a₹tha

A NEWSLETTER OF THE FINANCE LAB

January 2018, Volume 4, Issue 3

INDIAN INSTITUTE OF MANAGEMENT CALCUTTA

INDIAN INSTITUTE OF MANAGEMENT CALCUTTA

FRTL Financial Research & Trading Laboratory

Diamond Harbour Road,
Joka, Kolkata - 700104
West Bengal
033 2467 8300

Financial Research & Trading Laboratory

a₹tha

A NEWSLETTER OF THE FINANCE LAB

INDIAN INSTITUTE OF MANAGEMENT CALCUTTA

Indian Institute of Management Calcutta

Contents

Editorial

The Union Finance Minister will present his last full budget on 1 February 2018 and the general expectation is it may be more a 'populist' budget. However, given the general electoral mood in the country and results of recent state elections, the present government may take some risky bets and introduce a few proposals which are required though not 'popular'. One such area is labour reform. Such reform may help in the government's goal of creating more jobs. Another area that people will expect the Honourable Minister to address to how to fuel economic growth. Will massive public investment and large scale disinvestment help the economy grow at above seven percent? The third area is agriculture- how to release stress in this sector and improve farm productivity.

The first article briefly introduces various Alternative Investment fund (AIF) classifications. Authors discuss various hedge fund strategies and performance of Indian hedge funds. The second article looks into the recent trends in bank stocks and argues that the performance of bank stocks is out of sync with the performance of the banking sector. The third article deals with the non-performing loans and the author shows that despite having data, systems and institutionalized mechanisms, the non-performing loan levels in India are an indication that corporate bankers rarely pay heed to early warning signs. In the fourth article, the author highlights the Indian retail investors' participation in the equity market post January 2014. In the last piece, the author explains the Blockchain revolution in recent times.

The *Market Watch* section in this issue deals with the entry of Private Equity firms in the Banking sector.

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

Happy reading!

Ashok Banerjee

Performance of Hedge Funds in India

Ashok Banerjee and Bobbur Abhilash Chowdary*

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.

**Bobbur Abhilash Chowdary is a doctoral student in Finance and Control Department of IIM, Calcutta.*

Hedge fund industry is drawing media attention in India. Recently Avendus Capital has reported as the first domestic hedge fund to have $1 billion asset under management.[1] A hedge fund is an alternative investment fund (AIF), which employs diverse or complex trading strategies and invests and trades in securities having diverse risks or complex products including listed and unlisted derivatives.[2] AIFs are classified into three broad categories. While category I AIF includes Angel, venture capital, social and infrastructure funds, category II includes private equity, real estate, distressed and PIPE funds. Hedge funds are classified as category III AIFs as per SEBI regulations. There are currently 346 AIFs registered with SEBI. The Indian income tax law is not very supportive of AIFs; particularly for hedge funds. Income accruing to category I and category II AIFs, registered with SEBI, is taxed at the investor and not at the fund level. However, category III AIFs are not accorded pass through status. In other words, any income or gain of category III AIFs is taxed at the fund level. This is contrary to the taxation on mutual funds, where tax is charged at investors' level. This provision leads to increase in the operating costs of hedge funds. In fact, hedge funds are not clearly defined in the income tax laws in India. If any AIF, irrespective of category, suffers a loss, such loss has to be absorbed at the fund level and cannot be passed on to the investors. This is quite a punitive provision and calls for review. Like income or gains, losses should be given pass through status.

High net worth individuals and institutional investors are allowed to invest in risky AIFs. Each scheme of AIF should have a minimum corpus of Rs. 200 million and the minimum investment amount by any investor is pegged at Rs.10 million. Private equity (PE) and venture capital (VC) are the most popular AIF followed by real estate funds; hedge funds come as distant fourth.[3] Alternative Assets under management in India is very small compared

[1] Times of India, 25 January 2018

[2] SEBI (Alternative Investment Funds) Regulations 2012

[3] As of December 2016 Asset under management (AUM) of PE and VC funds was $23.6bn, followed by real estate funds $10.2 bn; and hedge funds comes fourth with AUM of $1.4 bn. (Source: Preqin Insight Report, November 2017)

to USA ($2.8 trillion), UK ($495 billion and China ($265 billion). However, the Indian market has huge growth potential- it grew by 55% in 2017.

There are several important differences between hedge funds and PE (and similarly VC) funds. Managers of hedge funds have flexibility to buy or sell a wide range of assets. PEs can hold long only portfolios. Hedge funds can take leverage positions, which PE cannot. Hedge funds normally seek to make profits from market inefficiencies (mispricing), rather than purely relying on economic growth to drive returns. While hedge funds have low holding period (sometimes even intraday), PEs have much longer holding period (5-7 years). Managers of hedge funds are pure financial investors, whereas PE investment comes with some degree of operational control on the investee company. Since investment horizon for hedge funds is relatively short, performance of such funds is estimated on monthly/quarterly basis. PE funds see returns only after 5-7 years. Private equity investors simply cannot withdraw capital before the end of a fund's life.

Investment Strategies

The returns of a hedge fund depend on the manager's skill, as well as on market conditions. The source of returns (skill vs. market) varies significantly depending on the investment strategies adopted by hedge funds. Broadly, investment strategies of hedge funds include directional and market neutral strategies. Directional investment strategies aim to capture market trend (going long during uptrend and short during downtrend) and market neutral strategies seek to generate absolute returns independent of market conditions. Successful hedge fund managers generate alternative beta and skill alpha. While the traditional sources of beta are the stock market spreads (for equity assets), alternative sources of beta are liquidity, volatility, beta of commodity markets etc. Similarly, structural alpha is driven by regulatory advantage that hedge funds enjoy and the latitude offered by having no benchmark. Alpha linked to the manager's skill (ability to pick right assets at the right time) is known as skill alpha.

Common investment strategies followed by hedge funds are listed below:

Directional Strategy: This strategy seeks to take advantage of major market trends rather than trends observed in individual stocks. Managed futures and global macro strategies are two examples of directional investment strategies. Managed futures refers to taking a bet on the forward curves of futures contract. If a near-month futures contract is over-priced compared to a far-month futures contract on the same underlying asset, one may short the near-month contract and go long the far month contract. Global macro strategies apply macroeconomic views to global markets to decide entry/exit strategies. Instead of analysing macroeconomic events affecting companies or

assets, they view the world from a top-down perspective (e.g., a manager taking a pessimistic view on UK currency, GBP vis-à-vis US dollar weeks before the referendum on Brexit and shorting GBP).

Long Bias and Short Bias: A fund with long bias strategy takes mostly long positions on the market. On the other hand a fund with Short bias strategy takes mostly short positions. Long (short) bias also includes net long (short) portfolios. Typically long (short) bias indicates bullish (bearish) view about the underlying asset.

Arbitrage Relative Value: This strategy involves simultaneous buying and selling of two closely related securities whose prices have diverged "relative" to each other. Typically these securities are very highly correlated. Both the securities could be from one asset class (e.g. equity, debt, futures, options etc.) or multiple asset classes. This strategy has potential to generate returns even when the market is moving sideways. One popular example of relative value arbitrage strategy is pairs trading.

Fundamental: In this strategy a fund manager takes fundamental factors, which affect the security returns, into consideration in making investment decisions.

Bottom Up: A strategy in which fund starts with analysis of specific securities and later on move on to industry and other macro analysis.

Top Down/Macro: This is exact opposite of Bottom Up approach. In this strategy the fund manager starts off with macro analysis and then slowly moves onto analysis of specific securities.

Opportunistic: In this strategy a fund manager opportunistically employs one or more strategies which he believes can generate the best return for that asset class

Systemic Quant: When a fund manager uses algorithms to evaluate the market, the fund is said to follow Systemic Quant strategy. Managers typically use price, volume, volatility and liquidity information to develop quant strategies.

Performance

The five-year (2013-2017) average performance of hedge funds in India was better than performance in many other countries (table 1). Indian hedge funds reported an average annualised return of 18%. The average monthly returns of hedge fund in India were even higher in comparison to the performance of ETFs. ETFs generated lower return with greater risk, thereby reporting a lower sharp ratio. It is important to note here that fund performance should not be judged by returns alone- one should rather look at risk-adjusted returns. Indian hedge funds have generated better returns at greater risk (standard deviation of returns) with higher drawdowns. One may argue that hedge funds in India have still outperformed (on risk-adjusted basis) Europe and USA. Within country, hedge

fund has higher risk-adjusted return (mean return divided by standard deviation) than ETFs. Since hedge funds normally generate absolute returns, there is no need to compare their performance with any benchmark.

