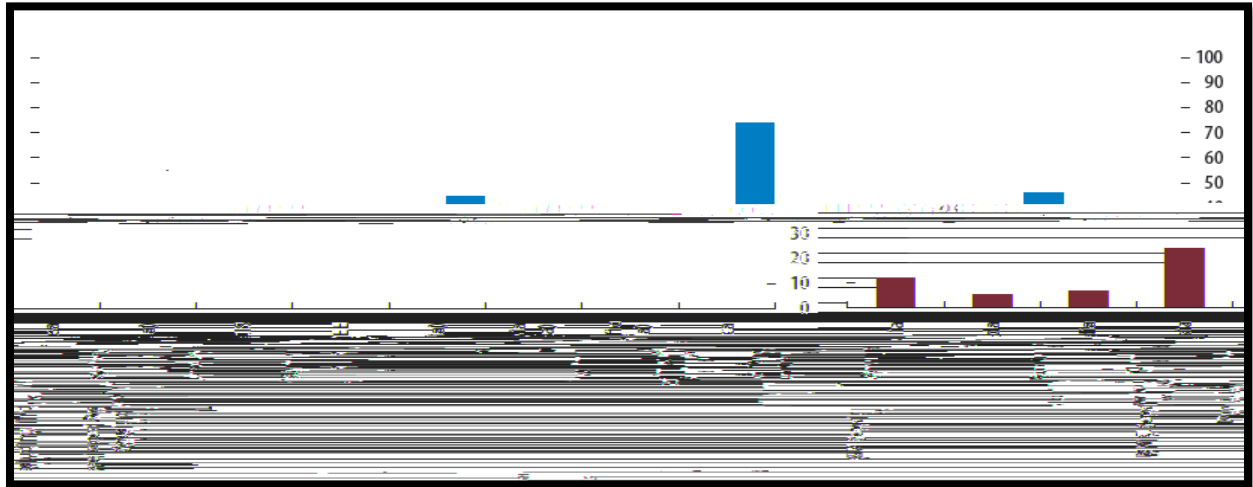






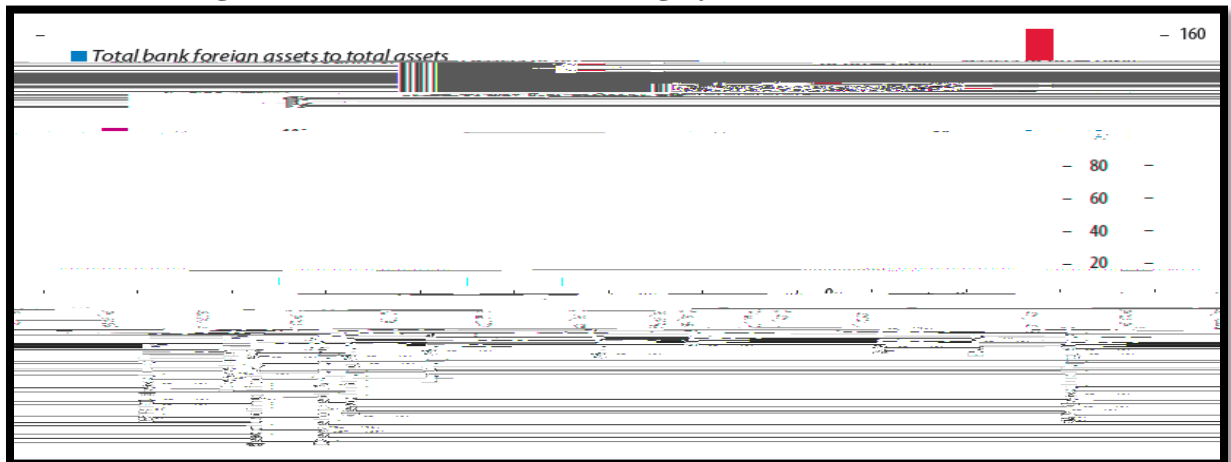


**Chart 1: Degrees of Globalization in Banking Systems – Foreign Bank Presence**  
 (% , ratio of Foreign Bank subsidiary and branch assets to total banking assets)



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.



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 a







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.

Table – 2: SDLs issued on Sep 18, 2012

No	State	Notified Amount (`Crore)	Amount Accepted (`Crore)	Tenor (Year)	Cut-off Yieldff
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**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.

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