Indian Money Market Dynamics

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The Clearing Corporation of India Ltd.

28 February 2012

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(February 2012)

Abstract

The short term market is an important source for banks and institutions to secure funds to align their short term asset liability mismatches. Central Banks use the market to signal policy stance changes. In India, Reserve Bank of India uses monetary policy not only to signal the policy stances but also uses the same to map growth dynamics of the economy. The short term rates generally synchronize with policy rates in a manner that helps smooth transmission of monetary policy. In India, the short term market heavily revolves around daily LAF of RBI as well as overnight inter-bank Call Money, Repo and CBLO markets. Effort to develop a term money market has not been very successful. The article looked at creating an indexed rate taking into account all three segments into consideration rather than picking up only one rate. The liquidity was estimated as ratio of LAF and Net Demand and Time Liability (NDTL). The relationship between indexed rate and liquidity was tested and found to be rational. The article also found rational relationship between the spread of Inter-bank Call and Repo and ratio of LAF and NDTL along with money market transaction volume.

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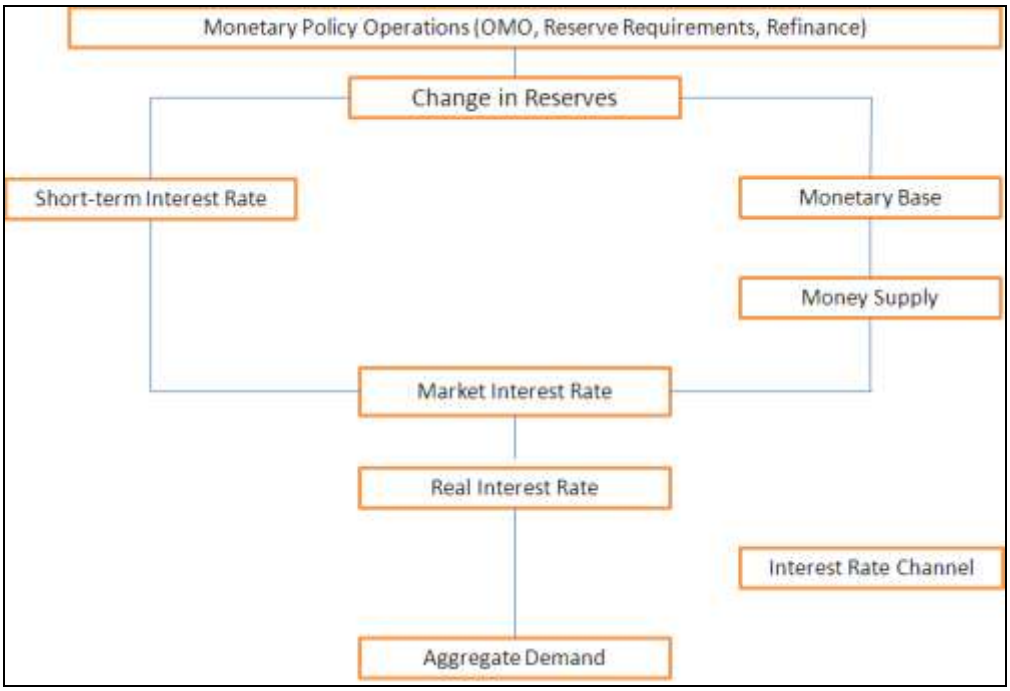
Introduction

The deregulation and integration of financial markets have fundamentally changed the landscape within which central banks around the world operate today. The financial crisis has once again brought to the fore the important role played by a central bank in both emerging as well as developed markets. For emerging markets, the monetary policy stance accepts the monetary policy stance of developed markets as given and operates around the theme of pressing domestic issues. It has been a big challenge for the central banks in emerging markets to meet many demands on them by society at large - starting with price stability and moving to greater financial stability. High inflationary pressures – arising from high commodity prices due to supply side constraints combined with rising income in many countries including India, ballooning sovereign debt crowding out the private enterprises to raise debt at sustainable cost, volatilities of exchange rates, etc. are some of the many new challenges that central banks face today in emerging markets like India. Managing New Trilemma - Price Stability, Financial Stability and Sovereign Debt Sustainability pose serious challenges to orthodox central banking. The financial crisis around the world has brought the fiscal dominance of the monetary policy in many developed and emerging economies. The support to the market economy is provided by the Governments through fiscal measures – typically large public debt. Most of the developed economies are running more than 100% of GDP as the outstanding public debt. Countries like Greece will see almost 200% of Debt/GDP ratio in 2012/13 and all efforts are being made to bring it down to 120% by 2012. Looking ahead, global economic growth and financial stability remain uncertain. Europe's debt crisis may cloud the outlook for the world economy. In the adverse scenario, if Europe's debt crisis cannot be contained, it is likely to degenerate into global financial shocks and extensive economic recession. As the outlook for advanced economies continues to deteriorate, momentum for growth in Asian countries was also expected to slow. Looking ahead, global economic growth and financial stability remain uncertain.