Table 1: Average Performance of Hedge Fund Industry

Asset Type	Country	Mean Monthly Return (%)	Standard Deviation of Monthly Returns (%)	Worst Month Performance (%)	Best Month Performance (%)	Average Performance in Positive Months (%)	Average Performance in Negative Months (%)	Percentage of Months with Positive Return	Max Draw Down (%)
Hedge Funds	Asia/Asia-Pacific	1.00	2.51	-4.75	8.19	2.06	-1.66	71.67	-9.11
Hedge Funds	Europe	0.59	2.28	-5.16	7.98	1.95	-1.30	58.33	-12.44
Hedge Funds	Global	0.51	1.88	-4.21	7.69	1.44	-1.36	66.67	-4.61
Hedge Funds	India	1.53	3.00	-8.24	9.74	2.71	-2.37	76.67	-13.39
Hedge Funds	USA	0.85	2.13	-3.72	8.41	1.88	-1.22	66.67	-4.18
ETFs	SENSEX	1.12	3.74	-7.45	10.51	3.48	-2.43	60.00	-19.91
ETFs	NIFTY	1.15	4.18	-7.76	11.37	4.15	-2.52	55.00	-20.70

Source: Thompson Reuters Lipper. Authors' calculations

Different investment strategies provide mixed results. While the systematic quant strategy reported highest average returns (table 2), it comes at a greater risk. The directional strategies, on the other hand, have minimum downside risk and lower standard deviation. Surprisingly, short bias has performed better than long bias strategy with positive returns in seventy five per cent of months.

Table 2: Strategy-wise Performance

Strategy	Mean Monthly Return (%)	Standard Deviation of Monthly Returns (%)	Worst Month Performance (%)	Best Month Performance (%)	Average Performance in Positive Months (%)	Average Performance in Negative Months (%)	Percentage of Months with Positive Return	Max Draw Down (%)
Arbitrage Relative Value	1.74	3.40	-11.26	9.39	3.00	-2.40	76.67	-17.40
Bottom Up	1.70	3.46	-8.65	12.02	3.16	-2.68	75.00	-13.42
Directional	1.31	2.87	-6.23	10.46	2.58	-2.17	73.33	-10.37
Fundamental	1.57	3.58	-8.68	13.30	3.37	-2.30	68.33	-13.31
Long Bias	1.65	3.71	-9.01	12.25	3.38	-2.75	71.67	-14.22
Opportunistic	1.33	4.08	-8.18	12.84	3.41	-3.15	68.33	-18.57
Short Bias	1.85	3.88	-10.55	13.09	3.48	-3.02	75.00	-15.20
Systematic Quant	1.91	4.02	-10.51	13.04	3.64	-3.26	75.00	-15.04
Top Down Macro	1.11	3.38	-8.85	11.87	2.97	-2.10	63.33	-12.28

Source: Thompson Reuters Lipper. Authors' calculations

There has been consistent decline in the number of strategies adopted by hedge fund managers in India over the past five years (table 3). One can observe maximum decline in relative value arbitrage strategies, followed by long bias strategies. It does not necessarily mean that Indian financial markets have been bearish during the period 2013-17. One has to look at the asset under management under each strategy to draw any conclusions about investors' preferred strategies. Investment strategies based on fundamental information has been consistent throughout the observed period.

Table 3: Investment Strategies during the year

Strategy	2013	2014	2015	2016	2017
Arbitrage Relative Value	124	73	56	48	48
Bottom Up	117	101	100	93	84
Directional	35	24	24	21	12
Fundamental	111	113	120	117	108
Long Bias	141	113	112	105	96
Opportunistic	24	29	36	36	36
Short Bias	25	12	12	12	12
Systematic Quant	13	12	12	12	12
Top Down Macro	26	24	24	21	12
Grand Total	618	501	496	465	420

Source: Thompson Reuters Lipper. Authors' calculations. Each strategy is assumed to liquidate at the end of the month.

The asset under management has increased over the past five years (table 4) with maximum investment in long bias strategies in 2017. There has been a decline in investments under relative value strategies. Investment exposure to fundamental strategies has doubled over the past five years. When one compares fund performance with AUM, one may note that long bias did continue to attract large funds despite not so noteworthy performance. It implies that AUMs are not necessarily based on historical performance.

Table 4: Asset Under Management (AUM)

Strategy	2013	2015	2017
Arbitrage Relative Value	7778.3	6498.2	6915.6
Bottom Up	1569.8	5075.7	8692.8
Directional	50.3	148.8	NA
Fundamental	4156.7	8014.9	8692.8
Long Bias	6103.6	11904.9	15351.3
Opportunistic	2587.0	3142.4	542.5
Short Bias	NA	NA	NA
Systematic Quant	NA	NA	NA
Top Down Macro	2545.8	3030.9	NA
Total	24791.3	37815.8	40195.1

Source: Thompson Reuters Lipper. Authors' calculations (figs in INR million)

Hedge funds, as an alternative asset class, has potential to grow. However, activities of hedge funds need to be carefully monitored without stifling its growth potential. Hedge funds do indulge in proprietary trading at high frequency and this is an area presently under close scrutiny of market regulators. Regulators believe that high frequency traders abuse their advantage of 'speed trade' and adversely affect market quality. However, empirical finds about the role of high frequency traders is mixed.

****

Bank Stocks: Irrational Exuberance or Government Assurance as the Ultimate Risk Manager?

Partha Ray

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

In recent times the stock market has been performing rather spectacularly all over the world - so much so that the recently released World Economic Outlook of the IMF (released on January 22 2018) flagged "rich asset valuations" and the possibility of a "financial market correction" as a risk that could dampen growth and confidence.[4] India is no exception to this global trend. Each day we get pleasantly surprised to find BSE Sensex / NSE Nifty crossing another stratospheric mark. While the aggregate stock market story could perhaps be explained in terms of herd behaviour of the investors chasing of yield in consonance with a global trend, the purpose of this commentary is much narrower. This commentary looks into the recent trends in bank stocks and argues that the performance of bank stocks is out of sync with the performance of the banking sector.

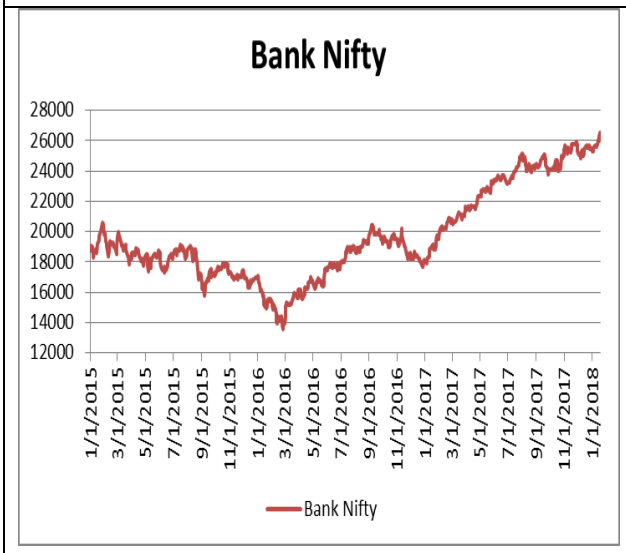
Performance of Bank Stocks

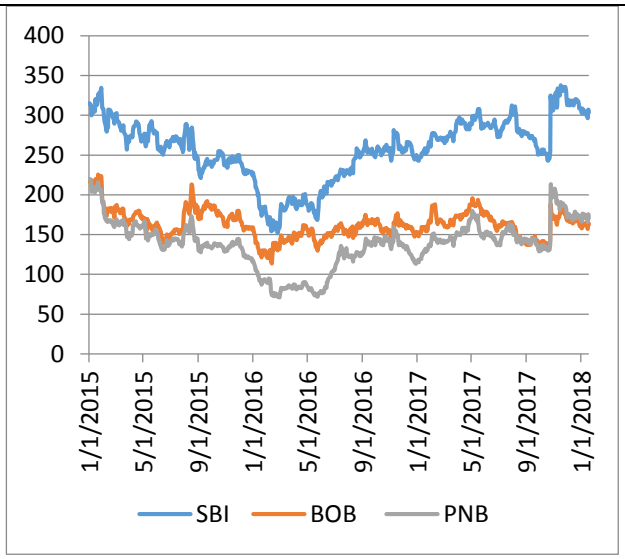
Chart 1 depicts the inter-temporal behaviour of banks stocks. Couple of stylized facts emerges from eyeballing the charts. First, Bank Nifty, the aggregate index representing bank stocks, is on a journey in the north-east direction nearly for the last one year. Second, in our selected sample of three public sector banks (viz., State Bank of India (SBI), Bank of Baroda (BOB) and Punjab National Bank (PNB)) stock prices of these three banks have also shown an increasing trend. Third, in our selected sample of three private sector banks, viz., ICICI Bank, Axis Bank and HDFC Bank, stock prices of these banks have also exhibited similar tendency; of course the extent of upward movement is shaper in case of HDFC banks.

