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A NEWSLETTER OF THE FINANCE LAB

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Indian Institute of Management Calcutta

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Editorial

Modi government has completed one year in office this month. Are the financial markets happy? In the first six months, the Modi government have taken a series of measures- more FDIs in defense and railways, financial inclusion (Jan Dhan), freeing diesel prices. The following six months saw slew of measures to boost investment in infrastructure sector and promote innovation- several infrastructure projects were stalled by the previous government. The government has unveiled plans to invest US\$ 137 billion in its rail network over the next five years. Such large investment plans would require a vibrant and deep financial markets to finance the requirements. The Union Budget 2015 proposed several innovative financing options including bullet bonds and dedicated funds in this regard. The government should also be credited for allowing our central bank (RBI) to pursue its independent policies on interest rate decisions and forex management. However, the government has to bring more clarity in handling direct tax matters. Another worrying area is the health of banks in India. Good borrowers are looking at other options while raising funds and therefore banks are increasingly saddled with bad accounts.

This issue covers three articles. The first piece deals with Algorithmic Trading and whether it has improved market liquidity particularly during the periods of crisis. The second article in this volume looks at the relationship between finance and economic growth and evaluates whether more finance leads to more economic growth. The third article is on Primary dealers (PDs) system and its role in India.

You may send your comments and feedback on this issue to ashok@iimcal.ac.in

Happy reading!

Ashok Banerjee

Algorithmic Trading and Market Liquidity

Ashok Banerjee and Samarpan Nawn*



Ashok Banerjee, Ph.D., is Professor, Finance and Control, Indian Institute of Management Calcutta (IIM-C). He is also the faculty in-charge of the Financial Research and Trading Lab at IIM-C. His primary research interests are in areas of Financial Time Series, News Analytics and Mergers & Acquisitions

Two previous issues of the Artha delved on concerns relating to high frequency and algorithmic trading. In the article on algorithmic trading (Vol 1 Issue 7) it was mentioned ‘whether algo trading is good for the market is a question yet to be answered’. Later in another related article on high frequency traders (Vol 2 Issue 5) it was suggested ‘capital market regulators in India should not be too much bothered about the abuse of HFTs at this stage since the empirical evidences so far on the role of HFTs are mixed’. Algorithmic trading refers to use of computers and programs to generate and execute large orders in markets with electronic access. Such orders come from institutional investors, hedge funds and trading desks of brokers. Rather than maximizing profits, one of the important objectives of algo traders is to minimise trading costs and market risk. There are two known methods of algo trading- high frequency trading (HFT) and quantitative trading (QT). HFT involves real time orders in milliseconds whereby a trader places and quickly cancels small orders to find out at what price a trade can take place. HFT profits are largely driven by volume. QT is a longer term trading strategy where the algorithms analyze the trends and predictable patterns in the market and trade upon machine-derived forecast.

National Stock Exchange (NSE) introduced co-location services (a paid facility) for the traders in January 2010. This facility allows market participants to rent servers located within the NSE’s premises. Co-location refers to bourses allowing members to set up automated trading systems on their premises to reduce latency i.e., the time required for orders to flow between the exchange and the broker’s trading system.¹ NSE, on an average, saw 21.67% of its turnover from co-location servers during the first three months of 2015.

¹ <http://www.livemint.com/Industry/l7jPRU8AqrRoC4bNgLa2TO/Institutions-skip-DMA-go-for-algorithmic-trades-colocatio.html> (accessed on 21 May 2015)

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In many advanced countries, an order is fragmented not only into smaller lots for execution but also is traded through multiple exchanges. In India, on the other hand, top two exchanges BSE (Bombay Stock Exchange) and NSE control almost the entire equity market. NSE, for example, accounts for 80% of equity spot trading and almost 100% of equity derivatives trading.² Therefore, it becomes relatively easier to study the effect of algorithmic trading on the quality of the market. A central question to the debate of algorithmic trading (AT) is whether AT is beneficial for the market in particular and society in general. A related question could be whether introduction of AT has improved market liquidity particularly during periods of crisis. Liquidity is best represented by the depth (number of shares available) at the top of the book (best bid and ask) as well as at the prices beyond the best quotes. High liquidity is very important to retail investors, especially when market condition is stressed. It is generally believed that algo traders supply liquidity when bid-ask quotes are wider. This is to take care of adverse selection cost- the cost associated with trading against an informed counterparty. Bid-ask spread gets large in case of high market volatility. Therefore, one can naturally expect algo traders supplying liquidity in times of high market volatility. However, evidence in this regard is mixed. While a study³ in the Hong Kong market shows algo traders supplying liquidity in times of short-term market volatility, we have done a pilot study in India and found when volatility is extremely high, rather than supplying limit orders, algo traders become consumers of liquidity.

AT and Market Microstructure

The message traffic in Indian stock market has increased manifolds since the introduction of co-location facilities in the stock exchanges. Message traffic includes electronic order submissions, cancellations and trade reports. In many markets, it is almost impossible to identify whether a trade is generated by a computer algorithm. Researchers, therefore, use proxies to identify trade. For example, Handershott et al⁴ use the rate of electronic message traffic as a proxy for the amount of AT taking place.

² Nidhi Agarwal and Susan Thomas (2013), *Market quality in the time of algorithmic trading*, Technical report, Indira Gandhi Institute of Development Research

³ Ahn, H.J., Bae, K.H., Chan K., (2001). *Limit orders, Depth and Volatility: Evidence from the Stock Exchange of Hong Kong*. The Journal of Finance 56, 767-788

⁴ Hendershott, T., C. Jones, and A. Menkveld. (2011). *Does algorithmic trading increase liquidity?* Journal of Finance 66:1-33

Table 1: Algorithmic and Non-algorithmic Trades in NSE

	2011	2012	2013
Avg Daily msg	75993500	125738000	171300000
New order	12%	8%	7%
Cancellation	5%	4%	4%
Revision	83%	88%	89%
algo msg	80%	91%	95%
non algo msg	20%	9%	5%
prop algo msg	52%	75%	79%
Cancelled by algo	48%	73%	87%
Cancelled by nonalgo	52%	27%	13%
mkt ord %	5%	4%	4%
mkt ord from algo	29%	31%	36%
mkt ord from non algo	71%	69%	64%
hidden order%	10%	12%	10%
hidden ord from algo	41%	63%	71%
hidden ord from non algo	59%	37%	29%
message to trade ratio nonalgo	4.5	3.2	2.6
message to trade ratio agencyalgo	20.0	16.7	21.8
message to trade ratio propalgo	54.1	125.4	252.8
order to trade ratio nonalgo	1.7	1.6	1.4
order to trade ratio agencyalgo	1.7	1.7	2.3
order to trade ratio propalgo	2.2	4.8	9.9

We have obtained a dataset from NSE that has separate flags to directly identify algo trades- a feature not available in similar database of most of the stock exchanges. Average daily messages in NSE is in millions- from 76 million in 2011 it has grown to 171 million in 2013 (Table 1). Messages posted by algo traders' account for about 95% of the total postings. A large number of orders submitted by algo traders are either subsequently revised or cancelled. The NSE dataset also distinguishes algo trading into proprietary algo (propalgo) and agency algo. Message to trade ratio for propalgo is more than ten-times that of agency algo indicating that prop ATs dominate the high frequency trading market. The order-to-trade ratio for propoalgo is also similarly high. SEBI, through a circular in 2012, imposed a fee to be paid by algo traders for high order-to-trade ratio. SEBI is of the opinion that large

unexecuted orders create unnecessary pressure on a trading system and also hampers price discovery. SEBI has advised stock exchanges to monitor orders from trading algorithms in order to arrest or identify any market manipulation by such traders. Order-to-trade ratio for non-algo traders is reasonable.

AT and Flash Crash

A flash crash on the National Stock Exchange (NSE) on October 5, 2012 around 10AM due to erroneous trades by a dealer in 59 frontline stocks pulled the NSE-50 (Nifty) index down 15.5% in 8 seconds⁵. Though NSE clarified that the abnormal orders were ‘non-algo’ in nature, skeptics raised the issue of the exchange not able to detect such order on time and to allow the trade to happen. Trading was subsequently stopped and trading resumed at NSE at 1005 hrs and NSE behaved normally thereafter on that day. We looked at the behavior of randomly selected five stocks on that day (Figure 1). All the stock saw sharp fall around 10AM on October 5, 2012.

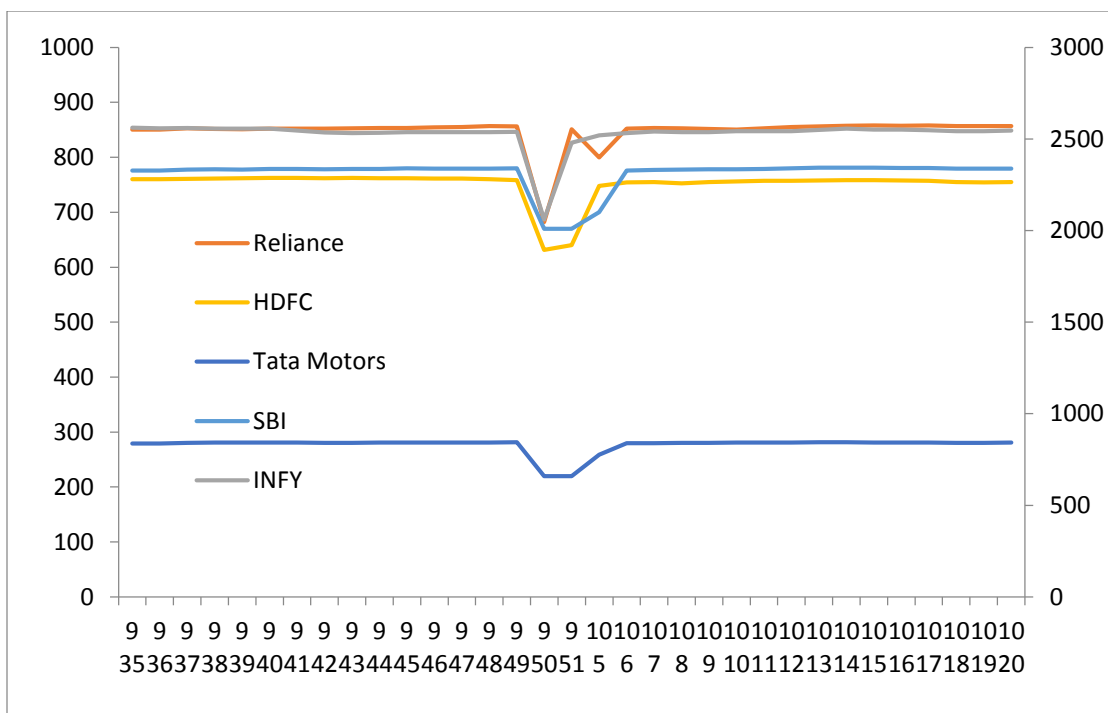


Figure 1: Stock Price Reaction on October 5, 2012 (x-axis denotes time-of-the-day and y-axis share price)

⁵ <http://timesofindia.indiatimes.com/city/delhi/NSE-flash-crash-pulls-Nifty-down-by-15-5/articleshow/16691260.cms> (accessed on 22 May 2015)

How did the algo traders behave on that day? Were they providing liquidity around 10AM on that day or cancelling orders? Figure 2 clearly shows that message-to-trade ratio had sharply dropped around the crash time. Reliance, for example, had a message-to-trade ratio of more than 4000 around 9.37AM and when trading resumed at 10.05 AM the ratio was around 14. About 90% of orders (of Reliance) were cancelled by the prop algo traders during the first fifteen minutes of market opening and then it suddenly dropped to almost zero at 9.51 when trading was stopped by the exchange. This shows that algo traders had no clue about the crash and were behaving normally immediately before the flash crash and once the trading resumed such traders again got back to their normal behavior.