The money market is an important part of the financial system. The central bank of a country uses the money market in its pursuit of monetary policy objectives. The money market typically caters to 3 broad functions: (i) it allows intermediation of demand and supply of short-term funds among the banks and institutions; (ii) it helps the borrowers and lenders of short-term funds to fund their positions at an efficient and typically low market price; (iii) central banks around the world use the market to influence cost and level of liquidity in the financial system. The last function integrates the real sector to financial sector through transmission of monetary policy impulses. It is the objective of the central bank to align the short term rates in the market with the key policy rates announced from time to time. Since the policy rate like Repo Rate and other derivatives Rates like Reverse Repo Rate (and MSF Rate that have been set keeping the interest rate corridor in mind) form a kind of resistance and support level for Banks and primary dealers, money market rates are expected to hover around these policy rates depending on the level of liquidity in the market. Any long-term wide deviation of the short term rates from these policy rates is seen as a poser to the efficiency of the monetary policy stance. Efficient functioning of the short term markets like Repo, Call and Collateralized Borrowing and Lending Obligations (CBLO) are important for the effectiveness of monetary policy.

The interest rate channel is the primary mechanism of monetary policy transmission in conventional macroeconomic models where an increase in nominal interest rates, given some degree of price stickiness, translates into an increase in the real rate of interest and the user cost of capital. These changes affect the aggregate demand and supply in the economy. Hence the short term money market is used as a channel for monetary policy transmission by central banks. In today's changing environment of monetary policy making, changes in short-term rates are not necessarily driven by changes in reserves e.g., RBI can just reduce the repo rate without affecting reserves.

Chart-1: Transmission of Monetary Policy under Monetary Targeting



Adopted from Kuttner and Mosser (2002)

Short Term Markets in India

The daily Liquidity Adjustment Facility (LAF) conducted by the Reserve Bank of India (RBI) is aimed at moderating supply of liquidity in the market. LAF Repo and Reverse Repo form the foundation of short term markets in India. Other markets like Call, Repo and CBLO are directly linked to the daily LAF operations of the central bank. LAF Operatives have seen many changes since its introduction in 2000. The system started with single LAF window and experimented with multiple LAFs, quantitative restriction of parking of funds with RBI limiting to Rs.3000crores in all and finally introduced Marginal Standing Facility in May 2011. Under MSF scheme, Banks can avail themselves of funds from RBI on overnight basis against their excess SLR holdings. Additionally, they can also avail themselves of funds, on overnight basis below the stipulated SLR, up to one per cent of their respective Net Demand and Time Liabilities outstanding at the end of second preceding fortnight without any penalty and the rate of interest on the amount accessed from this facility will be 100 basis points (i.e. 1%) above the repo rate. This scheme was introduced as Banks did not have any other window to access liquidity from central bank in case of an emergency. This scheme is expected to reduce funds mismatches during

the closing hours. The central bank uses the LAF window to ensure that banks manage their liquidity in an objective manner so that neither a large surplus in the system can dilute monetary transmission nor a large deficit chokes off fund flows. Monetary transmission does not give the desired results when the market has excess liquidity of funds and banks do not borrow from central bank at Repo rate. The short term rates also move southward and operate below the Reverse Repo rate due to excess liquidity. In case banks have excess liquidity on any day due to low demand for credit and investment, they can park such funds on overnight basis with RBI and get remunerated at Reverse Repo Rate. Similarly, banks can borrow money from RBI at repo rate if they find shortage of funds. However, the LAF window closes early in the day and any other excess of shortage of funds has to be sourced from the markets like Call/CBLO/Repo and finally if the shortage is not managed through market borrowings, Banks have to source funds from MSF of RBI.

Other short term markets like Call, Repo and CBLO help the market participants to even out excess and shortage of liquidity at a price appropriate to the liquidity in the system as well synchronizing with the policy rates of the central bank. Call market is a pure inter-bank market in which Banks and Primary Dealers (PDs) trade among themselves. Since this is a clean market without any collateral on offer, the rates are expected to be higher vis-à-vis a collateralized market rate. The call market has seen major revamp during last one decade or so. The non-bank entities have been phased out of this market and the exposures of the participants have been linked to their net owned funds in order to have better discipline and ensure that the short term market is not used largely for creating long term assets thereby creating structural asset-liability mismatch and systemic risk. The call market used to form the large chunk of the short term market in 2004 but the various reforms introduced in this market helped to bring down the same to about 15-20% of the short term market. This is pure OTC market and settlement is direct between the participants. Banks and PDs not having excess SLR typically use this market to borrow funds and pay a premia over the collateralized rate. Repo market is a collateralized market which uses Government securities (T-bills, Dated Securities and SDLs) excluding special securities like Oil bonds as collaterals for borrowing. Further, banks falling short of collaterals also use this market to borrow securities from others who have excess securities. The technology enhancement of this market has brought a great deal of transparency to this market. Unlike Call market, this market enables non-bank entities like Mutual funds (MFs) and Insurance Companies to participate and more often they are the largest lenders of money. The market also moved from a bi-lateral OTC market to an anonymous order driven market after CCIL introduced new dealing system in Repo called CROMS. The system enables both Basket and Special Repo as per International standards. Since Repo is used in India more as a lending and borrowing of funds against collateral or borrowing collateral for SLR purpose, the Basket Repo forms the large part of the market. Traditional bi-lateral Repo market exists with the new electronic version as there is no compulsion for a Bank to channel its deals to any system in particular. However, the anonymous order matching systems has garnered about 78% of the market as of Dec'11 showing the reliance on electronic system by the market participants. Once the short-selling and Interest Rate Futures market become more vibrant with liquidity, special Repo is expected to see better volumes. Collateralized Borrowing and Lending Obligations (CBLO) was introduced in 2003 and became the flagship product of short term market with more participants using the same because of its flexibility and liquidity. The depth of the CBLO market makes it more attractive to both borrowers and lenders. Unlike the traditional Repo market, CBLO market allows a market participant to unwind its position any

time during the life of the contract. This works more as a tradable Tri-party Repo in which CCIL freezes the security and unlike Repo, does not allow transfer of the security to the lender of money. The SLR benefit is not transferred to the lenders of funds in case of a CBLO deal while in Repo, the securities get transferred to the lender of money. CBLO accounts for more than 60% of the short term market. Due to the withdrawal of CRR benefit from CBLO, it is observed that on reporting Fridays, market participants move their position to Repo as it does not attract CRR.

