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– An Estimate for Scheduled
Commercial Banks in India

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Net Stable Funding Ratio – An Estimate for Scheduled Commercial Banks in India

P. Bhuyan & A.K. Srimany¹

Abstract

Liquidity Coverage Ratio (LCR) and Net Stable Funding Ratio (NSFR) are two new liquidity ratios introduced by Basel Committee on Banking Supervision (BCBS) to address the problem of liquidity in the aftermath of the crisis that began in 2007. While the LCR tells about resiliency of a bank in short term, NSFR reveals liquidity risk in medium and longer term horizon. Reserve Bank of India (RBI), a member of the BCBS indicated that final guidelines on Basel III liquidity framework would be issued once BCBS finalised the same. Based on the guidelines issued by BCBS, NSFR for scheduled commercial banks (SCBs) in India (excluding regional rural banks) is compiled in this paper using publicly available data for the last two financial years 2010-11 and 2011-12. NSFR, defined as percentage ratio of available stable fund to required stable fund, should be greater than 100. It is observed that there are quite a few SCBs that would fail to achieve NSFR of 100 per cent in India. The paper has discussed ways to achieve NSFR of 100 per cent along with its impact on profitability of banks. It is observed that lending rate at system level (all SCBs taken together) might have gone up by 40 to 50 basis points to meet NSFR of 100 per cent at end March 2012. Increased income from other sources (non-interest income) would however reduce the impact. Though the estimates are based on publicly available information and a number of related assumptions, the study suggests that quite a few banks in India may require to make significant improvement in their balance sheets to achieve NSFR of at least 100 per cent.

Key words: stable funding, net stable funding ratio, lending spread

JEL classification: E58, G21, G28.

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Net Stable Funding Ratio

– An Estimate for Scheduled Commercial Banks in India

To address the problem of liquidity faced by banks in the financial crisis that began in 2007, Basel Committee on Banking Supervision (BCBS) published in 2008 'Principles for sound liquidity risk management and supervision' [BCBS (2008)]. BCBS followed this by publication of two new liquidity ratios for banks viz. Liquidity Coverage Ratio (LCR) and Net Stable Funding Ratio (NSFR) in 2010 [BCBS (2010a)]. These guidelines of BCBS are referred to as Basel III. The focus of these guidelines is liquidity stress that a bank may face in short-term and mismatches between its assets and liabilities in longer-term. The objective of developing LCR was to prepare the banks to survive shocks of hostile nature lasting for a month. LCR requires the banks to have enough high quality liquid assets to manage stressed cash outflow for at least 30 days. While LCR promotes resiliency in short term, NSFR helps to assess the liquidity risk a bank is exposed to in a long term horizon. Both these ratios serve complementary objectives to manage liquidity risk by banks. A 100 per cent LCR translates into a 30 calendar day survival horizon for a bank experiencing a severe stress that involves the markets refusing to extend new facilities or roll some facilities with the bank, but the stress does not extend to a full scale run; the NSFR however is not a survival test, but instead assesses the degree to which a bank's illiquid assets are funded by capital, stable deposits, or long term funding [Littrell C. (2011)]. NSFR addresses the mismatches between the maturity of a bank's assets and that of its liabilities and is seen as the more relevant constraint for macroeconomic effect in the long run [BCBS (2010b)]. It aims to encourage more medium and long term funding of the assets and activities of banks, and thus reduce the extent of maturity mismatch at the bank which in theory would lower a bank's probability of liquidity runs and associated default [IMF(2011)]. LCR will be introduced on 1 January 2015 and the NSFR by 1 January 2018 [BCBS (2010a)]. Till such time it is observation period for both the ratios in order to address unintended consequences. Both LCR and NSFR are supervisory requirements. It has been indicated by Reserve Bank of India (RBI), a member of the BCBS, that the final guidelines on Basel III liquidity framework will be issued once the same is finalised by BCBS [RBI (2012a), RBI (2013)].

NSFR is defined as a bank's available stable funding (ASF) divided by its required stable funding (RSF) and should be greater than 100 per cent [BCBS(2010a)]. The purpose behind the minimum requirement is to ensure that banks maintain ample stable liabilities to fund long and medium term assets. In essence, the NSFR is aimed at encouraging banks to exploit stable sources of

funding [Subbarao (2012)]. It is intended to support the institution as a going concern for at least one year if it is subjected to firm-specific funding stress [IMF(2011)].