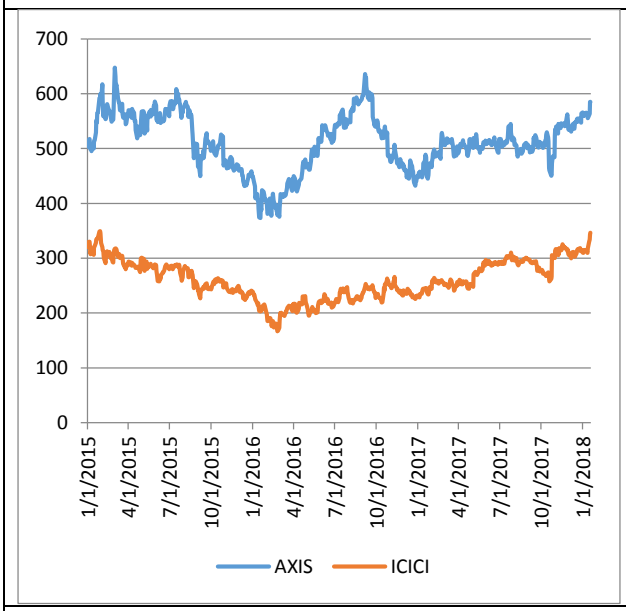
[4] http://www.imf.org/en/Publications/WEO/Issues/2018/01/11/world-economic-outlook-update-january-2018

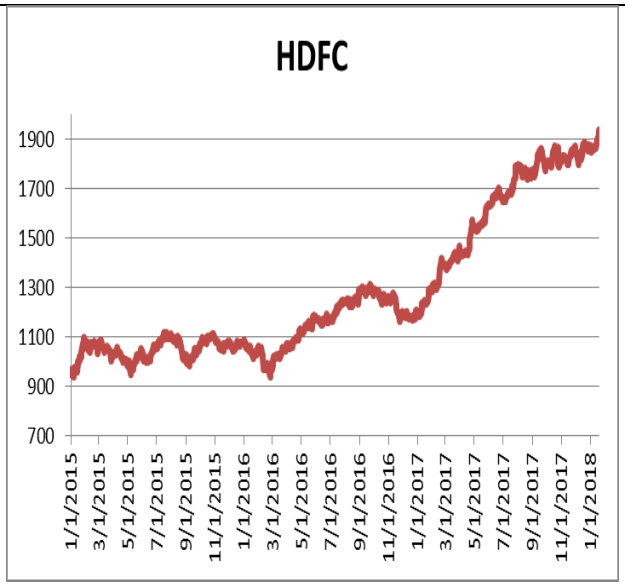
But what is wrong with these increasing trends in the stock prices? Stock prices routinely go up or come down and it might be foolhardy to attempt to explain their behaviour. The only uncomfortable piece of information in these cases is that these upward trends in bank stock prices have been accompanied with a deteriorating performance of the commercial banks - particularly that of the public sector banks.

Chart 1: Performance of Bank Stocks









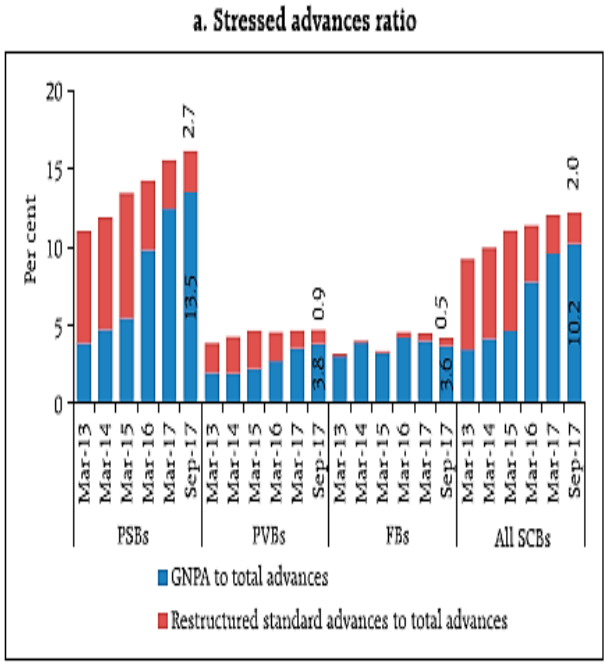
Source: Bloomberg.

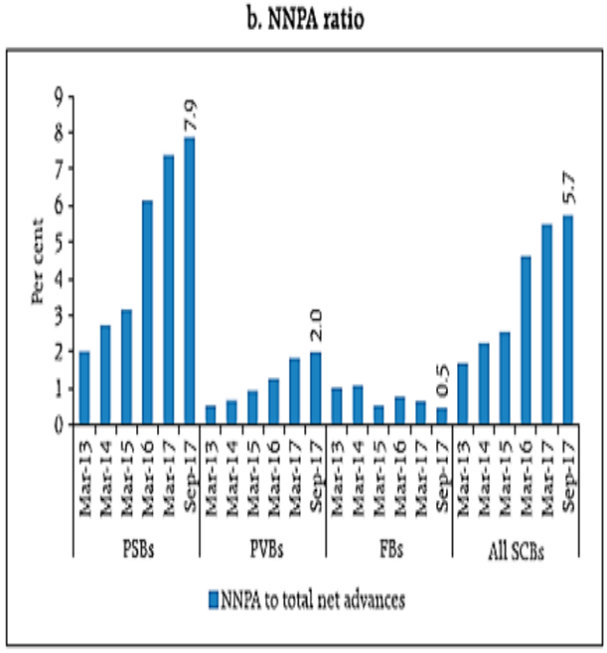
Performance of the commercial banks

What has been the risk-return profile of commercial banks? Towards probing this question, I looked into RBI's recent *Financial Stability Report (FSR)*, December 2017 (released on December 22, 2017). The FSR categorically

noted, "The overall risks to the banking sector remained elevated due to asset quality concerns". Besides, it finds that the gross non-performing advances (GNPA) ratio and the stressed advances ratio of the banking sector increased between March 2017 and September 2017. Finally, the stress tests conducted by the RBI tended to suggest that in the baseline scenario, gross NPAs of the banking sector "may rise from 10.2 per cent of gross advances in September 2017 to 10.8 percent in March 2018 and further to 11.1 per cent by September 2018" (Chart 2). These warnings are indeed a case for concern particularly for the public sector banks.