These three markets fulfill the requirement of various entities. Non-bank entities like MFs and Insurance companies account for a major share in lending in CBLO and Repo markets. These three markets have very high correlation among themselves as given in Table-1.

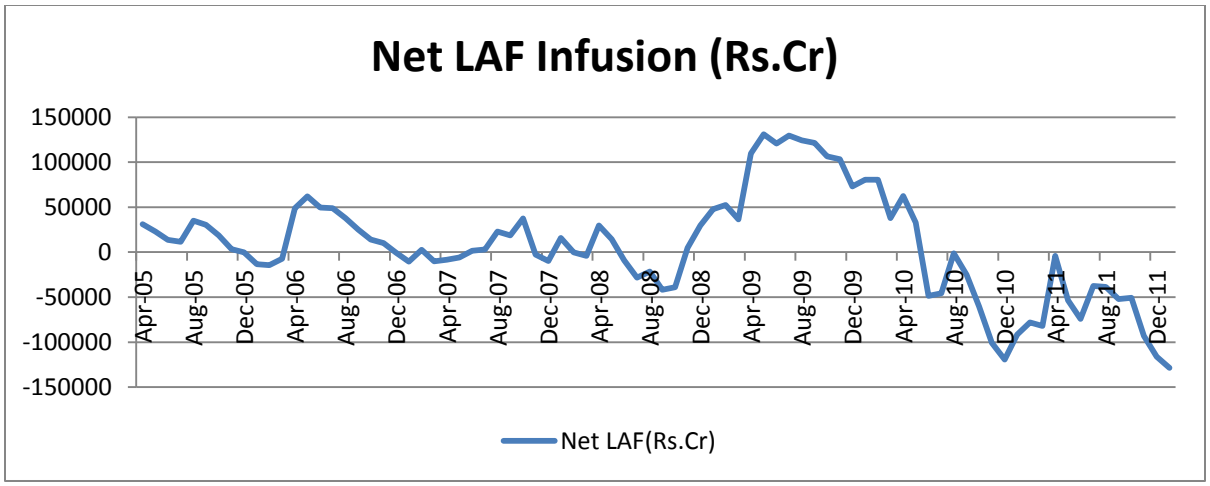
Table-1: Correlation in Short Term Interest Rates

	Rate Change Directions			Rate Level		
	Call Rate	**Repo Rate**	**CBLO Rate**	**Call Rate**	**Repo Rate**	**CBLO Rate**
Call Rate	1	0.8336	0.7066	1	0.8857	0.8563
Repo Rate	0.8336	1	0.8692	0.8857	1	0.9823
CBLO Rate	0.7066	0.8692	1	0.8563	0.9823	1

Short Term Market Dynamics

LAF Activity: Daily LAF activity of the central bank is aimed to ensure adequate liquidity in the system. However, due to structural issues, we see large liquidity shortage or overhang in the system. Due to infusion of liquidity by central bank to fight financial crisis in an environment of low credit off-take during 2008-09, banks continuously had excess liquidity with them which was parked with RBI. Prior to June 2010, the market was generally in excess mode where banks parked surplus funds with the central bank continuously from Nov 2008. However, prior to Nov 2008, the excess liquidity in the system was not very high and remained within a manageable limit.

Chart – 2: Net LAF Activity – Liquidity Support by RBI



The period from Nov 2008 to May 2010 witnessed excess liquidity as RBI released close to Rs.500,000crores to the system through changes in CRR/SLR and rate cuts (Cumulative potential primary liquidity impact – over Rs.490,000crore (9 % of GDP) at that time). Once the cycle reversed due to sharper recovery by the Indian economy relative to those of its peers combined with higher sustained domestic inflationary pressure, RBI started gradual withdrawing of liquidity followed by raising of policy rates and CRR and tightened liquidity in the system. As of now the, market is looking towards stabilization of the economy with lower inflation expectations. Last credit policy review in Jan 2012 saw reduction of CRR by 50bps to 5.5% and going forward, the market expects the central bank to start reducing policy rates to bring down the pressure on liquidity in the system. Given the drop in inflationary pressure in recent months, specifically drop in food inflation, RBI may change its stance and slowly bring down the Policy Repo Rate.

LAF/NDTL Ratio

The LAF/NDTL ratio is an important indicator of absorption of liquidity in the system. The ratio is used by the market to synchronize rate expectation. The spread of uncollateralized Call Rate over collateralized Repo rate is generally positive (not unusual to see negative spread at times) and during April'05 and Jan'12, the same was about 50bps on an average as given in the Table-1 below. If we consider only Reporting Fridays, then the spread works out to be about 90bps. This period alternates between surplus and deficit situations. We have calculated two spreads – spread between average Call and Repo on Reporting Fridays and spread between average Call and Repo rates taking into account all days in the fortnight of the Reporting Fridays. We have used the first spread rate on the respective Reporting Fridays rather than using an average rate for the entire fortnight on the premise that the pressure on the market on Reporting Fridays gets built up due to asset liability adjustments banks do on Reporting Fridays to cover up their CRR and SLR requirements in case there is shortage. However, since CRR is on average basis, generally banks frontload their reserves during the first week followed by gradual unwinding in the second week. As a result, the Reporting Friday figures are really the residuals only and hence, they may not capture the dynamics of the entire Reporting Friday period.