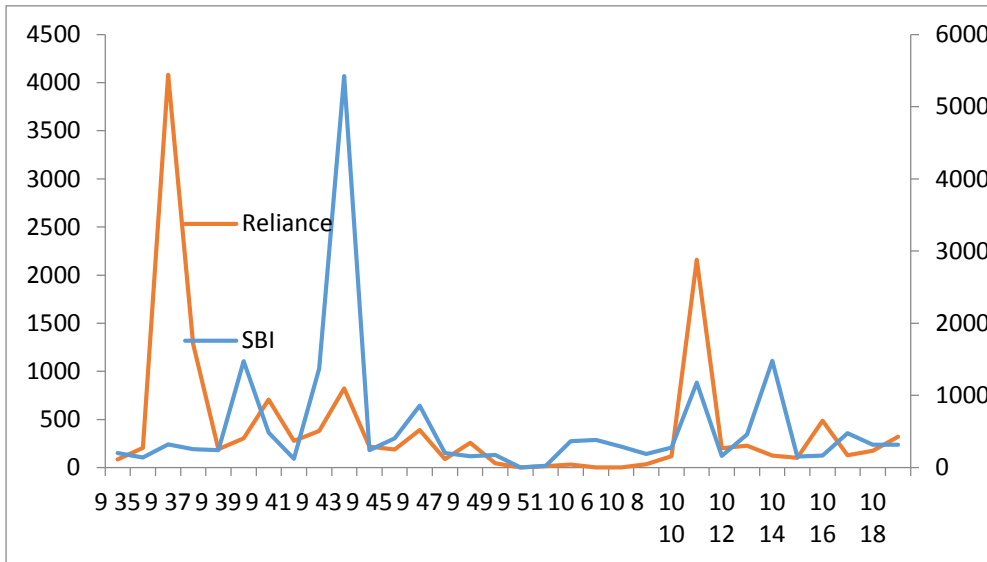


Figure 2: Prop AT message-to-trade ratio on October 5, 2012

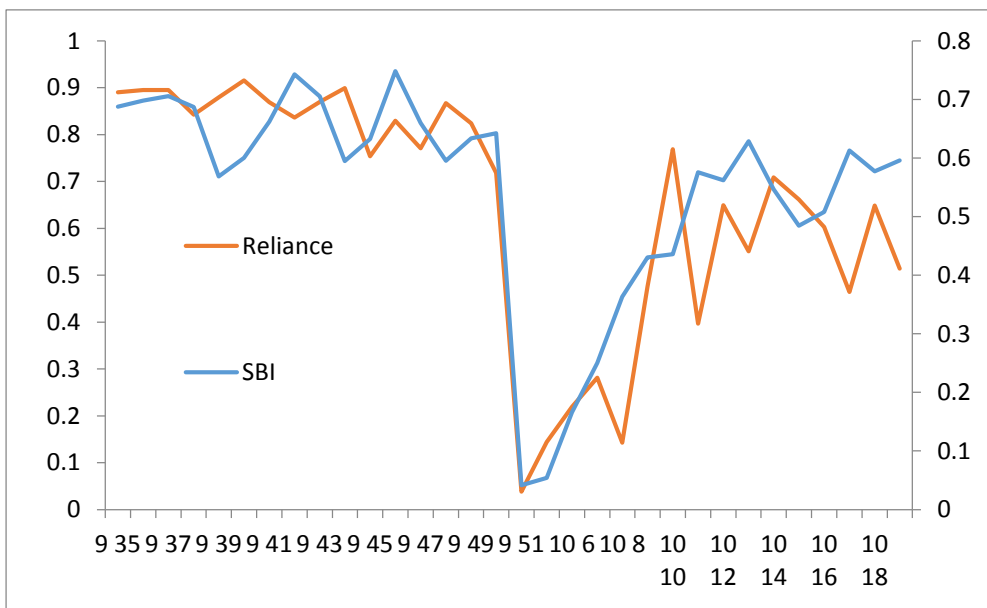


Figure 3: Prop AT order cancellation (%) on October 5, 2012 (SBI right-scale)

Figure 4 indicates proportion of prop algo trading of total traded volume. It is observed that AT volume had shot up around 9.51AM when the flash crash was observed. Whereas the non-algo cancellation (Figure 3) peaked around the crash time. This implies that while the non-algo traders panicked during crash, algo-traders actually traded at a disproportionately higher level.

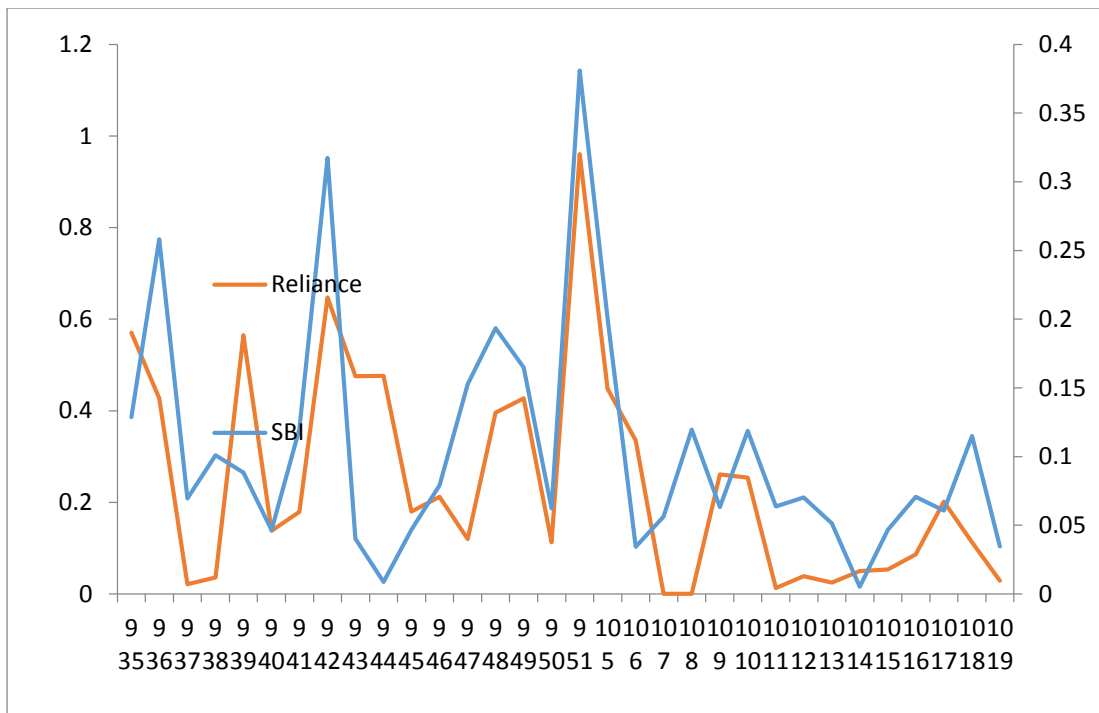


Figure 4: Prop AT Volume (%) (Right-scale is for SBI).

If Finance enhances Growth, does more Finance enhances More Growth in An Economy?: Some New Perspectives from Recent Research

Partha Ray



Partha Ray, Ph.D., is Professor, Economics, Indian Institute of Management Calcutta. Prior to joining Indian Institute of Management Calcutta, Prof. Ray, a career central banker, was the adviser to Executive Director, International Monetary Fund, Washington D.C. during 2007-2011.

The relationship between finance and economic growth is one of the key questions that should haunt economists and finance specialists. Since the perspective of shareholders value maximization in corporate finance literature is somewhat narrow, in some sense the finance-growth relationship gives a welfare context to finance from a utilitarian sense. The views, however, differed and sometimes differed widely. For example, the view that when enterprise comes in finance follows seems to be diametrically at variance with the opinion that finance is an essential ingredient of growth.

While the question seems to be at the heart of the process of growth and development, finance was a neglected issue in mainstream models of economic growth till recently. This is understandable as the mainstream growth literature is a theoretical paradigm that, “focuses on the fundamental mechanisms of the growth process, whereas finance is like the lubrication that reduces frictions and thereby enables the machinery to function” (Aghion and Howitt 2009).⁶ As far as this relationship between finance and economic growth is concerned, the literature distinguishes between two kinds of complementary channels.

- In the first channel Innovative financial technologies tend to lessen the informational asymmetries that act as impediments to the efficient allocation of funds, thereby improving total factor productivity (for example, Greenwood and Jovanovic 1990).⁷

⁶ Aghion, Philippe and Peter Howitt (2009): *The Economics of Growth*, Cambridge, Massachusetts: MIT Press.

⁷ Greenwood, J and B Jovanovic (1990): “Financial Development, Growth, and the Distribution of Income”, *Journal of Political Economy*, 98: 1076-107.