Maintenance of NSFR at 100 per cent and above would however have an impact on the profitability of a bank as it requires the bank to have sufficient stable liabilities continuously to support long and medium term assets. Banks that would not meet the 100-percent ratio requirement could take several types of actions and under normal circumstances, each of the potential adjustment actions by banks would reduce profits [Santos & Elliott (2012)].

Based on the guidelines issued in BCBS (2010a), an attempt has been made in this paper to compile NSFR for scheduled commercial banks (SCBs) excluding regional rural banks (RRBs) in India. The exercise is done based on balance sheet data published by these banks. It is observed that there are quite a few banks that would fail to achieve NSFR of 100 per cent. The paper, therefore, discusses ways to achieve NSFR of 100 per cent and suggest possible restructuring of balance sheet of banks to meet the prescribed level of 100 per cent. Cost of meeting such NSFR is also discussed. The method used for studying the impact on lending rate is motivated by the method used in King (2010) and Elliott (2010). The next section in the paper deliberates on NSFR. Section 3 presents the NSFR for SCBs in India at bank group level. The cost of meeting NSFR of at least 100 per cent and its impact on banks' lending rate is discussed in Section 4. The last section summarises the observations.

2. Net Stable Funding Ratio

NSFR is defined as [BCBS (2010a)]

$$\text{NSFR} = \frac{\text{Available amount of Stable Funding}}{\text{Required amount of Stable Funding}} \times 100\%$$

The percentage ratio should exceed 100. The numerator 'Available amount of Stable Funding' (ASF) measures the sources of available stable funding while the denominator viz. 'Required amount of Stable Funding' (RSF) is the likely amount that may be required for the assets held and funded by the institution. Thus the concept of ASF arises from sources of funds while RSF is rooted in uses of funds. BCBS (2010a) defines stable funding as the portion of those types and amounts of equity and liability financing expected to be reliable sources of funds over a one-year time horizon under conditions of extended stress. Basically stable funding measures the reliable sources of funds over a one year time horizon under stressed condition. Accordingly it includes those equities and liabilities that remain stable under strained

situations. The NSFR has a time horizon of one year and has been developed to provide a sustainable maturity structure of assets and liabilities [BCBS (2010a)].

2.1 Compilation Guidelines for Available Stable Funding (ASF)

Depending on the nature of stability, equity and liabilities are distributed across five categories to compile ASF [BCBS(2010a)]. These five categories are as mentioned below: (i) tier 1 and tier 2 capital after deductions; preferred stock and secured/unsecured borrowings with a maturity of greater than one year (ii) 'stable' small business / retail demand deposits and/or term deposits with residual maturities of less than one year residual maturity (iii) 'less stable' small business / retail demand deposits and/or term deposits with residual maturities of less than one year residual maturity (iv) unsecured wholesale funding, non-maturity deposits and/or term deposits with a residual maturity of less than one year, provided by non-financial corporates, sovereigns, central banks, multilateral development banks and PSEs and (v) all other liabilities and equity categories not included in the above categories.

Tier 1 and tier 2 capitals to be considered are as defined in BCBS (2010c) document that proposed Basel III. As may be seen from the five categories defined above, some deposits are classified as stable while some other deposits are classified as less stable. This classification is applicable to retail deposits, i.e. those deposits that are placed with a bank by a natural person². BCBS (2010a) defines stable deposits as those retail deposits (which receive a minimum run-off factor of at least 5 per cent in every jurisdiction) that are fully covered by an effective deposit insurance scheme or by a public guarantee that provides equivalent protection and where the depositors have other established relationships with the bank that make deposit withdrawal highly unlikely, or, the deposits are in transactional accounts (e.g. accounts where salaries are automatically deposited). Retail deposits with run-off rates 10 per cent and higher is defined as less stable deposits.

It may be construed from the definition of stable deposits defined above that these are such deposits which remain with the bank beyond the maturity or nominal repayment date in normal circumstances and thus may be treated as permanent in nature. Unstable deposits are less permanent or temporary in nature.

Each of the five categories mentioned above is assigned a weight called ASF factor in the range 0 per cent to 100 per cent as shown in Table 1 depending on the stability. Equities and liabilities with highest stability is assigned highest ASF factor of 100 per cent. ASF factor declines with decrease in stability of the equities and

² Deposits from legal entities, sole proprietorships or partnerships are captured in wholesale deposit categories.

liabilities. Amount in each category of the equities and liabilities is multiplied by the corresponding ASF factor and the total of these weighted figures is the total ASF.