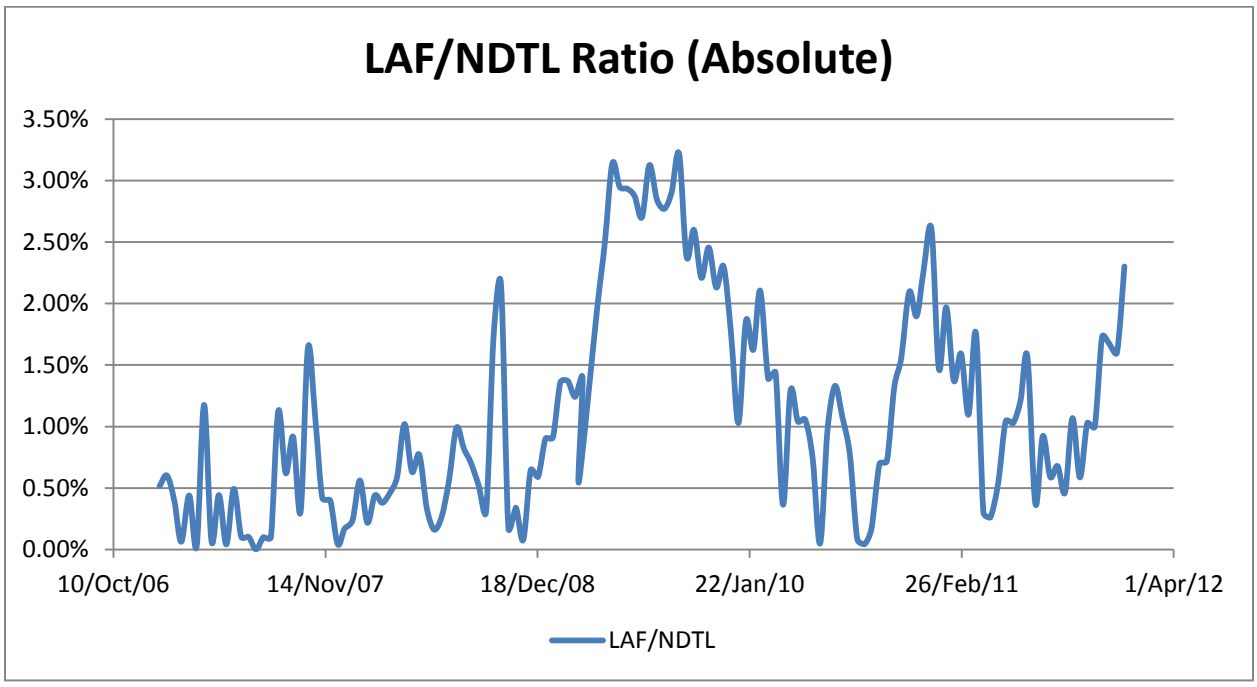
Table – 2: Descriptive Statistics of Call-Repo Spread

Parameters	Call-Repo Spread (only Reporting	Call-Repo Spread (only Reporting

	Fridays)	Fridays)
Mean	0.92%	0.49%
Standard Error	0.24%	0.10%
Median	0.40%	0.25%
Standard Deviation	2.70%	1.20%
Minimum	-0.23%	-0.21%
Maximum	29.47%	12.96%

Maintaining a higher shortage or an excess liquidity would make monetary policy transmission less effective and such shortages /excesses become structural and banks are exposed to more volatility and risk. Banks have been using short-term market to fund their assets (within the given parameters of asset-liability gap) and if the shortages/excesses are temporary in nature, banks may not venturing into creating medium and long term assets out of very short term liabilities like borrowing in overnight markets. On reporting Fridays, banks would avoid using overnight call/notice market as these obligations will be treated under the CRR coverage while doing a Repo transaction will not have such issues as the transaction is done as a buy and sell back arrangement. But banks not having excess SLR would have no option but to borrow in call market to cover their CRR. Hence rates on Reporting Fridays capture multi-faced dynamics and using the same for our analysis will make the study more robust. However, during last 4 years (aftermath of financial crisis) the ratio of LAF/NDTL (absolute) stayed beyond 1% level for a longer period indicating the less than effective transmission of monetary policy.

Chart – 3: Behavioural Pattern of LAF/NDTL Ratio (Absolute)



The study did not find a great correlation between spread and the LAF/NDTL (absolute) ratio – about 11.3% when we use the Reporting Friday spreads and 10. 34% when we use average spread but the

study empirically found that the shortage of liquidity (RBI supports market through net LAF infusion) has a higher cost than excess liquidity. The study also looked at the impact on spread due to combination of factors like LAF/NDTL ratio as well as the Money market volume on the given date (aggregate trading volume of Call, Repo and CBLO). The result shows that the spread is influenced by absolute value of LAF/NDTL ratio and the relationship is positive while the spread is having a negative relationship with the aggregate volume of the market. The results seem to be rational as we will expect the spread to widen when the liquidity drops in the market with the lower volume of trading. The estimated equation (Annexure-1) is:

$$S_t=0.4213+0.8818*LAF/NDTL_t+0.0379*Log\ (Vol_t) \qquad \text{Eq. 1}$$

The spread between Call and Repo is considered as an additional cost banks need to pay if they have to borrow in Call market to cover their shortfall. This cost increases significantly at the time of shortage. The same is much higher when the shortage is more than 1% of the LAF/NDTL ratio. The Table-3 gives the pattern of spread in various liquidity situations (Jan 2007 to Dec 2011). It may be noted that the spread under surplus situation is lesser than that under deficit situation for equal deviation of 1 per cent of NDTL. This is because it is easier to manage surplus situation than the deficit situation, especially when Govt. is a large borrower and inflation is higher on sustained basis.