- The second channel focuses on the “spread of organized finance at the expense of self-finance and the former’s ability to overcome indivisibilities through the mobilization of otherwise unproductive resources” (Bell and Rousseau 2001).⁸

Besides, there is a large empirical literature on the role of finance in industrialization in the historical context. Illustratively, accounts of industrialization in Europe showed how late industrializing countries of continental Europe created bank finance for long-term lending to overcome the lack of financial markets and played an active role in speeding up the pace of industrialization (Gerschenkron 1962).⁹

But is this relationship linear? If finance leads to growth, does more finance lead to more growth? This question has increasingly started popping up in the aftermath of the global financial crisis. Is there a point beyond which the benefits of financial development begin to decline and costs start to rise? Is the relationship inverted U-shaped? Using a new data-base and constructing a new measure of financial development¹⁰, a recent IMF Staff Discussion Notes delves into these questions and came up with some startling findings (Sahay et. al., 2015).¹¹

In particular, while this line of research continues to underscore that many benefits in terms of growth and stability can still be reaped from further financial development in most emerging markets (EMs), the effect of financial development on economic growth is found to be bell-shaped: it weakens at higher levels of financial development (Chart 1). This is in stark contrast with the earlier academic results that use narrower measures of financial development, such as the private credit to GDP. Besides, the benefits from developing financial institutions are larger at low income levels and decline as income increases, whereas the opposite is true for markets (Chart 2). This research tends to indicate that the pace of financial development matters so much so,

“When it proceeds too fast, deepening financial institutions can lead to economic and financial instability. It encourages greater risk-taking and high leverage, if poorly regulated and

⁸ Bell, Clive and Peter L Rousseau (2001): “Post-independence India: A Case of Finance-led Industrialization?”, *Journal of Development Economics*, 65: 153-75.

⁹ Gerschenkron, Alexander (1962): *Economic Backwardness in Historical Perspective*, Cambridge, Massachusetts: Harvard University Press.

¹⁰ Financial development is defined as a combination of depth (size and liquidity of markets), access (ability of individuals to access financial services), and efficiency (ability of institutions to provide financial services at low cost and with sustainable revenues, and the level of activity of capital markets).

¹¹ Ratna Sahay, Martin Čihák, Papa N’Diaye, Adolfo Barajas, Ran Bi, Diana Ayala, Yuan Gao, Annette Kyobe, Lam Nguyen, Christian Saborowski, Katsiaryna Svirydzenka, and Seyed Reza Yousefi (2015): “Rethinking Financial Deepening: Stability and Growth in Emerging Markets”, Staff Discussion Note No. SDN/15/08.

supervised. In other words, when it comes to financial deepening, there are speed limits. This puts a premium on developing good institutional and regulatory frameworks as financial development proceeds.”

Chart 1: Relation between Financial Development and Growth

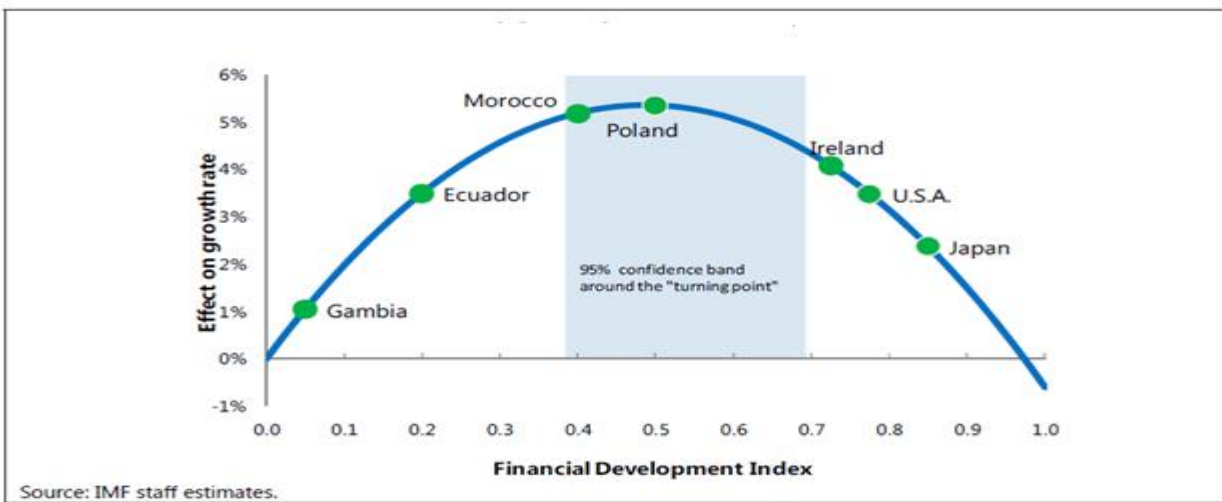
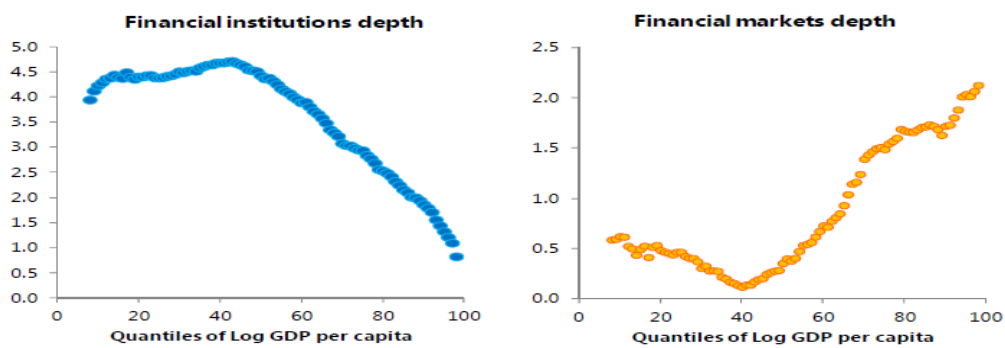


Chart 2

Income Effects of Financial Deepening at Different Levels of Development



What are the implications for India from this line of research? Two features stand out. First, contrary to popular belief, India’s financial development index is lower than China, South Africa or Brazil (Chart 3). Second, considering the fact that financial development indices of all these countries and India are higher than that of Poland (which corresponds to the threshold in Chart 1), possibility of

emergence of a perverse relationship between finance and growth cannot be ruled out in these countries.



The IMF is an organization that is not known for its financial conservativeness. On the contrary, it tended to at the vanguard of financial liberalization. Thus, this kind research coming from the IMF perhaps shows the limits of financial globalization. The authors of the study have mentioned rightly in an accompanying blog, “Financial development entails trade-offs. Beyond a certain level of financial development, the positive effect on economic growth begins to decline, while costs in terms of economic and financial volatility begin to rise.” Going forward this has profound implications for financial sector liberalization in a country like India.

Two Decades of Primary Dealer Operations in India

Sahana Rajaram and Payel Ghosh

Ms. Payal Ghose and Ms. Sahana Rajaram work in the Economic Research Dept. of The Clearing Corporation of India Ltd. as Managers. Both have Masters Degree in Management Studies. They work extensively in Bond Market areas.

Primary dealers (PDs) are financial intermediaries with a mandate to take part in the all-round development of the primary and secondary government securities market. The PD system was first initiated in the United States in 1960 and then later spread to Europe in the mid-1980s and then to emerging markets from the mid-1990s. The roles of PDs have changed in various countries with the gradual development of their financial markets. Their role in the government securities market now ranges from functioning as a link between the debt manager and investor, providing liquidity in the secondary market, providing market making services, promoting efficient price etc. In return for these obligations PDs have been given certain privileges in some markets like exclusive rights to participate in Treasury bill auctions, right to act as counterparty to open market operations of the central bank or access to specific line of credit or permission to borrow particular issues from the central bank. On the other hand, developed countries like Germany, Japan, Australia and Switzerland with their large diversified financial systems do not have PD systems as the potential for contribution is limited. Thus, while a PD system is not a necessary pre-condition for creating a well-functioning government securities market, it can be instrumental in supporting market development.

Comparative PD Systems across the World

Countries	Nomenclature	Selection	Obligations	Privileges	Auction Participation	Secondary Market	Assessment
France (1987)	Specialists in Treasury Securities (SVTs)	Minimum capital requirements; Membership of a trading platform for Government Securities	1. Auction participation; 2. Placement of Treasury securities; 3. Maintaining liquid secondary market;	Auction calendar prepared with consultation of SVTs	1. Mandatory participation in auction; 2. On a 12-month rolling average, SVTs should have 2% of volumes allotted through comp. bidding, and average of allotment in 3 product classes should be above 2.5%; 3. Their non-competitive bidding dependent on auction participation	1. Participation in grey and secondary market in all products including repo 2. Need to make firm quotes to customers and other SVTs for all Treasury securities and repo transactions	Ranking based on 3 criteria: Operations in primary market, operations in secondary market wr.t to volumes handled, and quality of service
Italy	Specialists	Minimum net regulatory capital requirement; Authorized to operate in the electronic market for Government Securities	1. Participation in auctions of G-Secs; 2. Contribution to secondary market efficiency through market-making; 3. Contribution to management of public debt 4. confidentiality and suitable organization structure	1. Exclusive access to reopenings after auctions and strip and reconstitute bonds; 2. Lead managers of syndicated issuance in Euros; 3. Dealers for USD benchmark program; 4. Counterparties for bilateral buy-back programs and other issuances in foreign currency and derivative transactions; 5. participation in syndicated transactions	1. 15% reserved-30% in case of first tranche; 2. Out of this 10% calculated on basis of performance in previous three auctions; 3. Remaining 5% available only to specialists with positive secondary market performance;	1. No specific quoting obligations; 2. Relative basis monitoring based on parameters like quotation quality index, depth contribution index etc.	1. Primary market quota should be equal to at least 3% of the total Treasury issuance; 2. Final ranking based on overall performance evaluation

USA	Primary Dealers	1. Needs to be a US broker/bank for at least 1 year; 2. Has been engaged in relevant business area of PD at least a year; 3. Minimum net capital requirement of US\$150 million; 4. Bank must meet the minimum Tier I Tier II capital standards under the applicable Basel Accord	1. Support to primary issuance of US Treasury securities; 2. Act as counterparty to open market operations of the New York Fed; 3. Provide New York Fed's trading desk with market information and analysis; 4. Meaningfully participate in all auction of US government debt and also market-make Fed's transactions on behalf of its foreign account holders	Exclusive access to open market operations of the New York Fed thus enabling their access to intraday liquidity in the federal funds market		PDs have to make a two-sided market in leading Treasuries	In case the PD fails to provide reasonably useful market information to the Fed, the New York Fed could restrict its access to all PD facilities and operations.
United Kingdom	Gilt Edged Market Maker (GEMM)	All GEMMs need to be authorized by the Financial Services Authority (FSA) and be registered as a market maker with an RIE like the London Stock Exchange (LSE)	1. Ensure two-way prices in all gilts; 2. Provide data to DMO related to prices, positions and turnover	1. Only institutions able to bid directly to the DMO in all gilt auctions; 2. Preferred counterparty for the secondary market transactions of the DMO; 3. Participate in periodic consultative meetings related to issuance policy.	1. Their purchase in the auctions should be at least equivalent to their secondary market share; 2. GEMM firms can bid non-competitively for upto 10% of the bonds on offer.	1. They have to achieve an individual share of at least 2.5% in conventional gilts and index linked bonds on a 3-month rolling average basis; 2. Exclusive access to screens of Inter-dealer brokers	

Our article traces the evolution of standalone PD system in India since their introduction.