Chart 2: Asset Quality of Indian Banks



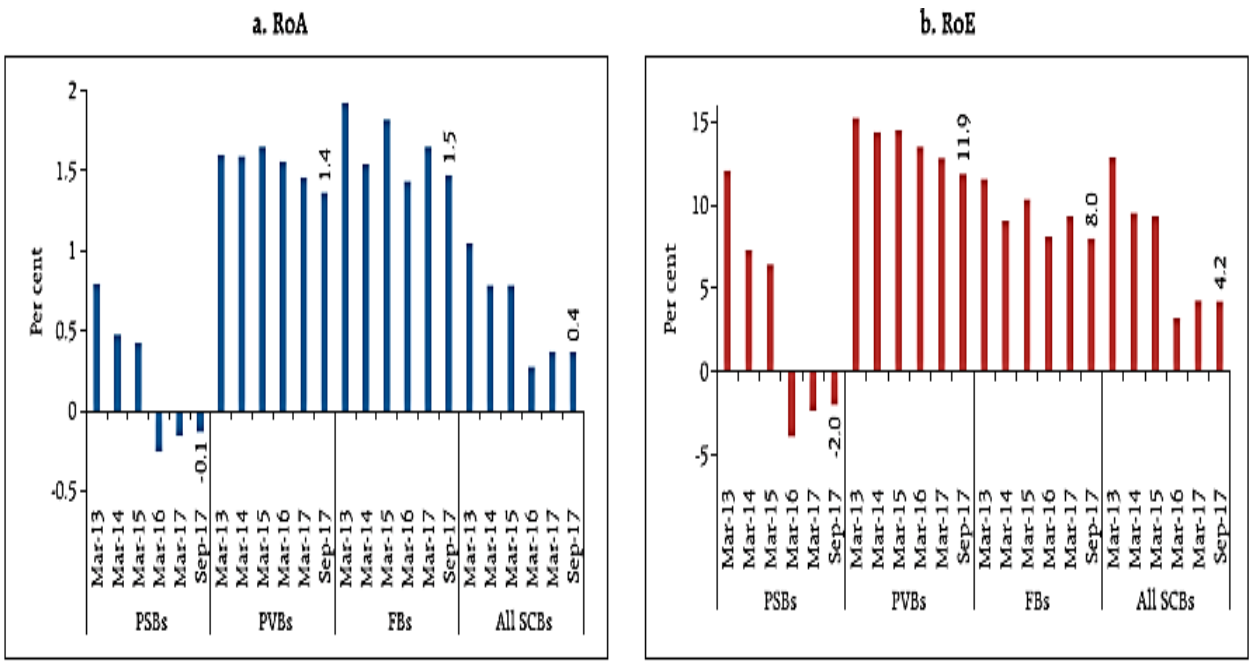


Source: RBI, Financial Stability Report, December 2017.

What has been the performance of the banking sector? Chart 3 plots two profitability indicators, viz., return on assets (RoA) and return on equity (RoE). Two important facts emerge from this chart. First, at the aggregate level, return on assets remained unaltered at 0.4 per cent between March 2017 and September 2017 while their return on equity declined from 4.3 per cent to 4.2 per cent during the same period. Second, for the public sector banks both the returns on asset and equity stood at a negative 0.1 per cent and 2.0 per cent, respectively as on September 2017.

Thus, as far as public sector banks are concerned, recent data reveals that their performance has been unsatisfactory and their risk profile has deteriorated in recent times.

Chart 2: Profitability of the banking sector



Source: RBI, Financial Stability Report, December 2017

What is going to be the future risk return profile? We have already noted that the RBI's Financial Stability Report has indicated that even under the baseline scenario, the gross NPA of all commercial banks are likely to deteriorate. But, under the severe stress scenario, seven banks have common equity tier (CET) 1 capital to risk-weighted assets ratio below the minimum regulatory required level of 5.5 per cent by September 2018. In sum, not only the present but the future of the public sector banks does not seem to be rosy. More specifically, the stressed condition of the commercial banks and their impressive performance in the stock market do not seem to add up.

Towards some conjectures

What would be possible explanations of this riddle? One obvious explanation is the presence of some irrational exuberance in bank stocks. But there are commentators who think otherwise. In fact, it has been pointed out that in explaining this impressive performance of bank stocks factors such as, shift in monetary policy or advances in technology, could have played a role.[5] Another explanation could be that the infusion of capital into the banks have assured the market players about the presence of the government almighty to rescue the public sector banks in the eventuality of any liquidity / bankruptcy problem or shortage of capital. Latest hue and cry about the

[5] SEE FOR EXAMPLE, "4 REASONS TO 'KEEP BUYING BANK STOCKS", INTERVIEW OF EQUITY RESEARCH ANALYST, RICHARD X. BOVE TO CNBC, AVAILABLE AT HTTPS://WWW.CNBC.COM/2018/01/23/BANKS-REACH-A-STATE-OF-NIRVANA-THANKS-TO-GOP-BOVE-COMMENTARY.HTML

Financial Resolution and Deposit Insurance Bill 2017 could have also convinced the market players about the infallibility of the banking system in India. The Union government announced the infusion of Rs. 88,000 crore of capital in ailing public sector banks on January 25, 2018. While it was a good to see that such capital infusion has been linked with a set of performance metrics, hope it does not encourage the syndrome of "privatization of profits and socialization of losses" in banking. Professor David Moss of Harvard Business School looked at government as the ultimate risk manager.[6] Metaphorically speaking, hope such an implicit role of the government as the ultimate risk manager would not fuel further the extent of irrational exuberance in bank stocks.

****

[6] David Moss (2002): *When All Else Fails: Government as the Ultimate Risk Manager*, Cambridge, Massachusetts: Harvard University Press.

ALUMNI CORNER

Banks ignore early warning signs at their peril

Balachandran R

Balachandran R is an alumnus of IIM Calcutta (1987-89) with extensive experience in corporate banking, investment banking and product management.

The non-performing loan woes of public sector banks have been discussed threadbare for a while now. Private sector banks have not exactly covered themselves with glory on this front. The inspections of the Reserve Bank of India have revealed a significant divergence between their declared NPA's and that determined to be non performing by RBI. The NPA figures in the banking industry which seems constantly on the upswing, have now crossed USD 100 billion, while total stressed loans could be twice this figure.

Do corporate loans turn bad overnight? The Relationship Management team is supposed to have an ear to the ground, being closest to the market. Many banks have independent credit monitoring teams which also look for signs of potential trouble. Large accounts have direct visibility at the CEO and board level. Yet we see the relentless onslaught of non-performing loans emasculating Indian banking.

Early warning signs

Banks have a treasure trove of data in their core banking and other systems on the conduct of accounts. One of the first signs of trouble is stressed cash flows of the corporate borrower. This usually manifests in the form of ad hoc requests for temporary overdrafts. A one off instance is understandable. But frequent over drawing in the account is a red flag.

The borrower could then request for additional working capital facilities to avoid the day to day hassle of over drawings in the account. While such a request could be genuine at times, more often than not, it is a warning sign to the bank management.

As things further deteriorate, there is delay though not necessarily outright default in meeting loan interest and principal installment obligations. Letters of credit favouring suppliers of raw material could start devolving. Cheques issued by the borrower return unpaid. Quarterly results start reflecting weak margins and stressed cash flows.

As the scenario worsens, the corporate borrower may stop routing its sales receivables through the bank for fear of the cash flows being seized for loan obligations. Decline in credit turnover in the account is an early warning sign which banks must look out for.

Macro-economic factors

While operational issues are clearly discernible after the event, analyzing and anticipating changes in the industry scenario requires different skill sets. Dumping of steel from low cost producing countries, cancellation of coal blocks a critical raw material source due to judicial intervention, power purchase agreements not being signed or rescinded are some of the factors behind the larger NPA's. Banks with huge exposure need to build in house industry expertise in segments where they plan to take huge exposure and for subsequent monitoring, rather than relying on consultants who do not have any bottom line, for appraising projects.

Institutional mechanism

Banks in India, US and other geographies have put in place systems to identify corporate borrowers who exhibit incipient signs of stress. The Reserve Bank of India lists 40 early warning signs which would qualify for a borrower being placed under a red flag status. Banks would need to report such accounts to the Central Repository of Information on Large Credits (CRILC) set up by RBI. The status of such accounts needs to be reported to the CEO every month. Such accounts thenceforth receive senior management attention in the form of close reviews.

The risk rating of such accounts usually gets downgraded. Efforts are made to reduce exposure. An exit strategy is put in place. Once the account technically becomes a NPA, it is a common practice to transfer it from the sales/relationship management team to a specialized recovery team.

The OCC in the US

The Office of the Comptroller of Currency, which supervises national banks in the US, calls for early identification of credit weaknesses and adverse credit trends, as a precursor to successful loan workouts/recovery. The OCC seeks a credit culture at banks, and rating systems that encourages lenders and managers to identify problem loans in a timely manner.

Technology can play a role

While large corporate accounts need a more nuanced and subjective approach in flagging off stressed conditions, software can help in identifying small and medium accounts which exhibit early warning signs. The software can read data from a bank's systems as well as from external sources to flag off such accounts.

The system fails

Despite having a wealth of data, systems and institutionalized mechanisms, the non-performing loan levels in India are an indication that corporate bankers rarely pay heed to early warning signs in a borrower's account. Several reasons can be attributed to this failure.