Table – 3: LAF Activity and Call-Repo Spread

	Shortage of Liquidity (RBI net support)	Excess Liquidity (Banks net deposit with RBI)	LAF >1% of NDTL (Excess Liquidity)	LAF>-1% of NDTL (Shortage of Liquidity)
Spread (Friday)	1.07%	0.76%	1.06%	1.78%
Spread (Average)	0.58%	0.39%	0.52%	0.91%

Market Composition

The short-term money market in terms of sourcing funds for banks and financial institutions consists of Call, Repo and CBLO markets. Most of these markets are predominantly overnight in nature (typically for 3 days on Fridays). However, a year-wise analysis indicates that the Call market is losing its dominant position and CBLO is gaining the leading role over the years. CBLO has established itself as the most preferred money market instruments which Banks and Institutions use to lend and borrow funds. Notice and Term money forms negligible part of the market. Table-4 shows the growing importance of CBLO segment in Money Market. Due to excess liquidity in the short term market, average daily call market volume dipped significantly in 2009 and 2010 and slowly gained due to tight liquidity conditions in the market in 2011 and 2012. Banks having excess cash would like to take the benefit of higher spread due to liquidity shortage in the market.

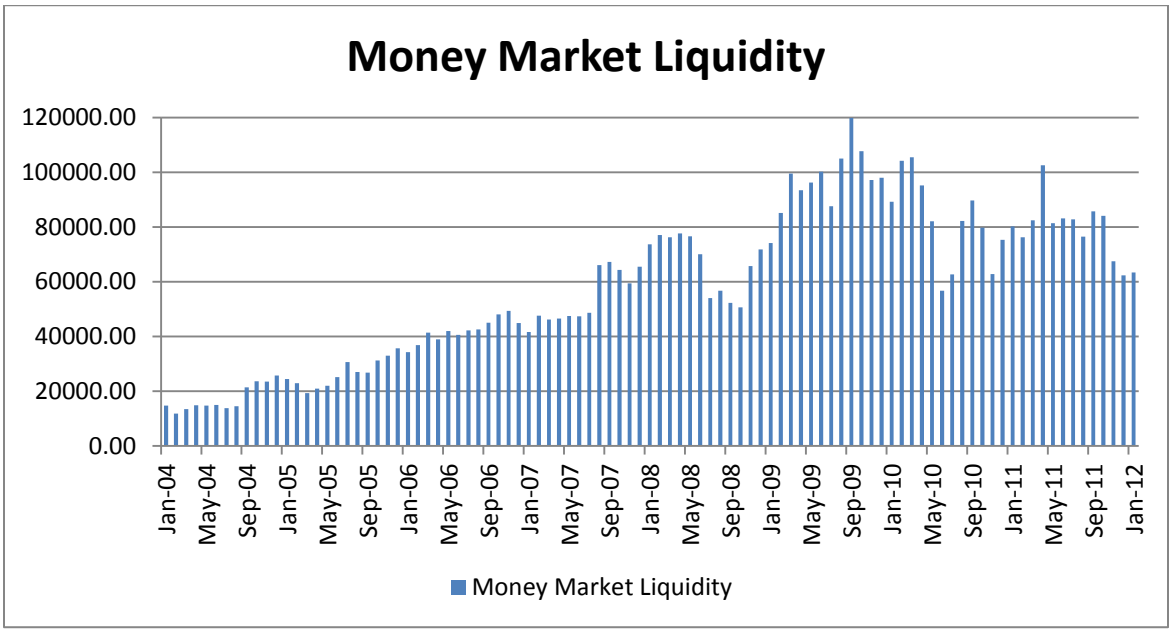
Table – 4: Year-wise Composition of Money Market Segments (Market Share in %)

Year	Average Daily Call Volume	Average Daily Repo Volume	Average Daily CBLO Volume

2004	49.88%	33.83%	16.28%
2005	44.86%	23.50%	31.64%
2006	32.48%	23.62%	43.90%
2007	25.45%	24.53%	50.02%
2008	22.97%	23.87%	53.16%
2009	11.99%	26.76%	61.25%
2010	13.29%	21.64%	65.06%
2011	18.53%	20.29%	61.18%
2012	29.19%	17.25%	53.56%
All Years	21.89%	23.77%	54.34%

Market liquidity in terms of total volume transacted in short term market (Call+Repo+CBLO) has seen significant changes during last few years. Highest daily volume of Rs.120,000crores were recorded in Sep 2009 which has dropped significantly in recent months. This is expected because under chronic deficit, LAF absorbs much of the excess SLR securities thereby leaving CBLO and Repo volumes to shrink and call volumes to increase. This can be seen in particular its relative positions during 2011 and 2012 so far.

Chart - 4: Daily Money Market Activity Level (CBLO, Call and Repo)



The average rates have seen significant changes to keep in sync with the market environment. Higher liquidity during 2009 and 2010 saw rates dipping significantly and tightening of liquidity saw rates rising in 2011 and 2012. The spread between clean call and collateralized repo is also widening in recent months due to liquidity pressure.