Primary Dealer System in India – The Early Years

The beginning of the 1990s saw the transformation of the Indian financial system from a planned and administrated interest rate system to a market oriented price discovery mechanism. As part of RBI's financial sector reforms, a few securities were initially issued through auctions and gradually the portion of market borrowing raised through auction was increased while RBI's participation in auction with devolvement option as well as private placement with RBI declined. RBI introduced the auction method of primary issuance for Government of India Securities in June 3, 1992, while the first price-based auction was conducted on May 11, 1999. On March 29, 1995, RBI issued the guidelines and procedures for introduction of a PD system in the Indian market with the objectives of supporting the market borrowing programme of the Government, strengthening the securities market infrastructure and improving the secondary market liquidity in government securities. The last date set for receiving the applications was April 30, 1995. The first set of registration for PDs commenced on February 1, 1996. Based on the applications received, the RBI granted 'in principle' approval to three companies, viz., Securities Trading Corporation of India Ltd. (STCI), Discount and Finance House of India Ltd. (DFHI), ICICI Securities and Finance Company Ltd. (I-SEC) and to three banks, viz., State Bank of India, Punjab National Bank and Canara Bank (jointly with public sector banks) to set up subsidiaries for undertaking primary dealership. STCI, DFHI and I-SEC and the bank subsidiaries set up later, viz., 'SBI Gilts', 'PNB Gilts' and 'Gilt Securities Trading Corporation of India' were given primary dealer authorisation in two stages in February 1996 and May 1996.

A system of satellite dealers (SDs), as a second tier of dealer system in trading and distribution, was put in place on December 31, 1996 to broaden the market and to impart momentum to the secondary market activity. SDs, with their good distribution channels, were expected to distribute securities at retail level thereby adding depth to secondary market trading and widening the investor base. The last date set for receiving the applications was January 31, 1997 and initially fourteen entities were granted approval to be registered as Satellite Dealers. The SD system was, however, discontinued from May 31, 2002 as it did not yield the desired results.

The success of PDs in the primary auctions was ensured through a scheme of underwriting, and a system of bidding commitments and success ratios in the auctions. Underwriting commitments were separately decided prior to the actual auction for primary issuance, with the PDs bidding to underwrite

various amounts at various commission rates. RBI decided the actual allotment of the underwriting commitment, taking into account various factors such as the likelihood of devolvement and the commission sought. The full notified amount was rarely allotted in underwriting auctions. Since underwriting was a purely voluntary responsibility, the success of primary auctions was sought to be achieved through bidding requirements, which were set at the beginning of the fiscal year for each PD, depending mainly on its capital size. In order to ensure against defensive bidding, the stipulation of a success ratio of 40% of bidding commitments was mandated. The performance of PDs in respect of bidding commitments and success ratios were monitored cumulatively over the year.

As per RBI data, the share of PDs in primary issuances of dated securities of Central Government rose by about four-fold in 2000-01 from Rs.11,916 crore in 1997-98. In the Treasury Bills market, the share of PDs was 85% of total issues of Treasury Bills in 2000-01. Between August 1999 and August 2001, State Governments raised Rs.4,680 crore from 18 auctions. The share of PDs in these auctions including purchases due to underwriting commitments amounted to 36% of total issues. In the secondary market, PDs achieved a noticeable expansion in their transactions covering a major part of transactions on outright basis and almost three-fourth of outright plus repos. In 2001, the PDs achieved a turnover of outright plus repos of Rs.5,09,133 crore, representing 72.80% of market transactions, out of which transactions on outright basis amounted to Rs.3,37,039 crore or 58.90%. To fund their stocks of Government securities, PDs tended to rely on two major sources of funds, the call money market and the liquidity support from the RBI. PDs' share of the total call money market turnover stood at about 30% in 2000-01. Keeping in view the growing systemic importance of PDs, they were brought under the purview of the Board for Financial Supervision (BFS) in 2002-03. However, most of the standalone PDs were making losses by late 2004 in a rising interest rate environment and began making presentations to the RBI seeking permission to diversify other businesses like commodity trading, foreign exchange, derivatives and equity.

Post FRBM Role for Primary Dealers - Overhaul After a Decade of Introduction

The primary market for central government securities became fully market determined with the withdrawal of RBI as underwriter of the last resort from auctions with effect from April 1, 2006 on implementation of the Fiscal Responsibility and Budget Management (FRBM) Act, 2003. The primary auctions in Government of India securities since 2006-07 have been subscribed to completely by the market at market determined prices. As the vacuum created due to the absence of RBI in the primary market was expected to be filled in by a dynamic and active PD network, several measures were taken during 2005 overhauling the PD system following the recommendations of an internal

technical group on central government securities market, which was constituted in December 2004 to examine the implications of RBI's withdrawal from the primary market on its debt management function and to address the emerging needs. These changes were necessitated as the extant system of annual bidding commitments of PDs did not guarantee that the notified amount would be sold in each auction alongwith the fact that with the increased responsibility, the PDs required adequate capital backing so as to sustain adverse movements in the market yields. With most PDs being typically highly leveraged with low capital bases, the need for restructuring the extant structure of PD business was highlighted as an important step of enabling them to meet their enhanced roles post-FRBM. The measures undertaken included:

- The permitted PD structure was expanded to include banks subject to certain minimum eligibility criteria. The guidelines for banks undertaking PD business were issued on February 27, 2006. Banks which were undertaking PD business through a partly or wholly owned subsidiary were allowed to undertake PD business departmentally by merging/taking over PD business from their partly/wholly owned subsidiary subject to fulfilling the criteria. RBI was to grant authorisation to the eligible entities to undertake PD business for a period of one year (July-June) and thereafter, review the authorisation on a yearly basis based on the performance criteria, such as underwriting in auctions of primary issuance of Government dated securities and Treasury Bills or fulfillment of bidding commitment and success ratio in the primary market and achieving the turnover ratio in the secondary market. The Bank-PDs were to be subject to underwriting and all other obligations as applicable to stand alone PDs. Furthermore, the banks had to maintain separate books of accounts for transactions relating to PD business (distinct from the normal banking business) with necessary audit trails. It had to be ensured that, at any point of time, there was a minimum balance of Rs.100 crore of Government securities earmarked for PD business. The Bank-PDs were subject to the following prudential norms:
 - No separate capital adequacy was prescribed for PD business, and the capital adequacy requirement for a bank also applied to its PD business.
 - The Government dated securities and Treasury Bills under PD business were eligible for Statutory Liquidity Ratio.
 - The investment valuation guidelines as applicable to banks in regard to “Held for Trading” portfolio were also applicable to the portfolio of Government dated securities and Treasury Bills earmarked for PD business.

- Bank-PDs did not have separate access to call money market and Liquidity Adjustment Facility (LAF).
- RBI's instructions to PDs also applied to Bank-PDs, to the extent applicable.

Nine banks, viz., Citibank N.A., Standard Chartered Bank, HSBC Bank, Bank of America, J.P. Morgan Chase Bank, Bank of Baroda, Canara Bank, Kotak Mahindra Bank and Corporation Bank were authorised to undertake PD business departmentally while discontinuing the same from their respective subsidiaries/group companies. HDFC Bank Ltd. was authorised to undertake PD business from April 2, 2007.

- For better risk management through generation of alternative streams of income, PDs were permitted to diversify their activities in addition to their core business of Government securities, subject to limits. They were also allowed to offer certain fee based services. The guidelines covering regulatory and prudential norms were issued on July 4, 2006.

Core Activities	Non-Core Activities
i. Dealing and underwriting in G-Sec,	<i>A)Activities which are expected to consume capital such as:</i>
ii. Dealing in Interest Rate Derivatives,	i. Investment / trading in equity and equity derivatives market,
iii. Providing broking services in G-Sec,	ii. Investment in units of equity oriented mutual funds, and
iv. Dealing and underwriting in Corporate / PSU / FI bonds/ debentures,	iii. Underwriting public issues of equity.Bottom of Form
v. Lending in Call/ Notice/ Term/ Repo/ CBLO market,	<i>B) Services which may not require significant capital outlay such as:</i>
vi. Investment in Commercial Papers (CPs),	i. Professional Clearing Services,
vii. Investment in Certificates of Deposit (CDs),	ii. Portfolio Management Services,
viii. Investment in Security Receipts issued by Securitization Companies/ Reconstruction Companies, Asset Backed Securities (ABS), Mortgage Backed Securities (MBS),	iii. Issue Management Services,
ix. Investment in debt mutual funds where entire corpus is invested in debt securities,	iv. Merger & Acquisition Advisory Services,
x. Investments in NCDs, and	v. Private Equity Management Services,
xi. Dealing in Credit Default Swaps.	vi. Project Appraisal Services,
	vii. Loan Syndication Services,
	viii. Debt restructuring services ,
	ix. Consultancy Services,
	x. Distribution of mutual fund units, and
	xi. Distribution of insurance products.

Capital Requirement	
PDs which undertake only the core activities are required to maintain a minimum NOF of Rs.150 crore.	PDs which also undertake non-core activities are required to maintain a minimum NOF of Rs.250 crore.

- The exposure norms for PDs for their investments are:
 - Exposure ceiling limits is 25% of Net Owned Funds in case of single borrower/counterparty and 40% of NOF in case of group borrower/counterparty
 - Ceilings not applicable where principal and interest guaranteed by Government of India
 - Clearing exposure to QCCP including trade exposure and default fund exposure will be kept outside the exposure ceiling of 25% of its NOF for a single counterparty
 - Other exposure to QCCPs in the form of capital will be within the 25% ceiling
 - All exposures of a PD to a non-QCCP should be within the 25% exposure ceiling

- It was also decided that PDs would not be permitted to set up step-down subsidiaries to ensure that the balance sheet of the PD did not get affected by the spillover of risks from other businesses/subsidiaries and that the business of the PDs focused on their primary dealership activities. Those PDs that already had step-down subsidiaries (in India and abroad) were advised to restructure the ownership pattern of those subsidiaries. In compliance with these guidelines, five PDs, namely DSP Merrill Lynch Ltd., ICICI Securities Ltd., IDBI Capital Market Services Ltd., Securities and Trading Corporation of India Ltd. and Kotak Mahindra Capital Company Ltd. restructured their operations as they either had step-down subsidiaries or they were undertaking equity broking business, which were not permitted under the guidelines.