Fear of pulling the plug: the account team may be wary of precipitating a crisis by calling back the loan prematurely. Taken to the extreme, this might tantamount to "extend and pretend" that all is fine, by kicking the can down the road as far as possible. Conversely, the client facing team could be apprehensive of losing business in what could otherwise be a genuine short term issue.

Corporate accounts are booked in a bank as part of a fairly drawn out wooing process, spear headed by the sales team, often with senior management in tow. It is not easy to admit failure and recall the loan when it appears to be heading for trouble. It is common to see the sales team pushing the credit approving authorities for additional facilities, citing "temporary" cash flow mismatches of the borrower instead of calling back the loan and instituting recovery process. The client facing team which generates revenue for the bank, having an upper hand over the "old men" in credit management, is not uncommon in commercial banking. The banking supervisor OCC in the US too, talks of commercial lenders being reluctant to transfer a credit to the recovery team even after a problem loan has been identified and deems senior management/board support essential for making sure than lenders surface loan problems at the earliest possible stage.

While working capital facilities may potentially be recoverable by way of the borrower making alternative arrangements, long term project finance is not readily amenable to such refinancing. Having lent to the project, the fate of the bank's loan is often irrevocably linked to the success or failure of the project.

Willful defaults

A gold plated project is doomed to fail, from the word go. Once the promoters have taken out their contribution manifold, the project/company becomes unviable, and is now the bank's problem to solve.

Such defaulters have perfected time tested methods to take out funds from bank funded legal entities by diverting cash flows to related parties, failing to repatriate export proceeds with the foreign "buyer" being a shell company of the promoter, deliberately invoking bank guarantees issued for non-existent projects awarded by the promoter's own related company, fraudulent/accommodation inland bill transactions under letters of credit issued to associate companies without an underlying trade transaction etc. In most cases, shell companies/related parties of the promoter are the commonly used vehicles to divert funds from the bank funded borrower to the coffers of the promoter. Early warning signs flash all over such accounts, but for reasons best known to them, corporate bankers ignore them until "the bird has flown"!

Indian banking has seen several such egregious cases with rarely any such corporate defaulter paying the price, despite the seemingly strong resolve of the current administration. This must be perplexing as well as vexing to the tax payer, whose funds are ultimately used to bail out ailing public sector banks through recapitalization. Perhaps, the Indian taxpayer can take some small comfort that it's a global phenomenon, with no criminal prosecution of either CEO's or errant bankers in the United States, in the aftermath of the 2008 crisis which almost brought down the financial system, requiring a mammoth government led bailout of Wall Street banks.

****

GUEST COLUMN

The Start of Indian Retail Investor Put

Deep N Mukherjee

Deep N Mukherjee is currently Chief Product Officer, handling product design and analytics in a Indian credit bureau. He has over 14 years of experience in Risk Management and Credit Assessment. Prior to his current role, within Fitch he was in structured finance team. Prior to his organization he was with American Express where he was heading the Institutional Risk Management Team focusing on quantitative risk management. He is also a visiting faculty in finance with IIM Calcutta. He has done his graduation in engineering from IIT, Kharagpur (BTech, 1999) and has obtained his management degree from IIM Lucknow (PGDM 2002).

US stock markets arguably have benefitted from the 'Greenspan Put' and later the 'Bernanke Put'. The narrative being that if there was ever a stress in the economy or any economic event which would have triggered a market crisis, Greenspan(Chairman of US Federal Reserve 1987 to 2006) would cut interest rate and flush markets with liquidity so as to ensure that the markets did not crash. 'Put' refers to a Put option where the put option buyer has the right to sell an asset at a pre-determined price to the put option seller even if the price of the asset has fallen significantly below pre-determined price level. Continued with the narrative of Greenspan Put, the market assumed that they own a put option from US Federal Reserve and was thus not worried about economic crisis or sharp market corrections knowing that they will be bailed out.

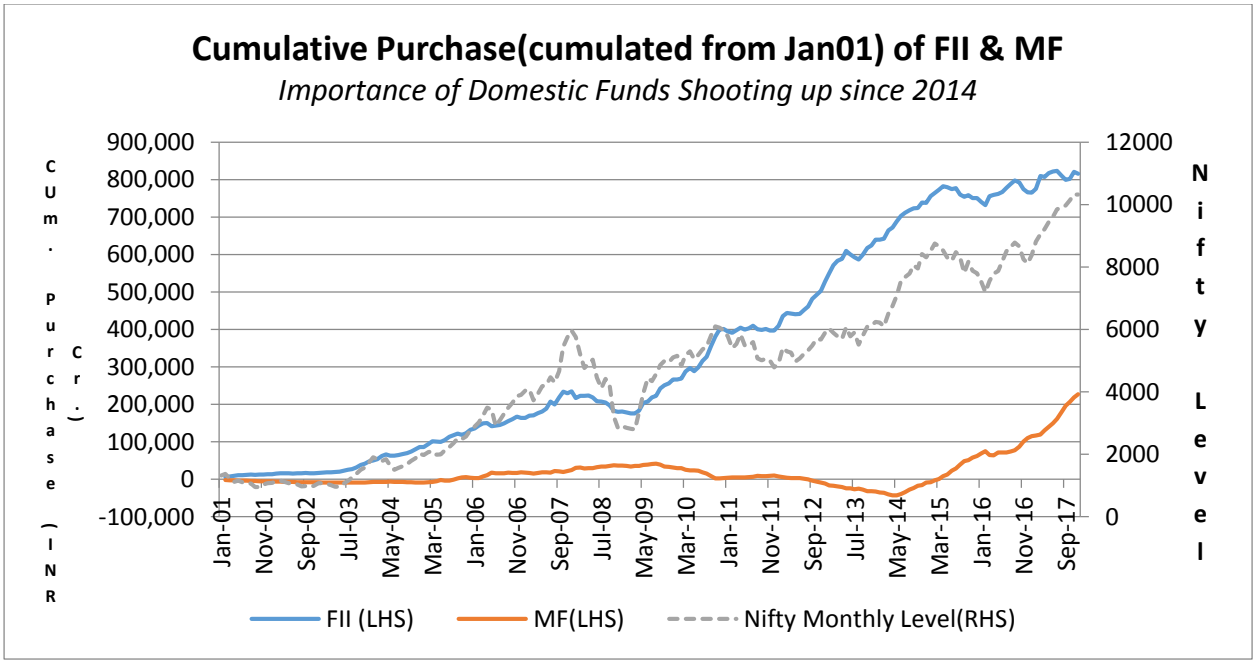
Indian retail investors' participation in the equity market has increased sharply post January 2014 and this may hold Indian equity prices at elevated level providing exit to smart money such as Foreign Institutional Investors (FII) and other bulge bracket investors and proprietary traders. Indian retail investors have been participating through SIP of Mutual Funds (MF), Employees Provided Fund Organization (EPFO) and National Pension System (NPS). This steady source of domestic liquidity, funded by retail savings may be providing a de facto put option to other investors and may be instrumental in supporting historically high market levels. The current Nifty Price-earnings (P/E) ratio is around 24X. Comparable, though slightly higher P/E ratio was observed between October and December 2007, and similarly in 2000. In each of these instances the market corrected sharply afterwards. Currently, with corporate earnings surprising more on the downside it's anybody's guess as to how long the current bull run may continue. As such, examples of elevated market levels supported by liquidity are not rare at all. But in this case, the provider of the put option to the smart money i.e. the Indian retail investor may be blissfully unaware of the elevated risk levels

I study the FII and MF purchase dynamics with Nifty Level historically and focus on the period post Jan 2014 to highlight the risk that domestic investors face. As such higher domestic participation in equity market as well as

lesser dependency on foreign investors by itself are not bad. The timing of when this transition is happening and the limited knowledge of retail investor with respect to the risk they are taking are the issues which may provide a shock to retail investors and thus reduce their confidence on Indian equities. This may not help in development of Indian equity markets.