2.2 Compilation Guidelines for Required Stable Funding (RSF)

RSF is the finance likely to be required by a bank for its balance sheet assets as well for off-balance sheet (OBS) exposures in jittery circumstances. It is basically such amount that a bank will require for its exposures that may become less liquid or illiquid in adverse market conditions. Amount of RSF is the amount of liquid fund a bank has to have in tight liquidity condition. As already mentioned earlier, NSFR is a supervisory requirement. BCBS (2010a) therefore suggests that *RSF is to be measured by supervisors using supervisory assumptions based on the liquidity risk profile of bank's assets, its OBS exposures and preparedness of the bank to face tight liquidity conditions in adverse situation*. For RSF purpose also, assets of a bank is distributed over seven categories while OBS activities are classified into two categories as mentioned below:

As per BCBS(2010a), RSF categories for balance sheets assets include cash, short-term unsecured actively-traded instruments (with remaining maturities less than one year), securities with exactly offsetting reverse repo, securities with remaining maturity less than one year, non-renewable loans to financials with remaining maturity less than one year, debt issued or guaranteed by sovereigns, central banks, Bank for International Settlements (BIS), International Monetary Fund (IMF), European Commission (EC), non-central government, multilateral development banks with a 0 per cent risk weight under Basel II standardised approach, unencumbered non-financial senior unsecured corporate bonds and covered bonds rated at least AA-, and debt that is issued by sovereigns, central banks, and public sector entities (PSEs) with a risk-weighting of 20 per cent and remaining maturity one year and above, unencumbered listed equity securities or non-financial senior unsecured corporate bonds (or covered bonds) rated from A+ to A- with residual maturities of one year and above, gold, loans to non-financial corporate clients, sovereigns, central banks, and PSEs with remaining maturity less than one year, unencumbered residential mortgages of any maturity and other unencumbered loans, excluding loans to financial institutions with a remaining maturity of one year or greater that would qualify for the 35 per cent or lower risk weight under Basel II standardised approach for credit risk, other loans to retail clients and small businesses having a remaining maturity less than one year and all other assets not included above. OBS exposures include undrawn amount of committed credit and liquidity facilities and other contingent funding obligations.

Each of the above categories of the assets mentioned above is assigned a RSF factor in the range of 0 to 100 per cent depending on its status of liquidity as shown in Table 1. All encumbered assets are assigned weight of 100 per cent irrespective of its maturity. In respect of unencumbered assets, RSF factor increases with decrease in liquidity or readily available position of the asset. For example, an RSF factor of 0 per cent is attached to cash which is always immediately available. The RSF amount in each of the categories described above is multiplied by an associated RSF factor assigned to the respective categories. This multiplied amount is that portion of the total amount of the asset that could not be liquidated during tight liquidity condition lasting one year and thus should be backed by stable funding from supervisor’s perspective. The total RSF is the sum of these weighted amounts.

2.3 NSFR is a supervisory ratio

The NSFR is designed to strengthen supervisory efforts to address maturity mismatches between assets and liabilities of institutions. By introducing the concepts of ASF and RSF it is making the banks to bring structural changes in their liquidity risk profiles. With a prescription of NSFR 100 per cent and above, it suggests banks to adopt strategies to move towards steady, longer-term funding of assets and thus to shield them from problems of short-term funding mismatches. A close look at Table 1 reveals that liabilities that are with residual maturity of one year or greater are assigned weight of 100 per cent on ASF side. On RSF side, all unencumbered assets with remaining maturity of less than one year are assigned 0 per cent weight while unencumbered assets with remaining maturity of one year or higher are assigned weight above 0 per cent. This means, NSFR articulates how much of long term assets are backed by long term stable funding and thus speaks about the gap between long term stable funding and long term assets.