- Since the extant system of annual bidding commitments did not guarantee that the notified amount will be sold in each auction, a revised scheme for underwriting commitment and liquidity support to PDs was introduced with effect from April 1, 2006. Under the scheme, PDs were required to meet an underwriting commitment, replacing the earlier requirement of bidding commitment and voluntary underwriting. The underwriting commitment was divided into two parts – minimum underwriting commitment (MUC) and additional competitive underwriting (ACU). The MUC of each PD was computed to ensure that at least 50% of each issue was covered by the aggregate of all MUCs. The remaining portion of the notified amount was open to competitive underwriting under ACU. This system ensured that auction cut-offs

were in line with market levels and RBI had the option of cutting off the auction below the notified amount and devolving the remaining amount on PDs at the cut-off price so decided.

- RBI extended revised liquidity support to stand alone PDs only. Of the total liquidity support, half was to be divided equally among all the standalone PDs and the remaining half would be extended on the basis of their performance in the primary auctions and turnover in the secondary market.
- Recognizing the fact that in the absence of short sale, market players like banks and PDs could only maintain a long position in Government Securities that exposed them to significant interest rate risk, shorting of Government Securities was permitted as an appropriate risk management tool. Permitting short sales was expected to enable PDs to hedge through a short position prior to an auction so that they could bid more aggressively in the primary auction, thus ensuring that the Government's borrowing programme does not suffer. This was expected to eventually lower the cost to the government as the pricing would be finer in auctions. This also addressed the issue of PDs failing to quote two-way prices for securities not held by them.
- In May 2006, 'When Issued' transactions in Central Government securities were permitted to facilitate price discovery process by reducing uncertainties surrounding auctions. Initially WI transactions were permitted only in case of re-issues and only PDs were allowed to take short position in the WI market.

Primary Dealer System in India – Current Status

Norms Governing PD Operations

Eligibility	1. Registered as NBFC for atleast 1 year
	2. Minimum NOF of Rs. 150 crore
	3. In the preceding year exposure to G-Sec market atleast 15% of its total turnover and atleast 15% of its assets need to be G-Secs
	4. Submission of turnover target of 150% of NOF for standalone PDs
	5. In case of Bank PDs minimum NOF is Rs. 1000 crore and CRAR is 9%
Obligations	1. Support for issue of G-Secs, T-Bills and Cash Management Bills
	2. Offering two-way quotes in the G-Sec markets; They need to have turnover of 5 times for G-Secs and 10 times for T-Bills of the average month-end stocks; Turnover of outright transactions should not be less than 3 times in Government dated securities and 6 times in T-Bills/ CMBs.
Facilities	· Access to Current Account and Subsidiary General Ledger (SGL) Account facility with RBI
	· Access to borrow and lend in the call market and all money market instruments
	· Membership of electronic trading, dealing and settlement systems

	· Access to LAF and in addition to this, standalone PDs get access to liquidity support from RBI under a separate scheme
	· Access to OMOs conducted by RBI

Capital Adequacy for Credit Risk

Risk Weight Calculation for CRAR

Asset	Risk Weight Calculation
On-Balance Sheet	Assigned percentage weight as per degree of Credit Risk (CR)
	Value of asset multiplied by relevant risk weight to arrive at risk adjusted value
	The aggregate of the risk weighted assets is taken into account for computing minimum capital ratio
	0% weight - balances with RBI, Investments in G-Secs and SDLs
	20% weight - amounts lent in call money market/money market instruments of banks/FIs, Fixed deposits and bonds of banks/FIs and securities issued by PSUs and guaranteed by the Government
	100% weight - Remaining investments like bonds issued by banks/FIs as Tier II capital, equity/mutual funds, securities and claims/subordinated debt of other PDs etc.
Off-Balance Sheet	Credit risk exposure calculated by multiplying the face value of each item by 'credit conversion factor' (CCF)
	The CCF percentage is 0 for contingent liabilities/commitments with original maturity of upto one year which can be cancelled unconditionally at any time
	It is 50 for shares/debenture and contingent liabilities like standby facility of original maturity of over 1 year
	It is 100 for Notional/Index position underlying the equity derivatives and bills discounted/rediscounted

Interest Rate Contracts

The risk weight in case of interest rate derivative contracts is calculated first computing the counterparty credit exposure by converting the notional amount into a credit equivalent amount by applying the current exposure method and then multiplying it by the relevant risk weight of the counterparty or the asset, whichever is higher. The current exposure method involves combining the current credit exposure and potential future credit exposure of these contracts. The current credit exposure of these contracts is calculated by marking these contracts to market periodically. Potential future credit exposure is calculated by multiplying the notional principal of these

contracts by an add-on factor specified depending on the nature and residual maturity of the instrument.

**Credit Conversion Factor (CCF) for Interest Rate Derivative
Contracts**

Residual Maturity	CCF (%)
One year or less	0.50
Over one year to five years	1.00
Over five years	3.00

In case of single floating currency/interest rates swaps the credit exposure is evaluated on the basis of their mark-to-market. The gross positive MTM value of such contracts must be taken into account for purpose of capital adequacy.

Reverse repo/repo Transactions

Repo type transactions attract Counterparty credit risk (CCR) in addition to credit and market risk. This is due to the risk of default of repo counterparty due to non-delivery of the pledged security or non-payment of the lent cash.

Fund Borrower

In case of a PD borrowing in the repo market by lending securities, his exposure is equal to the market value of the lent securities scaled up after applying appropriate haircut, which are dependent on the type/rating of security and the residual maturity. The 'off-balance sheet exposure' will be converted into 'on-balance sheet' equivalent by applying a credit conversion factor of 100 per cent. There would be zero haircut as the collateral in this case is cash. The credit equivalent amount arrived will attract a risk weight as applicable to the counterparty. As the lent securities remain in the books of account of the borrower he has to continue to maintain credit risk where the securities are held under HTM and market risk where the securities are held under AFT. The credit charge would be based on the credit rating assigned to the issuer of the security.

Fund Lender

The amount lent would be treated as a funded exposure on the counterparty, with zero haircut. The collateral needs to be market down as per the applicable haircut. As it is an on-balance sheet exposure, the amount of exposure reduced by the adjusted amount of collateral will receive a risk

weight as applicable to the counterparty. The lender need not maintain any capital charge on the security received as collateral as it is not in its balance sheet during the period of the repo transaction.

Capital requirements for exposures to Central Counterparties (CCPs)

Trades Exposures	
Clearing member exposure to QCCPs	2% risk weight applied to trade exposure when standalone PD acts as clearing member of the QCCP for its own purposes
	Exposure amount for transactions in OTC and Exchange traded derivatives and SFTs to be calculated as per the Current Exposure Method (CEM)
Clearing member exposures to clients	Capitalize exposure to clients as bilateral trades irrespective of final settlement
	However due to the shorter close-out periods for cleared transactions, clearing member's exposure to clients can be capitalised by multiplying the exposure by a scalar of atleast 0.71
Client PD exposures to clearing member	When PD is a client of a clearing member its exposures to the member will receive treatment similar to its exposure to QCCPs subject to some conditions being met
	In the instance when the clearing member is not protected from losses when the clearing member or its client default, but the concerned CCP is a QCCP, then a risk weight of 4% will apply to the client's exposure to the clearing member.
Default Fund Exposures	
QCCPs	Clearing member PDs may apply a risk-weight of 1111% to their default fund exposures to the QCCP, subject to an overall cap on the risk-weighted assets from all its exposures to the QCCP (like trade exposure) equal to 20% of the trade exposures to the QCCP. The Risk Weighted Assets for a PD's trade and default fund exposures to a QCCP is equal to the minimum of 2% of its trade exposure+1111% of its default fund contribution or 20% of its trade exposure
	non-Qualifying CCPs

Capital Adequacy for Market Risk

The capital charge for market risk to be computed by PDs should be higher of the capital charge worked out by standardized approach and the internal risk management framework based Value at Risk (VaR) model.

Standardized Approach

Under this approach the capital charge for a PDs investment in fixed income instruments, equity and foreign exchange position is computed and summed arithmetically. The duration method is applied to compute the price sensitivity of all interest rate positions i.e. Dated securities, Treasury bills, Commercial papers, PSU/FI/Corporate Bonds, Special Bonds, Mutual Fund units and derivative instruments like IRS, FRA, IRF etc., including underwriting commitments/devolvement and other contingent liabilities having interest rate risk. In this method the capital charge is the sum of the four components i.e. the net short or long position in the whole trading book, a small proportion of the matched positions in each time-band, a larger proportion of the matched positions across different time-bands and a net charge for positions in options, where appropriate. Computation of capital charge for equity includes all instruments that exhibit market behavior similar to equities like convertible shares behaving like equities, units of mutual funds and commitments to buy or sell equities. Long and short positions in the same issue may be reported on a net basis. In case of equity derivatives, for computation of credit and market risk the positions in derivatives should be converted into notional equity positions. Futures and forward contract of individual equities to be reported at current market prices, futures relating to stock indices to be marked to market to notional underlying equity portfolio and equity swaps are to be treated as two notional positions. The equity or equity like positions has to be included in the duration ladder below one month. Open foreign exchange positions usually held by PDs due to their FCNR (B) borrowings are converted to rupees at FEDAI rates and subject to a flat market risk charge of 15%.