Table – 5: Descriptive Statistics of Short Term Rates

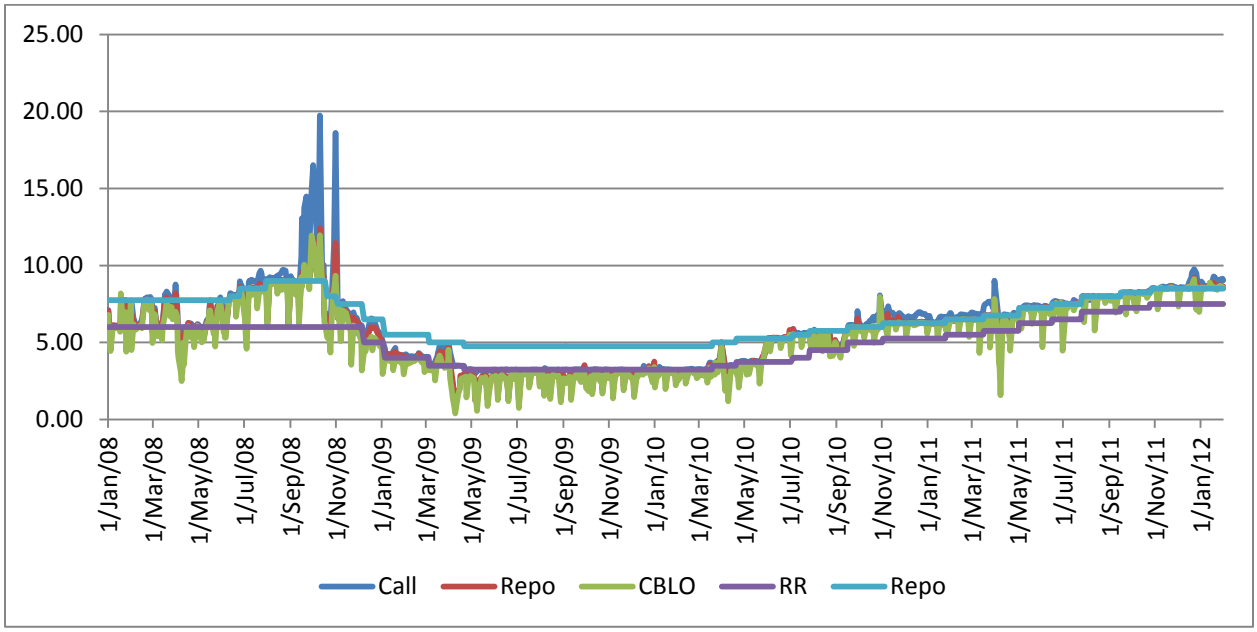
(%)

		2004	2005	2006	2007	2008	2009	2010	2011	2012
CBLO	Average Rate	4.23	4.85	6.01	5.38	6.84	2.84	4.58	7.21	8.56
	STDEV	0.65	0.66	0.77	3.10	1.64	0.72	1.35	1.06	0.10
	MAX	6.05	6.63	12.78	28.69	11.97	4.53	7.96	9.11	8.90
	MIN	2.70	2.11	4.81	0.02	2.50	0.39	1.19	1.57	8.41
CALL	Average Rate	4.61	5.12	6.44	6.62	7.71	3.49	4.97	7.62	8.91
	STDEV	0.48	0.47	1.13	5.45	2.11	0.47	1.35	0.79	0.21
	MAX	6.30	7.16	16.89	55.59	19.74	5.25	8.06	9.77	9.28
	MIN	4.07	4.52	5.47	0.13	5.26	2.99	3.12	5.88	8.62
REPO	Average Rate	4.23	4.95	6.12	5.67	7.20	3.09	4.76	7.40	8.65
	STDEV	0.63	0.52	0.89	3.06	1.45	0.73	1.32	0.90	0.09
	MAX	6.00	6.53	14.88	26.12	12.42	5.10	6.87	9.20	8.87
	MIN	3.17	3.61	4.92	0.14	3.02	0.98	2.06	3.72	8.45

Policy Rates and Market Rates

Policy Rate like Repo and derivative rate like Reverse Repo rates drive the short term market rates and typically market rates like Call, Repo and CBLO hover around these policy driven rates depending on shortage or excess liquidity in the system. Till June 2010, the market had excess liquidity for which most of the time, the market rates were hovering around Reverse Repo rates and from July 2010, the shortage of liquidity forced the rates to hover around Repo rate.

Chart – 5: Policy Rate and Market Determined Short Term Rates Synchronization



Relation between Short term Rates and Liquidity Shortage

Short term rates in the market are very sensitive to the liquidity availability in the system. In order to study the impact of liquidity we have created an indexed short term-rate (predominantly overnight rate) using all 3 segments of the market and the weight has been the volume of trading in that segment. The indexed rate is give as below:

$$I = \frac{(CallRate * CallVol + RepoRate * RepoVol + CBLORate * CBLOVol)}{(CallVol + RepoVol + CBLOVol)}$$