Table 1: Available Stable Funding and Required Stable Funding

Available Stable Funding (Sources)		Required Stable Funding (Uses)	
Item	ASF Factor (in %)	Item	RSF Factor (in %)
On Balance Sheet Items			
(i) Tier 1 & 2 Capital Instruments; other preferred shares and capital instruments in excess of tier 2 allowable amount having an effective maturity of ≥ 1 year; other liabilities with an effective	100	(i) Cash, Short-term unsecured actively-traded instruments (< 1 year), securities with exactly offsetting reverse repo securities with remaining maturity < 1 year, non-renewable loans to financials with remaining maturity < 1 year.	0

maturity of ≥ 1 year.			
(ii) Stable deposits of retail and small business customers (non-maturity or residual maturity < 1 year).	90	(ii) Debt issued or guaranteed by sovereigns, central banks, BIS, IMF, EC, non-central government, multilateral development banks with a 0% risk weight under Basel II standardised approach.	5
(iii) Less stable deposits of retail and small business customers (non-maturity or residual maturity < 1 year).	80	(iii) Unencumbered non-financial senior unsecured corporate bonds and covered bonds rated at least AA-, and debt that is issued by sovereigns, central banks, and PSEs with a risk-weighting of 20%; maturity ≥ 1 year.	20
(iv) Wholesale funding provided by non-financial corporate customers, sovereign central banks, multilateral development banks and PSEs (non-maturity or residual maturity < 1 year).	50	(iv) Unencumbered listed equity securities or non-financial senior unsecured corporate bonds (or covered bonds) rated from A+ to A- with a maturity ≥ 1 year; gold Loans to non-financial corporate clients, sovereigns, central banks, and PSEs with a maturity < 1 year.	50
(v) All other liabilities and equity not included above.	0	(v) Unencumbered residential mortgages of any maturity & other unencumbered loans, excluding loans to financial institutions with a remaining maturity of 1 year or greater that would qualify for the 35% or lower risk weight under Basel II standardised approach for credit risk.	65
		(vi) Unencumbered loans to retail clients and small businesses having a maturity < 1 year	85
		(vii) All other assets	100
-	-	(i) Undrawn amount of committed credit and liquidity facilities.	5%
-	-	(ii) Other contingent funding obligations.	National Supervisory Discretion.
Source: BCBS(2010a)			

3. NSFR for Banks in India

We have made an attempt to compile NSFR for banks in India with publicly available information on assets & liabilities and income & expenditure of banks. A number of assumptions and adjustments have been made on these data maintaining the spirit of the concept used in BCBS (2010a). NSFR is calculated in IMF(2011) based on publicly available data for each of 60 globally oriented banks in 20 countries. While presenting the calculation, IMF(2011) stated that *to try to calculate a realistic NSFR, a number of assumptions had to be made on how to apply the Basel III weights, or factors, to the components making up the ASF and RSF. These assumptions reflected broad interpretations of the liquidity and stability characteristic of banks' balance sheets.* It is further stated in IMF(2012) that *the NSFR calculation is underpinned by a number of assumptions, including on the weights used for each of the components, which are set to broadly reflect the liquidity of banks' balance sheets.*

As mentioned earlier, NSFR will help banks' supervisor to address maturity mismatches issues as it reveals the gap between long term stable funding and long term assets of the banks. Before we proceed to compile NSFR for banks in India, it would be worthwhile to have a look into the maturity profile of assets and liabilities of these banks. The purpose is to show relevance of this ratio for banking system in India and hence this research work. We have analysed the maturity profile of banks in India at bank group level and also at system level (all SCBs taken together) at end March 2011 and 2012.

SCBs (excluding RRBs) in India can be classified into five mutually exclusive groups viz. 'State Bank of India & Associates' (SBIA), 'Nationalised Banks' (NB), 'Old Private Sector Banks' (OPRB), 'New Private Sector Banks' (NPRB) and 'Foreign Banks' (FB). While Government of India (GoI) is the major shareholder in SBIA and NB (and thus called public sector banks), OPRB and NPRB are in private sector while FB are branches of foreign banks operating in India. At end March 2012, there were 87 SCBs in India. NB group with 20 banks had a share of 51.4 per cent in total assets of all SCBs at end March 2012 while SBIA with 6 banks accounted for 21.3 per cent in the same period. NPRB group comprised of 7 banks and accounted for 15.7 per cent of total assets of all SCBs at end March 2012. OPRB (13 banks) and FB (41 banks) had a share of 4.5 per cent and 7.0 per cent at the end of the same period respectively.