Internal risk management framework based method

The PDs should calculate the capital requirement based on their internal risk management framework based VaR model for market risk, as per the following minimum parameters:

- *VaR* must be computed on a daily basis at a 99th percentile, one-tailed confidence interval.
- *The minimum holding period is assumed to be 15 days*

- *Interest rate sensitivity of the entire portfolio should be captured on an integrated basis to capture the cash flows of all fixed income securities like G-Secs, Corporate bonds, CPs, derivatives etc. to arrive at the portfolio VAR. Computation of market risk for instruments like mutual funds could be done at a flat market risk measure of 15%.*
- *Underwriting commitments also need to be mapped into the VaR framework for risk measurement purposes.*
- *The unhedged foreign exchange position would carry a market risk of 15% and the measure obtained needs to be added arithmetically to the VaR measure obtained for other instruments.*
- *The historical period for calculating VaR should be a minimum of 1 year and not less than 250 trading days.*
- *The capital requirement will be higher of the previous day's VaR number measured according to the above parameters and the average of the daily VaR measures on each of the preceding sixty business days, multiplied by a multiplication factor prescribed by the RBI (3.3 presently)*

Capital Adequacy Requirements

Capital funds for computation of capital adequacy for primary dealers include Tier I and Tier II capital. Tier-I capital includes paid-up capital, statutory reserves and other disclosed free reserves. Tier II capital includes undisclosed reserves and cumulative preference shares (excluding convertible shares and those which permit redemption by the holder), revaluation reserves discounted at 55%, general provisions and loss reserves up to a maximum of 1.25 percent of total risk weighted assets and hybrid debt capital instruments with certain characteristics of equity and debt. PDs are required to maintain a minimum Capital to Risk-Weighted Assets Ratio (CRAR) of 15 percent on an ongoing basis. To calculate the eligible capital it is necessary to first calculate the PD's minimum capital requirement for credit risk and then its market risk requirement to establish how much Tier-I and Tier-II capital is available to support market risk. Of the 15% capital charge for credit risk, at least 50% should be met by Tier-I capital, and the total of Tier II capital should not exceed one hundred per cent of Tier-I capital, at any point of time, for meeting the capital charge for credit risk. Subordinated debt as Tier-II capital should not exceed 50 per cent of Tier-I capital. Therefore the eligible capital will be the sum of the PDs Tier I capital and Tier II capital under the limits imposed. The overall capital adequacy ratio will be calculated by establishing an explicit numerical link between the credit risk and the market risk factors, by multiplying the market risk capital charge with 6.67 i.e. the reciprocal of the minimum credit risk capital charge of 15 per cent. The resultant figure is added to the sum of risk weighted assets worked out for credit risk purpose.

Performance of Primary Dealers

A. Profitability

PD business is exposed to interest rate cycles and adverse movements expose them to losses, which can be further aggravated by geo-political and economic risks and consequent volatility in domestic or international financial markets. This risk is amplified for standalone PDs due to their relatively small balance sheet size. In the light of the implementation of the FRBM Act, RBI recognized the importance of a strong PD system where PDs have strong financials and risk management capabilities. In order to protect PDs from downside risks, RBI allowed them to diversify their businesses. However, only a couple of PDs have diversified. Over the years, RBI has also been pondering over allowing PDs exclusive access to securities as a means of strengthening the PD system. However, this has been held back as exclusivity gives commercial advantages which have to be considered in a market where major investors have regulatory and statutory mandate to invest in government securities. Further, standalone PDs with small balance sheet size and limited holding capacity may fail to meet the huge demands exclusivity would impose on them, given the large size of issuances.

The bias in PDs' income accrual from interest income has become dominant since 2009-10, as against their earlier earnings through trading profits and other income. Interest income constituted around 80% of their total income, up from around 50% in 2008-09. The share of trading profits on the other hand dropped from around 45% in 2008-09 to around 5% in 2011-12, before increasing to 18% in 2012-13. The share of other income was around 2% in 2012-13. This reflects the passivity in their trading in this market and leaves them open to the vagaries of adverse interest rate cycles. It is essential for PD Boards to review their corporate strategy and de-risk the business from vagaries of interest rates and financial market volatility.

Select Financial Indicators: Primary Dealers (PDs)

Item	End-March	(Per cent)
CRAR #	2013	39.40
	2014	48.60
Return on Assets	2013	1.50
	2014	1.90
Return on Equity	2013	10.10
	2014	13.30
Efficiency (Cost/Income Ratio)	2013	27.20
	2014	30.60

#: Mar-13 as per Basel II and Mar-14 as per Basel III. Source: RBI Annual Report 2014.

B. Market Participation

B.I. Primary Market

RBI's success in managing the huge quantum of government borrowing in the recent years, in the aftermath of the global financial crisis and its repercussions on the Indian economy in a cost effective and risk efficient manner has been supported by the active participation of PDs. As per RBI statistics, PDs subscribed to nearly half of the notified amount in the primary auctions of dated central government securities during past two years while picking up nearly three fourths of the T-Bill issuances. Thus, the PD system has shown resilience even in challenging market conditions thereby ensuring non-disruptive borrowings and they are looked upon as providers of valuable information with regard to pricing of the bonds in auctions. However, RBI has raised flags on their bidding behavior of actively cornering commission in underwriting auctions and defensively bidding in auction to avoid allotment.

B.I.a. Underwriting Primary Auctions

Post FRBM, the primary responsibility of ensuring success in the primary auctions was shifted to PDs. In order to ensure this RBI put in place a new incentive scheme to ensure 100% underwriting by PDs and to encourage competitive bidding from PDs. Initially, the PDs were required to bid for a minimum of 3% of the notified amount in the ACU auction. In November 2007, this was modified such that the minimum bidding amount in the ACU auction in PDs was equivalent to their MUC amount.

Illustration of minimum bidding commitment of primary dealers in the additional competitive underwriting auction

Sr. No.	Underwriting components	Basis of computation	(Amount in Rs. crore)
	Notified Amount		5000.00
1	No. of PDs		19
2	Minimum Underwriting Commitment (MUC) for all PDs collectively	(Notified Amount / 2)	2500.00
3	Each PD's share under MUC	(Sr.No.2 / Sr. No.1)	131.58
4	Rounded off to next higher integer		132.00
5	Total PD commitment under MUC collectively	(Sr. No. 4 x Sr. No. 1)	2508.00
6	Balance under ACU	(Total notified amount minus MUC)	2492.00

7	Minimum bidding commitment for each PD under ACU	Amount equal to MUC	132.00
8	Total commitment under ACU for all PDs collectively	(Sr. No. 7 x Sr. No.1)	2508.00
9	Total underwriting commitment for each PD under MUC and ACU	(Sr. No. 4 + Sr. No. 7)	264.00
10	Total Underwriting	(Sr. No. 9 x Sr. No. 1)	5016.00

Source: RBI

Underwriting Norms for Primary Dealers

Dated securities of Central Government

- i. The underwriting commitment on dated securities of Central Government will be divided into two parts - a) Minimum Underwriting Commitment (MUC), and b) Additional Competitive Underwriting (ACU).
- ii. The MUC of each PD will be computed to ensure that at least 50% of the notified amount of each issue is mandatorily underwritten equally by all the PDs. The share under MUC will be uniform for all PDs, irrespective of their capital or balance sheet size. The remaining portion of the notified amount will be underwritten through an ACU auction.
- iii. RBI will announce the MUC of each PD. In the ACU auction, each PD would be required to bid for an amount at least equal to its share of MUC. A PD cannot bid for more than 30% of the notified amount in the ACU auction.
- iv. The auction could be either uniform price-based or multiple price-based depending upon the market conditions and other relevant factors, which will be announced before the underwriting auction for each issue.
- v. Bids will be tendered by the PDs within the stipulated time, indicating both the amount of the underwriting commitment and underwriting commission rates. A PD can submit multiple bids for underwriting. Depending upon the bids submitted for underwriting, RBI will decide the cut-off rate of commission and inform the PDs.
- vi. Underwriting commission: All successful bidders in the ACU auction will be paid underwriting commission on the ACU segment as per the auction rules. Those PDs who succeed in the ACU for 4% and above of the notified amount of the issue, will be paid commission on the MUC at the weighted average of all the accepted bids in the ACU. Others will get commission on the MUC at the weighted average rate of the three lowest accepted bids in the ACU.

vii. In the GOI securities auction, a PD should bid for an amount not less than its total underwriting obligation. If two or more issues are floated on the same day, the minimum bid amount will be applied to each issue separately.

viii. Underwriting commission will be paid on the amount accepted for underwriting by the RBI, irrespective of the actual amount of devolvement, by credit to the current account of the respective PDs at the RBI, Fort, Mumbai, on the date of issue of security.

ix. In case of devolvement, PDs would be allowed to set-off the accepted bids in the auction against their shortfall in underwriting commitment accepted by the RBI. Devolvement of securities, if any, on PDs will take place on pro-rata basis, depending upon the amount of underwriting obligation of each PD after setting off the successful bids in the auction.

x. RBI reserves the right to accept any amount of underwriting up to 100% of the notified amount or even reject all the bids tendered by PDs for underwriting, without assigning any reason.

Dated securities of State Governments

i. On announcement of an auction of State Development Loans (SDLs), which are dated securities of the State Governments, RBI may invite PDs to collectively bid to underwrite up to 100% of the notified amount.

ii. The auction could be either uniform price-based or multiple price-based depending upon the market conditions and other relevant factors, which will be announced before the underwriting auction for each issue.

iii. A PD can bid to underwrite up to 30% of the notified amount of the issue. If two or more issues are floated on the same day, the limit of 30% is applied by taking the notified amounts separately.

iv. Bids will be tendered by PDs within the stipulated time, indicating both the amount of the underwriting commitments and underwriting commission rates. A PD can submit multiple bids for underwriting.

v. Depending upon the bids submitted for underwriting, the RBI will decide the cut-off rate of commission and the underwriting amount up to which bids would be accepted and inform the PDs.

vi. RBI reserves the right to accept any amount of underwriting up to 100% of the notified amount or even reject all the bids tendered by PDs for underwriting, without assigning any reason.

vii. In case of devolvement, PDs would be allowed to set-off the accepted bids in the auction against their shortfall in underwriting commitment accepted by the RBI. Devolvement of securities, if any, on PDs will take place on pro-rata basis, depending upon the amount of underwriting obligation of each PD after setting off the successful bids in the auction.

viii. Underwriting commission will be paid on the amount accepted for underwriting by the RBI, irrespective of the actual amount of devolvement, by credit to the current account of the respective PDs at the RBI, Fort, Mumbai, on the date of issue of security.

Bidding in Primary auctions of T-Bills/CMBs

i. Each PD will individually commit, at the beginning of the year (April – March), to submit bids for a fixed percentage of the notified amount of T-Bills/CMBs in each auction.

ii. The minimum bidding commitment amount / percentage for each PD will be determined by the RBI, in consultation with the PD. While finalizing the bidding commitments, the RBI will take into account the NOF, the offer made by the PD, its track record and its past adherence to the prescribed success ratio. The amount/percentage of minimum bidding commitment so determined by the RBI will remain unchanged for the entire year or till execution of the undertaking for the next year.

iii. In any auction of T-Bills/CMBs, if a PD fails to submit the required minimum bid or submits a bid lower than its commitment, the RBI may take appropriate penal action against the PD.

iv. A PD would be required to achieve a minimum success ratio of 40% of bidding commitment in T-Bills/CMBs auctions which will be monitored on a half yearly basis, i.e. April to September and October to March, separately.

v. The CMB transactions may be reported in PDR returns along with the T-Bill transactions.