Dynamics of FII and MF Investments in Indian Equities

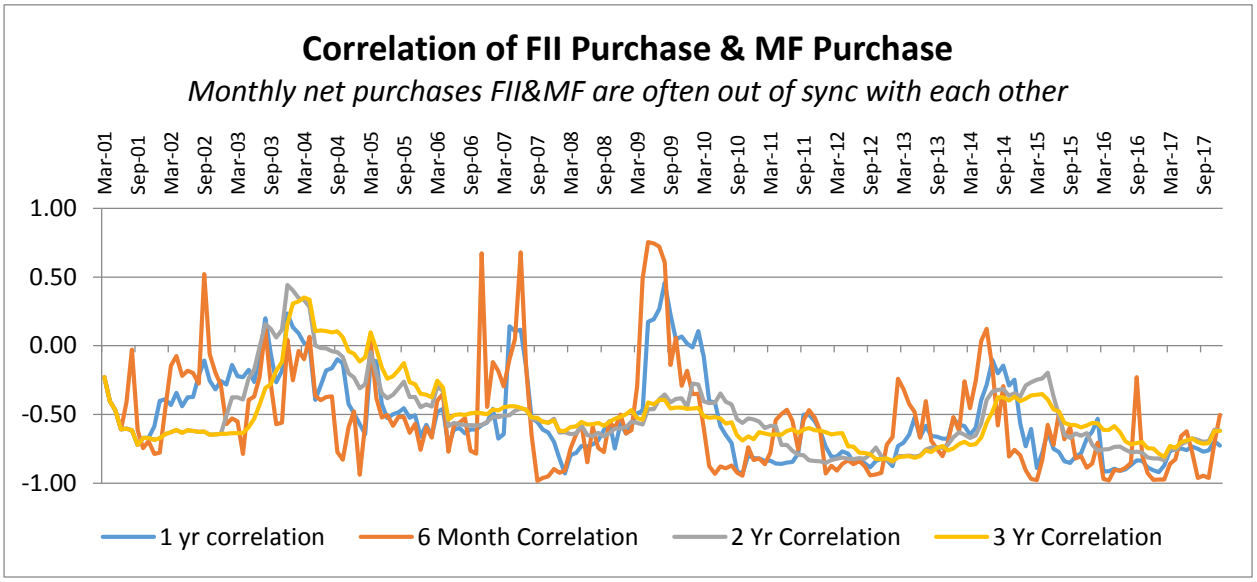
Prior to Jan 2014, Indian equity markets were largely driven by FII inflows/outflows. To study the dynamics I consider monthly Net Purchase, with negative value implying net sales. The net purchases are cumulated at various time points such as January 2001.The cumulative figure at any point in time does not represent the total purchase or investment in Equity. They represent the total incremental equity purchase (or sell if the value is negative) from the time point where accumulation started.



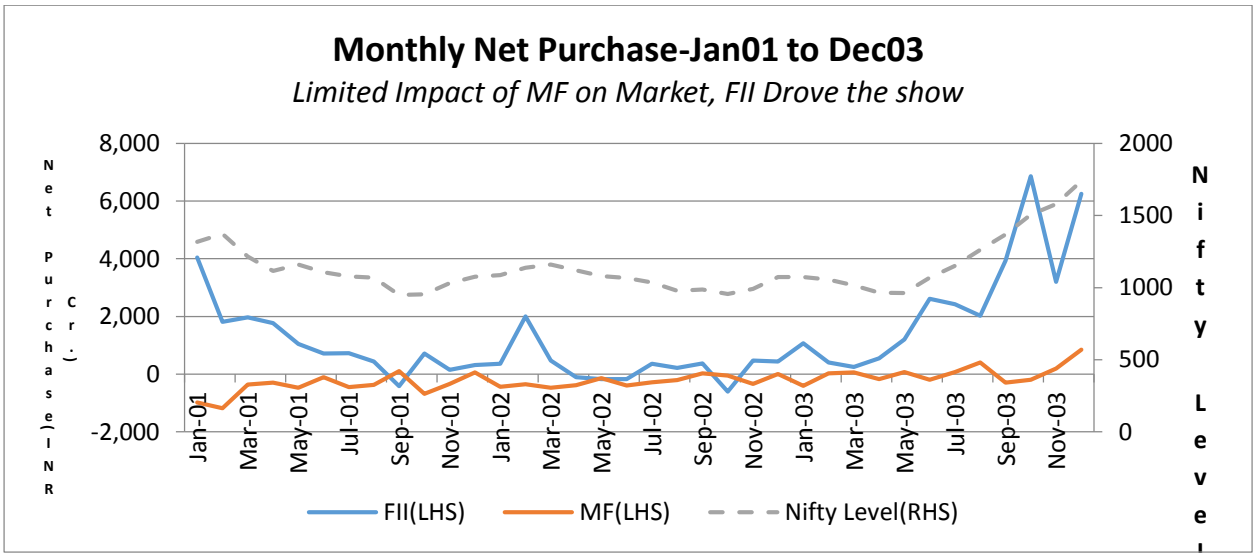
From January 2001(Nifty:1316) cumulative net purchases of MF peaked in June 2009(Nifty:4436) and measured at INR39,000 crore. The commensurate number for FII was INR207,000 crore. Clearly the key driver of Indian equity markets during this phase was FII. Most of the incremental purchases that happened in MF during the eight and a half years got pulled out between June 2009 and January 2014. During this period Indian MF had Net Sales of INR 35,000 crore. Between June 2009 and January 2014 the FII pumped another INR437,000 crore(Cumulatively INR 640,000 crore from January 2001)

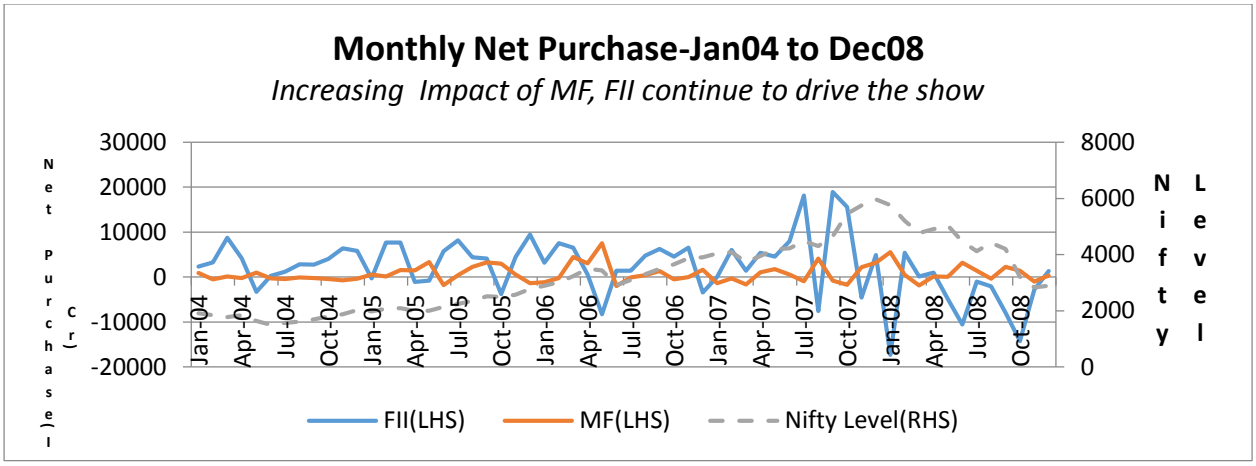
Analyzing the monthly net purchase data suggests that for most of the period the FIIs and MFs may have been taking an opposite view of Indian's market. Correlations run on Net Purchase(monthly) between FII and MF for various rolling/trailing periods(6 months, 12 months, 24 Months and 36 Months) are mostly negative. The highest negative correlations are for 6month trailing periods. Of course FIIs compare India with a basket of other countries