To analyse the maturity profiles of assets and liabilities of these bank groups, we distributed the assets and liabilities in three time buckets as per residual maturity³

³ in RBI(2012b) data are published in following time buckets '1 - 14 days', '15 - 28 days', '29 days to 3 months', 'over 3 months to 6 months', 'over 6 months to one year', 'over one year to 3 years', 'over 3

viz. “less than one month’, ‘one month and above but less than one year’ and ‘one year and above’ (data are presented in Annex 1). It is observed that all the bank groups had negative gap (liabilities in excess of assets) in the time bucket ‘less than one month’ at end March 2011. At end March 2012 also, all the bank groups, other than OPRB and NPRB, had negative gap in this time bucket. In the time bucket ‘one month and above but less than one year’, except FB group, all the other bank groups had negative gap at end March 2011 as well as at end March 2012. The scenario is just opposite in the time bucket of longest maturity i.e. ‘one year and above’ vis -à-vis that in the time bucket ‘one month and above but less than one year’. All the banks groups other than FB had positive gap in the time buckets ‘one year and above’ i.e. assets with remaining maturity above one year exceeded liabilities of same remaining maturity period in SBIA, NB, OPRB and NPRB at end March 2011 and 2012. At system level also, we have seen almost similar pattern; positive gap in the time bucket ‘one year and above’ and negative gap in the other two time buckets in both of these two years. Such liquidity mismatch in longer term thus clearly urges to study NSFR of banks in India. It may be recalled from the discussion on NSFR presented earlier that NSFR addresses liquidity risk exposure of banks in long term horizon. Based on balance sheet and income & expenditure data of SCBs published by RBI in RBI (2012b) an attempt has been made here to compile NSFR for all the bank groups mentioned above. We have done the exercise for the last two financial years ending March 2011 and 2012. It is observed from the items under ASF and RSF in BCBS(2010a) that, some of these items are not available in public domain in respect of banks in India. Accordingly data on those items are compiled based on alternative sources, maintaining the essence of concepts as stated below.

The first item under ASF is ‘tier 1 & 2 capital instruments, other preferred shares and other liabilities with an effective maturity of one year and above’ (Table 1). Data on amount on this item are not available in public domain. We have therefore used ‘paid up capital, reserves and borrowing (with remaining maturity one year and above)’ for this item.

Regarding the second and third items under ASF viz. stable and less stable deposits respectively (Table 1), BCBS (2010a) clearly suggests that if it is not possible to identify stable deposits, entire amount of deposits may be treated as less stable. In respect of banks in India, data on stable and less stable deposits are not publicly available. Further, deposits in India are classified as current, savings and

years to 5 years’ and ‘over 5 years’. For our study, we have clubbed the time buckets ‘1 - 14 days’ and ‘15 - 28 days’ as ‘less than one month’, the time buckets ‘29 days to 3 months’, ‘over 3 months to 6 months’ and ‘over 6 months to one year’ as ‘one month and above but less than one year’. Rest of the time buckets are clubbed as ‘one year and above’.

terms, of which current deposits and demand liability portion of savings deposits define demand deposits while time liability portion of savings deposits and entire amount of term deposits constitute time deposits. Moreover, for compilation of ASF and RSF and hence NSFR, we need data on certain items as per remaining maturity of 'less than one year' and 'one year and above'. These items are term deposits, investments in 'government & other approved securities' and borrowing from 'other than RBI'. Data with residual maturity on these items are not available in public domain but data on total deposits, total borrowing, total loans and total investments with residual maturity in various time buckets are published [RBI (2012b)]. Based on these data, we have compiled the distribution of these liabilities and assets items into time buckets of residual maturities of 'less than one year' and 'one year and above'⁴. We have used that distribution pattern to compile term deposits, investments in 'government & other approved securities', borrowing from 'other than RBI' with remaining maturity 'less than one year' and 'one year and above'.