Source: RBI

Two days prior to the auction, PDs submit bids indicating the amount they are willing to underwrite and the fee expected by them. The bids are examined on basis of the prevailing market conditions and cut-offs are decided for the amount to be underwritten and the fee to be paid. In case of devolvement, the bids put in by the PDs' are set off on pro-rata basis against the amount underwritten. RBI announces the underwriting auction results a day prior to the auction date. Generally higher underwriting commissions (UWC) indicate uncertainty regarding the auction outcome. Tracking the yearly movement of the average UWC, it can be seen that they touched levels of 40 paise per Rs.100 around March 2009 following the increase in the frequency of auctions. The churning of the markets following the volatility in the forex market during the months of July and August 2013 resulted in

UWC shooting to a high of 98 paise and the average UWC was at 37 paise. The UWC has come down during 2014-15 following the benign financial market conditions.

Underwriting Commitment

Amt. Rs. Crore

Year	Average Underwriting Commitment (paise per Rs.100)	Range (paise per Rs.100)	Total Borrowing	Avg. LAF
2008-09	9.94	0.16 - 49	2,77,000	6091
2009-10	4.49	0.37 - 39	4,28,306	101676
2010-11	0.99	0.23 - 4.48	4,37,000	-47362
2011-12	1.82	0.22 - 13.99	5,10,000	-79345
2012-13	1.13	0.16 - 14.75	5,58,000	-81386
2013-14	13.21	0.13 - 98	5,63,973	-46920
2014-15	0.52	0.16-4.95	5,92,000	-71596

Source: RBI, CCIL

PDs generally bid aggressively in T-Bill/CMB auctions to fulfill success ratio requirements. The cost for them is much lower for T-Bills/CMBs as compared to dated securities of higher tenors. Further chance of T-Bill/CMB auctions devolving on them is remote as compared to dated securities.

The cut-offs of the underwriting auctions show that there is tenor wise difference in the cut-offs of the commissions. Therefore except for 2008-09, which was an exceptional year due to the measures adopted to contain the impact of the global financial crisis, average UWC has been higher on an average in case of longer tenor securities specifically of tenor 15 years and above.

Average Underwriting Commission

Paise per Rs.100

Residual Maturity	< 5 yrs	>= 5 yrs to <7 yrs	>= 7 yrs to <10 yrs	>= 10 yrs to <15 yrs	>= 15 yrs to <20 yrs	>=20 yrs
2008-09	12.82	1.67	8.77	14.23	14.98	10.37
2009-10	1.00	2.89	3.26	6.00	5.05	6.60
2010-11	0.46	0.84	1.23	0.89	1.14	1.12
2011-12	-	2.00	1.65	1.20	2.29	2.37
2012-13	0.33	0.98	0.98	0.75	1.80	1.32
2013-14	11.78	9.65	9.76	8.43	16.43	18.06
2014-15	-	0.40	0.73	0.95	0.92	1.18

Source: CCIL

B.I.b. Devolvement

A devolvement in case of a government securities auction occurs if the cut-off price set by RBI is beyond the market expectations or the RBI rejects the bids that are not par with its prescribed cut-offs. Devolvments could be partial where some bids are rejected by the RBI or complete, wherein RBI rejects all the bids. In such cases the PDs as the underwriters of the auction have to absorb the devolved amount. Devolvement of securities on PDs takes place on pro-rata basis, depending upon the amount of underwriting obligation of each PD after setting off the successful bids in the auction. In case of devolvement, PDs are allowed to set-off the accepted bids in the auction against their shortfall in underwriting commitment accepted by the RBI. Despite the steadily increasing quantum of borrowing of government securities, devolvement in the primary auction of government securities has not mirrored the trend reflecting RBI's success in handling the government borrowing program. While devolvments peaked in 2013-14, they have stabilized in 2014-15 reflecting the smooth conduct of the market borrowing program during the year.

Devolvement History

Year	Devolvments (Rs. Cr.)	% of Notified Amount
2006-07	5604.251	3.26
2007-08	0	0.00
2008-09	10773.46	4.13
2009-10	7219.20	1.73
2010-11	5772.65	1.32
2011-12	11609.559	2.30
2012-13	1828.194	0.33
2013-14	17410.92	3.13
2014-15	5271.16	0.89

Source: CCIL, RBI

B.I.c. Primary Market Performance

The success of PD participation in the primary market is gauged in terms of their success ratio in T-Bill and CMB auctions (the minimum stipulated success ratio is 40% in case of T-Bill and CMB auctions). An example is given below explaining the process.

Illustration: A PD has committed to bid for aggregate Rs.500 crore in T-Bills as shown below. The success ratio to be maintained by the PD is 40% in respect of T- Bills/CMBs. Various scenarios in respect of fulfillment of the bidding commitment and the success ratio assuming that the bids tendered and the bids accepted will be as under:

T-Bills/CMBs: (Rs. crore)

Scenarios	I	II	III
Bidding Commitment (a)	500	500	500
Bids Tendered (b)	600	500	400
Bids Accepted (c)	300	200	100
Success Ratio Achieved (c)/(a)	60%	40%	20%
Fulfillment of Bidding Commitment	Yes	Yes	No
Fulfillment of Success Ratio	Yes	Yes	No

Success Ratio in T-Bills/CMBs is the ratio of bids accepted to the bidding commitment. Source:

RBI

In case of dated securities, the success ratio is a function of the bids accepted to the notified amount.

B.I.d. Security Holdings

PDs are expected to act as warehouses for securities for enhancing the liquidity in the market. However, it can be seen that their share has been relatively steady at a very small percentage of total holdings of central government dated securities. Apart from their regulatory requirements, the share of banks in the total holdings may also be higher due to the large number of Bank-PDs.

Holding Pattern of Dated Central Government Securities (in percent)

Month	Commercial Banks	No n-Bank PDs	Insurance Companies	Mutual Funds	Co-operative Banks	Financial Institutions	Corporates	FIs	Provident Funds	RBI	Others
2006-07	49.68	0.41	26.19	0.44	2.97	0.70	4.79	0.18	6.68	6.51	1.86
2007-08	51.26	0.34	24.78	0.79	3.22	0.41	3.48	0.52	6.38	4.78	4.38
2008-09	46.90	0.29	23.20	0.82	2.92	0.41	4.72	0.24	6.59	9.71	4.20
2009-10	47.25	0.14	22.16	0.40	3.35	0.35	2.99	0.59	6.76	11.76	4.24
2010-11	47.03	0.11	22.22	0.18	3.41	0.35	1.94	0.97	7.06	12.84	3.89
2011-12	46.11	0.10	21.08	0.17	2.98	0.37	1.38	0.88	7.45	14.41	5.07
2012-13	43.86	0.11	18.56	0.68	2.81	0.75	1.14	1.61	7.37	16.99	6.12
2013-14	44.46	0.11	19.54	0.78	2.76	0.72	0.79	1.68	7.18	16.05	5.92

2014-15 (End-September 2014)	42.95	0.20	20.55	1.26	2.71	1.44	1.06	3.37	7.13	14.33	4.99
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Source: RBI

Apart from 2011-12, standalone PDs have been negligible holders of state government securities.

Holding Pattern of State Government Securities (in percent)

Year	RBI	Commercial Banks	Co-operative Banks	Non-Bank PDs	Insurance Companies	Financial Institutions	Mutual Funds	Provident Funds	Corporates	FIs	Others
2007-08	0.00	52.25	-	0.55	22.40	0.53	0.02	9.79	-	-	14.45
2008-09	0.00	58.22	-	0.27	20.49	0.94	0.45	8.83	-	-	10.80
2009-10	0.00	58.46	-	0.21	21.71	2.74	0.02	8.09	-	-	8.77
2010-11	0.00	51.44	-	0.11	24.66	2.64	0.06	8.02	-	-	13.08
2011-12	0.00	51.19	3.27	4.05	25.78	0.01	0.05	7.99	1.08	0.01	6.56
2012-13	0.04	49.91	2.57	0.20	28.51	0.41	1.41	15.84	1.08	0.01	0.02
2013-14	0.06	49.67	2.74	0.24	30.45	0.40	0.83	15.04	0.32	0.00	0.26

Source: RBI. The format of the Table has been revised from 2010-11 to improve the sectoral coverage.

PDs are major investors in the primary market for treasury bills as they have to achieve a minimum success ratio of 40% in their bidding commitment in the primary auction of treasury bills. Thus after banks, they are the major holders of Treasury Bills. As per RBI statistics, PDs were the major holders

of 182 day and 364 day T-Bills, though their share has come down over the past 2 years. Overall they hold around 22% of the total outstanding stock of Treasury Bills. Their participation has two-fold benefits of providing a mechanism for financing Government deficit, and helping the Reserve Bank to manage excess liquidity prevailing in the market.

Primary Dealers Holding of Treasury Bills

(%)

Year	91-day	182-day	364-day	Total Treasury Bills
2011-12	23.02	49.10	53.19	22.76
2012-13	23.68	32.38	34.33	20.45
2013-14	22.86	33.42	35.16	22.76

Source: RBI

B.II. Secondary Market

Primary dealers are major intermediaries in the secondary market for bonds while relying heavily on the money market for meeting their funding requirements.