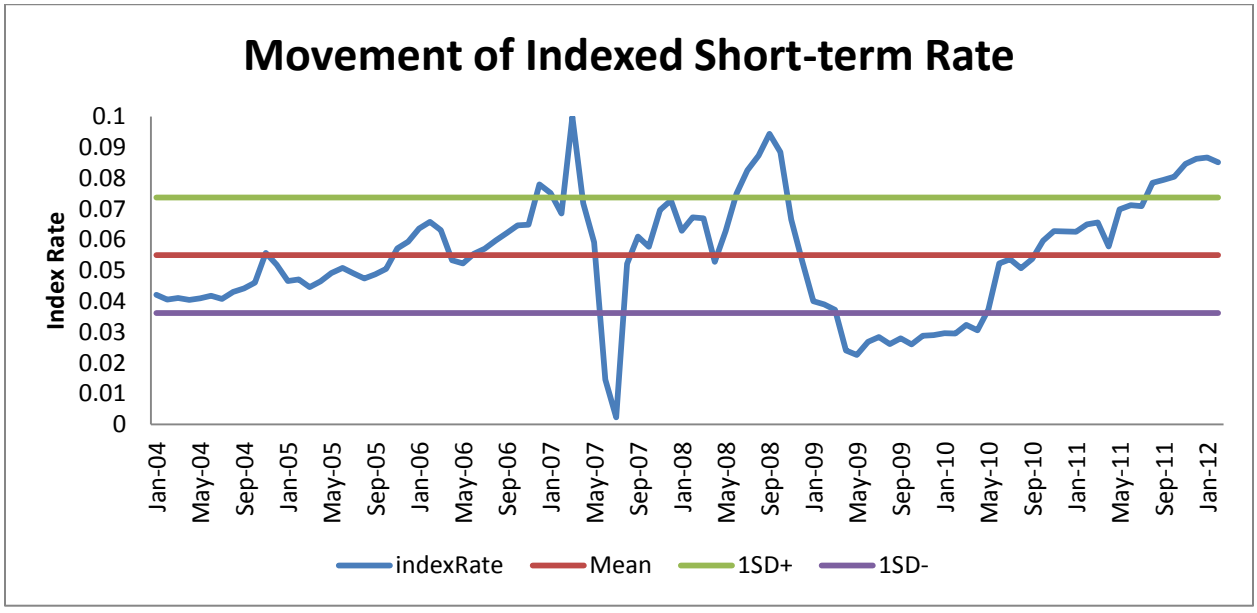
The index rate is scientific as it gives due weight to the volume and has the following behavior (Jan 2004 to Feb 2012) given in Table – 6.

Table – 6: Descriptive Statistics of Indexed Rate

Mean	0.0549
Standard Error	0.0019
Median	0.0545
Standard Deviation	0.0188
Sample Variance	0.0004
Minimum	0.0023
Maximum	0.0999
Count	98

The indexed rate has hovered within +/-1 standard deviation for most of the period though at times it moves away from the range but returns soon to the trajectory. This can be attributed to relative success of monetary policy given the difficult situation in hand since onset of the global financial crisis.

Chart – 6: Movement of Index Rate



The rational expectation is that the indexed rate will be higher at the time of liquidity shortage and lower at the time of liquidity excess. Hence we have tested to establish the relevance of the relationship

through a simple linear regression in which indexed rate is a dependent variable while liquidity measured in terms of LAF/NDTL ratio is the independent variable. The estimated equation is

$$I_t=0.0684-1.1536*(LAF/NDTL)_t \qquad Eq.2$$

As expected the relationship is negative – higher rate with lower liquidity and vice versa. The model was also tested for lagged effect but the estimation did not change significantly (improved R Square marginally):

$$I_t=0.0689-1.2431*(LAF/NDTL)_{t-1} \qquad Eq.3$$

The other information on the regression is given in the Annexure-II

Market Participation

The call market converted into a pure interbank market after phasing out non-bank participants from the market except PDs. So Banks and PDs form the call market. Table-7 gives the call market composition. PSU banks lend heavily in Call while Private and Foreign Banks borrow regularly in Call market. Co-operative Banks have also been very active in Call lending.

Table – 7: Call Market Composition

Market Share in NDS-CALL Borrowing (per cent)					
Month	Co-operative Banks	Foreign Banks	Public Banks	Private Banks	Primary Dealers
2007-08	0.02	48.99	14.79	27.38	8.82
2008-09	0.01	32.98	26.31	32.59	8.11
2009-10	0.06	23.45	22.42	41.56	12.51
2010-11	0.31	27.48	32.50	28.81	10.89
Jan-12	4.20	20.28	27.71	40.56	7.24
Market Share in NDS-CALL Lending (per cent)					
Month	Co-operative Banks	Foreign Banks	Public Banks	Private Banks	Primary Dealers
2007-08	5.40	6.84	70.77	16.60	0.39
2008-09	6.00	11.06	67.21	15.31	0.41
2009-10	12.20	11.21	68.81	7.68	0.10
2010-11	5.74	9.45	77.11	7.65	0.05
Jan-12	4.58	4.46	81.12	9.75	0.09

The Repo market is used for both borrowing of funds and borrowing of securities for SLR purposes. Mutual Funds and Insurance Companies contribute significantly in lending side of the Repo market while Banks are usual borrowers in this market. In the borrowing side, foreign banks, private banks and PDs

account for the major share in Repo market. PSU Banks have a relatively smaller share though recently their market share has increased.