To compile ASF, we have treated savings deposits and term deposits (from other than banks with remaining maturity less than one year), excluding NRD portions in both cases, as 'less stable' deposits and term deposit with remaining maturity 'one year and above', excluding NRD portion, as 'stable' deposits. To exclude the NRD portion, we had to estimate the amount of NRDs in current, savings and term separately bank group wise as such type of data are not published. NRDs are in the form of foreign currency non-resident deposits [FCNR(B)], non-resident external (NRE) rupee account and non-resident ordinary (NRO) rupee deposits. Of these, NRE deposit accounts may be opened as current, savings or term deposit, NRO deposit accounts may be opened as current, savings, recurring or term deposit [RBI (2012c)] while FCNR(B) deposits are term deposits in nature with maturity of at least one year [RBI (2012d)]. Data on NRDs bank wise or bank group wise are not available. Aggregate data on NRDs for all SCBs, however, are published in RBI(2012e), but without further break up in terms of current, savings, term etc. Assuming that NRE as well as NRO deposits are in equal proportion in terms of current, savings and recurring/term deposits and with the fact that FCNR(B) deposits are term deposits in nature, it is estimated from the data published in RBI(2012e) that around 23 per cent of NRDs are in savings, 55 per cent in terms while the rest 22 per cent of NRDs are in current accounts. Data on NRDs for various bank groups have been compiled based on the share of NRDs to total deposits in respective groups as published in RBI (2011). Current deposits, non-resident deposits (NRD) and term deposits from banks with maturity less than one year are included under item no. (v) viz. 'all other liabilities' of ASF as these items are likely to be withdrawn immediately in stressed situation.

⁴please refer to footnote 3

The fourth item under ASF is 'wholesale funding provided by non-financial corporate customers, sovereign central banks, multilateral development banks and PSEs (non-maturity or residual maturity less than one year)'. Data on 'wholesale funding' i.e. 'borrowing' is published by banks in India under the two heads viz. 'borrowings in India' and 'borrowings outside India'. While the data on 'borrowings in India' is further classified under borrowing from 'Reserve Bank of India', 'other banks' and 'other institutions and agencies' data on 'borrowings outside India' is without further break up. For ASF purpose, we have treated 'borrowing from RBI' as 'stable'. Borrowings other than from RBI with remaining maturity less than one year are included under unstable category of 'other liabilities' as they may not be available under stressed liquidity condition.

The concept of RSF is built on maintenance of back up funds to support its balance sheet assets as well for OBS exposures in tight liquidity situation. A look into the items under RSF reveals that cash and unencumbered securities with effective maturity of less than one year are assigned RSF factor 0 per cent as these funds are more or less readily available (i.e. very liquid). Regarding the item 'cash', BCBS(2010a) suggests that the amount of 'cash' should be immediately available to meet obligations and not currently encumbered as collateral and not held for planned use (as contingent collateral, salary payments, or for other reasons). We have therefore included the encumbered cash (for meeting 'operating expenses' and 'provisions & contingencies' during the year) under RSF with 100 per cent RSF factor as the banks would require stable funds for these expenses (rest of the cash amount that are unencumbered will have RSF factor 0 per cent). Unencumbered government securities with residual maturities of one year or greater is assigned RSF factor 5 per cent. RSF items also include investments on corporate bond rated AA- or higher, investments in gold and equities listed on a recognised exchange, unencumbered residential mortgage/loans that qualify for 35 per cent or lower risk weight under Basel II standardised approach. As data on these items are not available publicly, all these are included under 'other assets' that are assigned RSF factor 100 per cent. Regarding OBS exposure, RSF is on two categories viz. 'undrawn amount of committed credit and liquidity facilities' with RSF factor of 5 per cent and 'other contingent funding obligations' (*RSF factor as per national supervisory discretion*). For SCBs in India, data on OBS exposures are available on four categories viz. 'liability on account of outstanding forward exchange contacts [includes all derivative products (including interest rate swaps) as admissible]', 'guarantees given on behalf of constituents', 'acceptances, endorsements and other obligations' and 'others' (includes inter alia items like claims against the bank not acknowledged as debt, liability for partly paid investments, bills re-discounted and letters of credit). As information on 'undrawn amount of committed credit and liquidity facilities' is not available separately, we have included all these items under OBS

exposures with RSF factor 2.5 per cent (differ from prescribed 5 per cent to compensate for additional coverage).