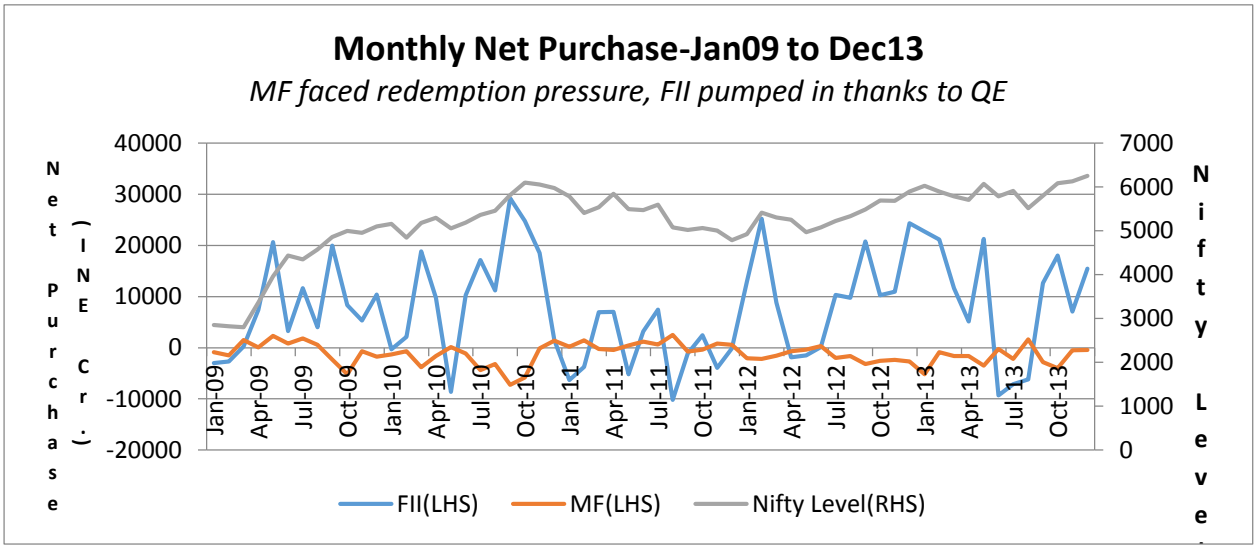
and Indian equities' attractiveness at any point in time would depend among other things on their relative expensiveness/cheapness with respect to other countries



A simplistic explanation for the negative correlation between purchases of MF and purchases of FII is that if Indian equity rises, the FII limits investment (instances of large pull outs has been limited) while the MF , which attracts retail investment because of recent performance(driven by FII investment), invests creating a negative correlation. Prior to January 2014 , MF has seen period of significant redemptions(June 2009 to January 2014) where the Net Purchase(monthly) has been usually negative. Also there were periods where cumulative purchases wavered around approximately fixed levels because of fidgety retail investors ie the Net MF purchase altering between positive and negative values in alternate time frames.



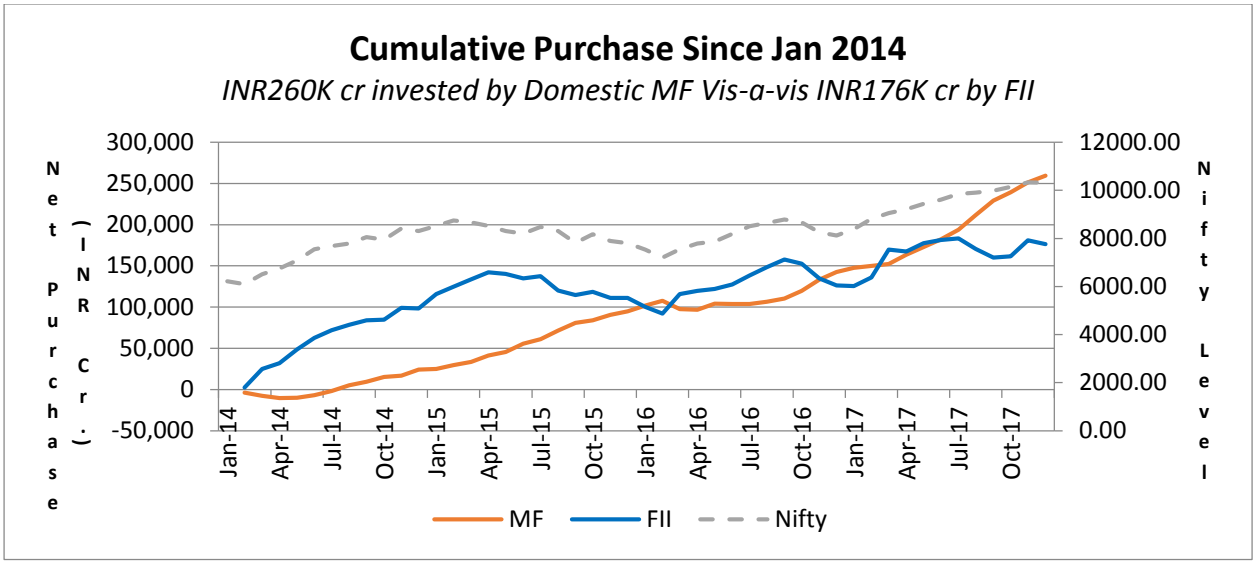




What Happened Post January 2014?

In January 2014, The Nifty P/E ratio was approximately 18.5, somewhere around the long term average, possibly with a slight upward bias. Nifty was at 6000. In the last 36 months, MF have made incremental net purchases of INR 260,000 crore while FII have made purchases of INR I76,000 crore. Currently the Nifty is around 10,500 and P/E is at 24.0. In fact from February 2016(Nifty:7200) till date FIIs have made net incremental purchase of INR84,000 crore while MF has invested INR 153,000 crore. Of this INR153,000 crore INR126,000 crore came in post demonetization in November 2016. In the same period FII's made incremental purchases of INR42,000 crore. An incremental investment of this level over a 12 month period is among the lowest incremental Net purchases by FII in last 10 years.

In short, higher and higher portion of retail savings entered into the Indian equities at higher and higher P/E.



What about the PUT Option?

With over a INR 100,000 crore coming from MF, the FII or other smart money may gradually move out. The reasons can be anything from rising US interest rate to high P/E of Indian markets and possible delay in earnings recovery. The domestic investment is driven my mandated investment from EPFO, NPS and 'formalization' benefit where savings previously held in cash may be coming into equity market. Clearly the domestic liquidity would be able to bankroll some exits, in the event of a large scale pull out by FIIs. Retail investors are the ones who will bear the most losses just like any put option seller.

VOICE OF AMERICA

The Magic of Blockchain

Ayan Bhattacharya

Ayan Bhattacharya is Assistant Professor of Finance at The City University of New York, Baruch College. He has a PhD from Cornell University and his research focus is financial economics, especially financial market design and asset pricing.

In October 2008, almost out of nowhere, a mysterious figure named Satoshi Nakamoto posted a short paper on cryptographic mailing lists describing an architecture that could – the paper claimed – replace existing centrally controlled currencies. Dismissed initially by the mainstream as a nerdish fantasy, interest in crypto currencies exploded abruptly last year. All of a sudden, it seemed that the financial press and investing public could not get enough of bitcoins and its cousins, and the daily gyrations of crypto markets quickly became the subject of animated discussions on coffee tables all around the world!

Many opine that the current crypto currency craze is a bubble, and that it may very well be. However, there is a growing realization – among researchers and practitioners alike – that the fundamental scaffolding on which bitcoins operate is indeed radical. This scaffolding is the Blockchain.

1. The Idea of Blockchain

Try teaching your grandma about the internet, and after the first few sessions there is the inevitable question – is WhatsApp the Internet – or, is Facebook the Internet – or otherwise, is Gmail the Internet? As you may have patiently explained, indeed WhatsApp, Facebook and Gmail are the Internet, but the Internet is much, much more. The relation between crypto currencies and the blockchain is similar. Bitcoins are an application built on top of blockchain. As interesting as bitcoins potentially are, the truly fundamental innovation is at the level of the blockchain.

At the most basic level, blockchains provide practical solutions to two inter-related problems in game theory and cryptography – creating common-knowledge and obtaining consensus – in a large population of independent entities. These were open questions in the fields for a long time. Complete technical details of the blockchain

solution to these problems would require a lot of computer science jargon; however, the essence of the innovation can be captured through simplified analogies.

2. Blockchain and Consensus

To understand how a blockchain obtains consensus, let us turn to an analogy with the most popular consensus creating mechanism we humans have created – voting.

Suppose we have an honest distributed system. Distributed: means that each node is a stand-alone entity. Honest: means that at least a majority of the nodes in the system are non-corrupt ("nodes in a system" is really an abstract representation; a concrete realization could be anything, for instance a scattered population of voters). How can one poll such a distributed system so that one gets the honest majority's opinion? One way could be to undertake "conventional" voting -- one node, one vote. But simple voting is "cheap" and easy to rig in a distributed system. Suppose corrupt nodes send two votes instead of one, it would be very hard to detect, and the outcome is compromised. The first essential innovation of blockchain is to propose a robust alternative voting mechanism building on a technique called "proof-of-work". What does that mean? Suppose there are multiple candidates in an election. Instead of simply asking the nodes to choose between candidates, a blockchain requires each node to solve a special kind of puzzle, and then attach their solution to the puzzle along with the vote. The class of puzzles that is used is another novelty and they involve specialized cryptographic techniques, but the idea can be explained through another analogy.