Table – 8: Repo Market Composition

Category wise share in Lending in Repo (Money) (per cent)								
Year	Co-operative Banks	FIs & Ins	Foreign Banks	Mutual funds	Others	Primary Dealers	Private Sector Banks	Public Sector Banks
2007-08	0.05	2.10	22.29	68.38	0.05	1.48	5.00	0.65
2008-09	0.27	6.17	18.45	61.17	0.14	1.62	8.48	3.70
2009-10	0.16	3.34	4.35	89.06	0.07	0.14	2.70	0.18
2010-11	0.20	5.92	17.99	63.56	0.08	0.95	7.27	4.04
Jan-12	0.06	25.87	7.60	23.81	0.00	3.15	11.79	27.72
Category wise share in Borrowing in Repo (Money) (per cent)								
Year	Co-operative Banks	FIs & Ins	Foreign Banks	Mutual funds	Others	Primary Dealers	Private Sector Banks	Public Sector Banks
2007-08	0.07	0.00	46.58	0.00	0.00	25.44	24.89	3.02
2008-09	0.03	0.00	34.59	0.00	0.00	21.61	40.78	2.99
2009-10	0.02	0.00	22.30	0.00	0.00	14.31	62.37	1.01
2010-11	2.30	0.00	32.51	0.00	0.00	27.00	29.47	8.71
Jan-12	3.32	0.00	35.97	0.00	0.00	50.55	7.91	2.25

The CBLO market is a cheaper source of funds for borrower vis-à-vis call and Repo market. Lending side dominated by Mutual Funds and Insurance Companies while borrowing side is dominated by PSU Banks.

Table – 9: CBLO Market Composition

Category-wise Share in CBLO Borrowing (per cent)								
Month	Co-op Banks	FIs and Insurance Co.	Foreign Banks	Mutual funds	Others	Primary Dealers	Private Sector Banks	Public Sector Banks
2007-08	4.80	2.96	13.65	1.56	13.81	8.78	17.09	37.36
2008-09	3.72	2.24	15.78	1.15	10.08	4.88	19.83	42.32
2009-10	3.00	2.26	12.00	0.86	4.83	2.47	24.37	50.20
2010-11	4.13	3.70	16.59	1.38	8.55	4.11	21.29	40.25
Jan-12	4.68	9.63	20.05	2.29	25.55	5.91	9.10	22.80
Category-wise Share in CBLO Lending (per cent)								
Month	Co-op Banks	FIs and Insurance Co.	Foreign Banks	Mutual funds	Others	Primary Dealers	Private Sector Banks	Public Sector Banks
2007-08	1.16	9.18	1.58	65.57	0.10	0.12	6.09	16.20
2008-09	2.13	13.99	1.72	70.11	1.53	0.10	1.81	8.61
2009-10	0.75	6.62	1.06	88.52	0.61	0.04	0.91	1.48
2010-11	0.71	11.23	2.42	74.22	1.63	0.04	2.04	7.72

Jan-12	0.84	28.13	2.87	49.16	2.83	0.09	4.95	11.14

Conclusion

The short term market is an important source for banks and institutions to secure funds to align their short term asset liability mismatches. RBI uses the market to signal policy stance changes. The short-term rates generally synchronize with policy rates in a manner that helps smooth transmission of monetary policy. In India, the short term market heavily revolves around daily LAF of RBI as well as Call, Repo and CBLO markets. Predominantly, these markets are overnight in nature. Effort to develop a term money market has not been very successful.

The article looked at creating an indexed rate taking into account all three segments into consideration rather than picking up only one rate. The liquidity was estimated as ratio of LAF and NDTL. The relationship between indexed rate and liquidity was tested and found to be rational. The article also found rational relationship between the spread and ratio of LAF and NDTL along with money market transaction volume.

Reference:

Kuttner and Mosser (2002): The Monetary Transmission Mechanism: Some Answers and Further Questions, FRBNY Economic Policy Review / May 2002

Annexure – 1:

St=0.4213+0.8818*LAF/NDTLt+0.0379*Log(Volt)

Regression Statistics								
Multiple R	0.3622							
R Square	0.1312							
Adjusted R Square	0.1176							
Standard Error	0.0253							
Observations	131							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	2	0.0124	0.0062	9.6662	0.0001			
Residual	128	0.0822	0.0006					
Total	130	0.0946						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.4213	0.0996	4.2275	0.0000	0.2241	0.6184	0.2241	0.6184
LAF	0.8818	0.2879	3.0633	0.0027	0.3122	1.4515	0.3122	1.4515
MarketVol	-0.0379	0.0091	-4.1776	0.0001	-0.0558	-0.0199	-0.0558	-0.0199

Annexure - II

=0.0684-1.1536*LAF/NDTL								
Regression Statistics								
Multiple R	0.42517							
R Square	0.18077							
Adjusted R Square	0.166645							
Standard Error	0.020203							
Observations	60							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.005224	0.005224	12.79816	0.000708423			
Residual	58	0.023673	0.000408					
Total	59	0.028897						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.068387	0.004387	15.59017	2.1E-22	0.059606682	0.077168	0.059607	0.077168
LAF/NDTL	-1.15359	0.32246	-3.57745	0.000708	-1.799060199	-0.50811	-1.79906	-0.50811
=0.0689-1.2431*LAF/NDTL								
Regression Statistics								
Multiple R	0.457739							
R Square	0.209525							
Adjusted R Square	0.195657							
Standard Error	0.019886							
Observations	59							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.005975	0.005975	15.1085	0.000267233			
Residual	57	0.02254	0.000395					
Total	58	0.028515						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.068877	0.004319	15.94867	1.12E-22	0.060229224	0.077525	0.060229	0.077525
LAF/NDTL(-1)	-1.24313	0.31982	-3.88697	0.000267	-1.883557096	-0.6027	-1.88356	-0.6027