It may also be seen from Table 1 that weights assigned to items (deposits, advances and investments) with effective maturity 'less than one year' differ from those with effective maturity 'one year and above'. BCBS (2006) defines 'effective maturity' of an underlying as the longest possible remaining time before the counterparty is scheduled to fulfil its obligation, taking into account any applicable grace period. Data on liabilities/assets with effective maturity are not available in public domain for banks in India. However, published data on assets and liabilities with remain maturity are available for these banks [RBI(2012b)]. Such data are used in the compilation of ASF and RSF in this paper. As per the explanations stated above, we have compiled NSFR for all bank groups defined earlier viz. SBIA, NB, OPRB, NPRB and FBs and also for the system (all SCBs taken together) as on end March 2011 and 2012 as per the formula shown below:

$$NSFR = \left[\frac{Cap+Res+Borr_{O(\geq 1\ year)}+Bor_{RBI}+80\%SD+TD_{b(\geq 1\ yr)}+80\%TD_{o(< 1\ yr)}+TD_{o(\geq 1\ yr)}}{5\% G\ sec,\ app\ sec_{(\geq 1\ yr)}+OI+85\%L_{(< 1\ yr)}+L_{(\geq 1\ yr)}+Oth+2.5\% OBS} \right] \times 100 \quad (1.1)$$

'Cap' and 'Res' represent capital and reserves respectively, ' $Borr_{O(\geq 1\ year)}$ ' is borrowing (other than from RBI) with remaining maturity 'one year and above', ' Bor_{RBI} ' is borrowing from RBI, ' SD ' is savings deposits (excluding a portion of NRD as discussed above), ' $TD_{b(\geq 1\ yr)}$ ' is term deposits from banks with remaining maturity of one year and above, ' $TD_{o(< 1\ yr)}$ ' and ' $TD_{o(\geq 1\ yr)}$ ' are term deposits from others (excluding a portion of NRD as discussed above) with remaining maturity 'less than one year' and 'one year and above' respectively, ' $G\ sec\ \&\ app\ sec_{(\geq 1\ yr)}$ ' is investments in 'government and other approved securities' with residual maturity of 'one year and above', ' OI ' is other investments (investments other than in 'government and other approved securities'), ' $L_{(< 1\ yr)}$ ' and ' $L_{(\geq 1\ yr)}$ ' are loans with residual maturity of 'less than one year' and 'one year and above' respectively, ' Oth ' includes 'encumbered cash' and all other assets including 'balances with banks, money at call & short notice etc.'. Table 2 shows the values of NSFR for all the bank groups and also for the system (all SCBs taken together) (detail is in Annex 2).

It may be seen from Table 2 that at end March 2011, NSFRs of 'NB' and 'OPRB' were above 100 per cent while the ratios in respect of the other three groups were below that level. The ratio was below 100 per cent in all the bank groups except for 'NB' at end March 2012 (in case of OPRB the ratio was very close to 100 per cent). NSFR was below 100 per cent at system level also at end of both the periods under reference. A look into the balance sheet structures of NB and OPRB reveals that these two bank groups had higher NSFR than the other bank groups

due to their higher share of term deposits in their balance sheets and lower ratio of contingent liabilities to their total liabilities.

Table 2: Bank group wise NSFR

Bank group	NSFR (in %)	
	2011	2012
SBIA	90.8	92.8
NB	103.7	101.3
OPRB	102.2	99.2
NPRB	83.0	82.8
FB	42.8	46.4
All SCB	89.0	88.6