Share of PDs in Money and G-Sec Markets (%)

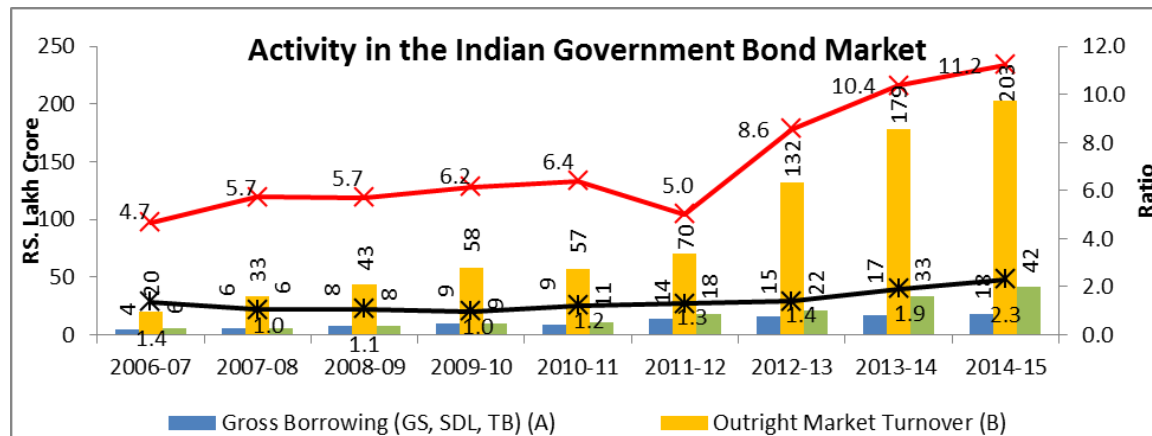
FY	Outright - Buying	Outright - Selling	Repo	Reverse Repo	NDS-Call Borrowing	NDS-Call Lending	CBLO-Borrowing	CBLO-Lending
2003-04	22.18	28.24	27.79	0.13	NA	NA	25.55	0.43
2004-05	19.50	31.22	37.57	0.17	NA	NA	32.70	0.98
2005-06	24.13	38.12	45.16	0.76	NA	NA	23.07	0.75
2006-07*	23.64	34.46	39.08	1.87	14.29	0.77	13.22	0.28
2007-08	15.61	20.59	25.44	1.48	9.00	0.41	8.78	0.12
2008-09	16.21	21.18	21.61	1.62	7.88	0.41	4.88	0.10
2009-10	13.35	18.29	14.31	0.14	12.47	0.10	2.47	0.04
2010-11	16.61	21.36	27.00	0.95	10.89	0.04	4.11	0.04
2011-12	22.76	28.69	38.57	1.94	7.95	0.03	5.55	0.04
2012-13	14.53	18.13	37.61	0.75	11.59	0.00	5.37	0.04
2013-14	16.16	20.70	26.03	1.29	16.65	0.01	3.97	0.05
2014-15	19.01	22.03	33.86	1.94	23.57	0.01	4.02	0.13

*NDS-Call data September 18, 2006 onwards. Source: CCIL

B.II.a. Outright Securities Segment

PDs are important suppliers in the secondary market for dated central government bonds, State Development Loans and Treasury Bills, contributing to price discovery while enhancing liquidity and depth to the Indian government bond market. They are also important players in the When-Issued

market and are the sole intermediary authorized for stripping or reconstituting a security. While the quantum of issuances has increased, the market as a whole has grown several times over the gross government borrowing as a result of the various reforms and market innovations undertaken by the RBI. The activity of PDs in the outright market also surpasses gross issuances, indicating healthy churning of their portfolios.



Source: CCIL

On an average standalone PDs have accounted for about a fifth of the outright market since 2003-04.

Participation in Outright Market

FY	Buying			Selling			Overall		
	Trades	Face Value (Rs. Cr)	Market Share (%)	Trades	Face Value	Market Share (%)	Trades	Face Value	Market Share (%)
2003-04	54596	349557.27	22.18	65097	445040.03	28.24	119693	794597.30	25.21
2004-05	34445	221038.76	19.50	44451	353768.95	31.22	78896	574807.71	25.36
2005-06	34299	208867.99	24.13	46133	329984.05	38.12	80432	538852.05	31.12
2006-07	34841	241370.04	23.64	43777	351800.57	34.46	78618	593170.61	29.05
2007-08	32013	258031.20	15.61	38661	340361.67	20.59	70674	598392.87	18.10
2008-09	46534	350415.51	16.21	55326	457874.12	21.18	101860	808289.63	18.69
2009-10	48906	388603.67	13.35	62045	532444.42	18.29	110951	921048.09	15.82
2010-11	58384	475798.61	16.61	70783	611986.02	21.36	129167	1087784.63	18.99

2011-12	99230	794972.62	22.76	118398	1001977.84	28.69	217628	1796950.46	25.72
2012-13	104761	957025.57	14.53	121397	1194729.37	18.13	226158	2151754.94	16.33
2013-14	142436	1444336.29	16.16	170900	1850571.66	20.70	313336	3294907.95	18.43
2014-15	185105	1932308.45	19.01	201019	2239183.25	22.03	386124	4171491.70	20.52

Source: CCIL

RBI mandated PDs to act as market makers and enhance depth and liquidity. However, market making efforts of PDs have been found to be limited to few liquid bonds. It is expected that once RBI starts rolling down the HTM limit, forcing churning of portfolio by banks, PDs will get to play a more active role in market making. The Gandhi Working Group on Enhancing Liquidity in the Government Securities and Interest Rate Derivatives Markets had recommended that one of the ways for improving liquidity is to consider allocating specific securities to each PD for market making and, if required, rotate the stock of securities among the PDs at periodic intervals. This would ensure continuous availability of prices for a select group of securities. RBI is in consultation with Government and PDAI to operationalize this recommendation in 2015-16. Initially semi-liquid securities would need to be chosen. The present annual minimum turnover ratios of 5 times for dated securities and 10 times for T-Bills/CMBs of the average month-end stocks need to be reviewed as the market has grown significantly during recent years and the prescribed turnover ratios are far too low at present. PDs are expected to expand their reach so as to restrain the dependence on brokers to buy government securities at high costs.

Since the introduction of screen-based trading with the launch of NDS-OM in September 2005, PDs have moved most of their trading activity to the NDS-OM platform. PDs prefer the OTC market mostly for selling securities while buying mostly on the anonymous order matching platform. This is consistent with their important role in the supply side of the market and they are generally net sellers in the market. Trading behavior indicates that while PD buying activity is heavily concentrated, with dated government securities accounting for more than 90% of their total buying, their selling activity is relatively less concentrated. PDs have not been very active in trading in the longer tenor papers despite the heavy issuances in these papers and several instances of devolvement on the PDs over the past few years. The longer tenor securities are possibly preferred for use as collateral for raising funds through CBLO or LAF repo rather than for trading activity. While most of the activity of PDs is concentrated in securities maturing in the 5-15 year basket, they are net sellers in securities maturing within the year. While PDs generally prefer to trade in smaller trade lots, the share of larger trade lots

(greater than Rs.100 crore) has increased in the recent years on the selling side. Foreign banks and public sector banks are the largest counterparties to PD trades and while PDs also transact a lot on behalf of their clients, such trades are a very small fraction of their total activity. Concomitant to their critical role in market development, on an average, since the launch of When-Issued trading, PDs have accounted for more than half of the activity in the segment. The introduction of STRIPS was expected to aid the development of a sovereign zero-coupon yield curve. However, despite their advantages only a few trades have taken place in STRIPS. PDs have been present only on the selling side in this segment while insurance companies have been the primary buyers.

B.II.b. Money Market

PDs are largely borrowers in the money market due to their significant role as market makers in the primary and secondary market of government securities. Comparing their activity through the years in the various markets it can be observed that PDs borrow largely in the Repo market, deploying their large security holdings as collateral to raise funds. Given the persistent systemic liquidity deficit since the migration to RBI's new monetary policy framework, PDs have also increased their borrowing through the uncollateralized call market. On the other hand, the share in the borrowing side of the CBLO market has gone down substantially following the merger of Bank-PDs.

PDs prefer borrowing under the collateralized repo/CBLO as rates are cheaper than that under uncollateralized call/notice market. Despite being the only intermediaries allowed to participate in the call market apart from banks, PDs account for a very small share and generally access this market only to meet their funding requirements. The prudential limits on their activity in the uncollateralized market also prove deterrent. The repo and CBLO markets provide PDs with the avenue to transact with a wider selection of counterparties. While PDs are net borrowers in the repo market, their lending rates are lower than their borrowing rates indicating that they may also be accessing the repo market to meet their security requirements. This is also reflected in their preference for lending through Special Repos on the CROMS platform. Securities used by PDs in the repo market have witnessed considerable churning over the years. PDs are increasingly using short term securities like T-bills and CMBs to raise funds in the repo market as against dated securities. On the other hand, they prefer longer tenor securities as collateral when they are lending in the repo market. While the participation of PDs has increased many-folds in the CBLO market in terms of volumes traded, the widening of the CBLO market in terms of participants and volumes has seen their absolute share decline from 13% in FY04 to 2% by FY14. Foreign banks and public sector banks are the major borrowers from PDs in the collateralized market while mutual funds and insurance companies are primary lenders. In

the call market, PDs have primarily borrowed from public sector banks and co-operative banks, while lending primarily to public sector banks and foreign banks.

B.II.c. Derivatives Market

PDs, as expert investors dealing in securities with inherent interest rate risk are expected to actively use the products available in the market to hedge. This arises from the necessity of PDs warehousing more securities for market making that exposes them to interest rate risk which can be mitigated through greater participation in the Interest Rate Futures (IRF) market. However, as per the RBI, participation is not widespread in IRFs and many market participants including PDs are yet to start using the product. Participation of PDs is also lackluster with regards to trading in the Interest Rate Swaps (IRS) market. As per latest data available with CCIL, PDs are active mainly in the IRS-MIBOR segment while having no or marginal share in the other segments of the IRS market. They are most active only in IRS maturing within a year. Foreign Banks are generally the counterparties to PD trades. Thus, despite being entities most vulnerable to interest rate risk, PDs in India are not active in using the available derivatives for hedging and trading.

B.II.d. Corporate Bond Market

Over the years, RBI has tried to develop a class of underwriters and market makers in the corporate bond market on the lines of PDs in the government securities market, despite the realization that PDs would be exposed to greater credit risk if they carry a sufficiently large inventory of corporate bonds that is needed for market making. Several measures have been undertaken to incentivize their participation in this market segment such as relaxation of investment norms by allowing standalone PDs to invest funds borrowed from call money market subject to certain limits, enhancing investment limit in Tier II bonds of other PDs/banks/FIs from 5% to 10% of NOF and increasing the Inter Corporate Deposit (ICD) borrowing limit from 75% to 150% of NOF. Banks and standalone PDs have also been allowed to become direct members of stock exchanges for undertaking proprietary trades in corporate bonds market. However PDs have not showed active interest in these non-gsec investments and their participation has been limited to less than 1% of the total market. Like the government bond market, PDs are net sellers in the corporate bond market also.

Conclusion

The gradual paring of the SLR requirement for banks could create some space for PDs to increase their role. The revised format of IRFs trading launched on exchanges at the start of 2014 provides

PDs with an alternate instrument to manage their interest rate risks and their role in this market segment may see a boost. The revised norms for trading in corporate debt will also act as an enhancer to their participation.