Suppose every node of the population is equipped with an infinite number of sealed boxes – each such box containing the 52 playing cards, with the Queen of Hearts on top. These boxes are special: they are very heavy; to shake a box (in other words, to shuffle one pack of cards), it takes a single node 20 seconds. At the end of 20 seconds, each node makes a mark indicating its vote on the box – that's the vote – and submits as many boxes as it wants to. So technically, each node can submit more than one vote. Once all the boxes have been submitted, they are opened, and the number on the card at the top of the deck in each box is noted, along with the vote mark on the box. Now comes the catch – not all votes are taken as valid. Only if the card on top of a box is a King of Hearts, the vote is recorded; otherwise the vote is discarded. Importantly, no node knows which card has to be on top for the vote to be recorded – that's a secret – and it is different from the card that is initially on the top of each deck (for example, we had a Queen of Heart on top of each deck initially).

The above mechanism guarantees that the "probability of recording an honest vote" is greater than "probability of recording a corrupt vote", as long as the majority is honest. The guarantee comes from the randomization of the shuffle, and because the boxes are "heavy", and the card needed on top for the vote to be recorded is secret – and different from the card on top of the decks initially. Corrupt nodes can submit multiple boxes with corrupt

votes, but unless the boxes have been shuffled, it is no good. And since it takes 20 seconds to shuffle, a corrupt node will have shuffled only one box when the boxes are collected. As one has multiple independent rounds of voting, since probabilities multiply, the difference in probabilities keep piling up. After sufficient number of rounds, we are almost guaranteed to record the honest opinion. That is the beauty of the blockchain: it is a computational solution to the problem of corrupt nodes. But that's not all!

3. Blockchain and Common Knowledge

The examples above assumed that we have an honest aggregator of the votes. However, there is no reason to believe that election commissions will always stay impartial and honest! What if the arbiter of votes is itself corrupted? The blockhain handles this problem by doing away with the centralized vote aggregator completely, relying instead on a "public ledger". A public ledger, in its most simple form, is like a giant scoreboard of live updating vote-counts that all entities can observe. The technical problem that a giant scoreboard addresses is one of common knowledge.

The apocryphal tale of the unfaithful wives is a good fable to explain the purpose of a public ledger (it might very well have been the tale of unfaithful husbands, just interchange the wife and husband in the story). The story goes something like this. In a quaint old village live a 100 married couples. Every evening the men of the village meet around a fire and praise the virtue of their faithful wives. However, if a husband suspects that his wife has been unfaithful, he invokes a curse at the fire that immediately turns his wife into a stone statue. If a wife is ever unfaithful, through some magical telepathic device, everyone in the village gets to know about the affair, except for the husband. Now suppose all women in the village are unfaithful. What happens? Nothing – because the husbands have no way of knowing. Due to the magical device, each husband thinks that the other wives are unfaithful, but he never gets to know about his own wife. For many years this village is thus a picture of tranquility with the husbands praising their wives every evening, till one day, a holy man comes and publicly declares that "a wife in this village has been unfaithful". For 99 days thereafter, all stays the same, with the husbands praising their virtuous wives, but on the 100^{th} day, all the 100 ladies in the village become stone statues!

It is easy to see the reason for this calamity. From the magic device each husband knows that 99 other wives are unfaithful, so for 99 days a husband can hold on to the belief that his own wife is above suspicion. But if every husband in the village holds on to this belief for the 99 days, there are no curses invoked at the fire for 99 evenings, and thus everyone knows that everyone holds this beliefs. On the 100^{th} day, this belief system has to unravel because at least one wife has been unfaithful. Thus you have the 100 stone statues on day 100. Game theorists use this fable to illustrate various finer points about knowledge, reasoning and belief. In reference to the blockchain, the main message is that without common knowledge the truth of a situation can stay distorted for indefinite amounts of time. Till the holy man's arrival, the husbands praise the wives at the fire even though the

wives have been unfaithful. The holy man's declaration is like an announcement on a public billboard that everyone can see. The public ledger in the blockchain plays a similar role.

4. The Opportunity

The land of the blockchain today is like the terrain of the internet in the early 1990s. A bitcoin is like the Alta vista search engine or AOL chat tool: interesting early applications of the internet, but hardly ones that scratched the full potential of the World Wide Web. The disruptive potential of the blockchain mechanism is still unfolding and early entrepreneurs with the vision have the chance to make a real difference.

This opportunity is especially important for India. Indian businesses have not had a major hit since the IT outsourcing revolution, which has largely run its course. Further, the new waves of startup fueled tech-based businesses in India are largely knockoffs of Western or Chinese ideas, adapted to local Indian conditions. This is unlikely to lead to revolutionary global innovative companies that can disrupt businesses the way the Googles or Amazons have done. The blockchain revolution provides India another chance to take a place at the high-table of global innovation. If India can create an ecosystem that is at the forefront of research and innovation in the blockchain, the next Google can very well come from the country.

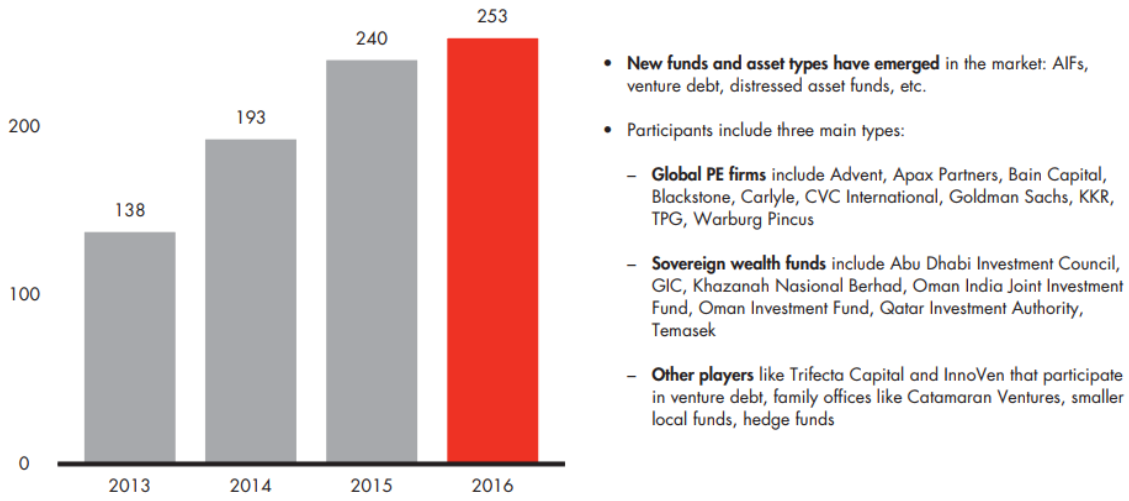
****

[8] Sergiu Hart, Andreu Mas-Colell (2013). Simple Adaptive Strategies. World Scientific, Singapore

Market Watch

Private Equity inflow: Solution to rising NPAs

Amit Kumar Agrawal
(PGP Student, 1st year, IIM Calcutta)



Source: Bain Private Equity Report 2017 .

Number of PE Funds participating in India

Banking system is reeling under ₹12-lakh crore worth of stressed assets (gross NPAs plus restructured advances) – 11.5% of gross advances. Global PE investors are partnering with local players to invest in the distressed assets space in India.

ARCs act as debt aggregators by acquiring non-performing loans from the banking system, managing and recovering illiquid NPLs by putting them on the resolution path. Regulatory changes made as part of Insolvency and Bankruptcy code have created an enabling and supportive operational environment for ARCs and for takeover of stressed assets by PE firms.

Apollo Global ($825Mn), Canada Pension Plan ($450Mn), Brookfield Asset Management ($1Bn), Bain Capital ($1Bn), Lone Star Funds ($550Mn), SSG Capital ($2Bn), Pacific Alliance and Oaktree Capital have already made commitments to investing in the Indian distressed debt opportunity.

With the market for distressed asset in India set to grow, will entry of Private Equity firms in this sector solve this problem? Only time will tell.

****