Data are as at end March; authors' calculation

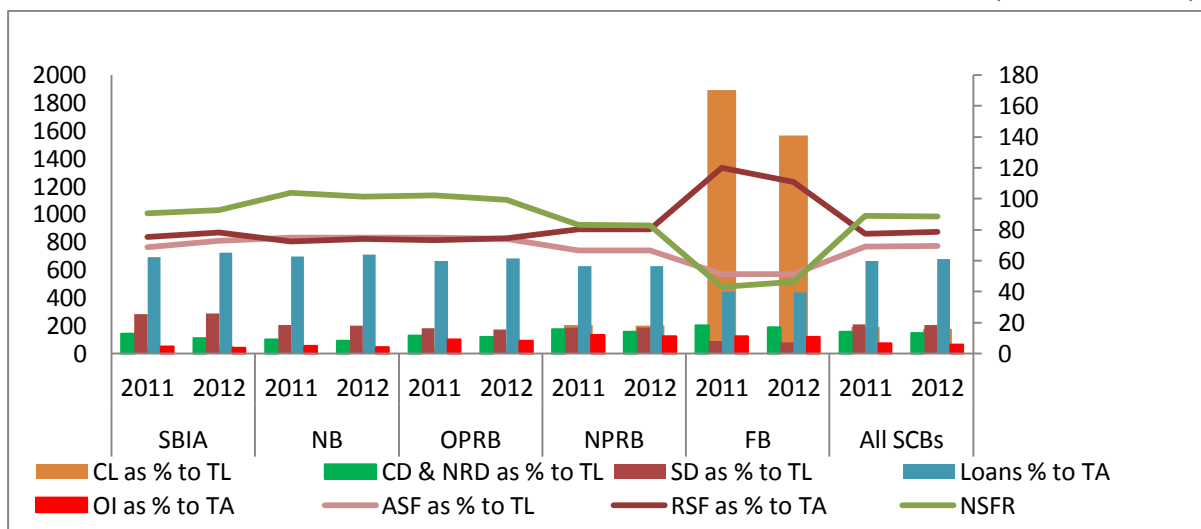
It is observed that ASF as a percentage of total liabilities in 'SBIA', 'NPRB' and 'FB' groups is lower while RSF as a percentage of total liabilities is higher as compared to those in 'NB' and 'OPRB'. In 'SBIA', 'NPRB' and 'FB', such ASF percentages in respect of term deposits were lower while RSF percentages in respect of loans were higher in 'SBIA' group (Table 3 & Chart 1). In 'FB', RSF was very high as per cent of total liabilities due to very high exposure of these banks to contingent liabilities especially on account of 'outstanding forward exchange contacts' (Table 3 & Chart 1). We have also compiled NSFR bank wise for all the SCBs for the period as on end March 2011 and 2012. Table 4 presents the distribution of all SCBs in various ranges of NSFR viz. 'below 90 per cent', '90 per cent or above but below 95 per cent', '100 per cent or above but below 105 per cent' and '105 per cent and above'.

Table 3: Values of ASF and RSF as per cent to Total Assets on important Items
(at end March)

Item at (i) to (viii) are as % to TA or TL	SBIA		NB		OPRB		NPRB		FB		All SCBs	
	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012
(i) CD & NRD	12.7	9.8	9	8.3	11.7	10.8	15.5	13.8	18.3	17.1	14.2	13.0
(ii) SD	25.4	25.6	18.3	17.8	16.1	15.4	16.5	16.5	8.1	7.2	18.8	18.4
(iii) TD	42.9	47.0	59.4	60.3	61.6	62.0	39.0	38.6	26.1	26.6	50.4	51.7
(iv) Loans	62.2	65.0	62.5	63.9	59.8	61.4	56.3	56.5	39.8	39.4	59.8	61.1
(v) OI	4.6	3.7	4.8	4.2	9.0	8.2	12.0	11.3	10.9	10.8	6.4	5.9
(vi) CL	54.0	53.2	35.9	40.2	45.0	58.6	202.0	197.1	1893.6	1567.8	191.4	176.3
(vii) ASF	68.5	72.7	75.0	74.9	74.8	74.0	66.6	66.4	51.3	51.4	68.9	69.6
(viii) RSF	75.5	78.4	72.3	73.9	73.2	74.6	80.3	80.2	119.9	111.0	77.5	78.5
(ix) NSFR	90.8	92.8	103.7	101.3	102.2	99.2	83.0	82.8	42.8	46.4	89.0	88.6

Authors' calculation; CD: current deposits, CL: contingent liabilities, NRD: non-resident deposits, OI: other investments, SD: savings deposits, TD: total deposits, TA: Total assets.

Chart 1: Values of ASF and RSF as per cent to Total Assets on important Items⁵
(at end March)



It is observed from Table 4 that NSFRs were 100 per cent and above in most of the banks in 'SBIA', 'NB' and 'OPRB' groups while the ratios were found to be below 100 per cent in all the banks in 'NPRB' group and most of the banks in 'FB' group. It is further also observed that majority of the banks with balance sheet size less than ₹1000 billion had NSFR below 100 per cent, while over two third of the banks with balance sheet size ₹ 1000 billion and above had NSFR 100 per cent and above (Table 5). This probably is a pointer to the fact that smaller banks remain more exposed to liquidity risk in medium and long term.

⁵ In the chart, values of CL as % to TL are plotted on the left axis while all other items are plotted on the right axis.

Table 4: Bank wise NSFR: Distribution of Banks

(at end March)

NSFR (in %)	SBIA		NB		OPRB		NPRB		FB		All SCB	
	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012
i.<90	0	0	0	0	1	1	4	5	26	30 (27)	31	36 (33)
ii. 90-95	1	1	0	0	0	1	3	2	1	2 (1)	5	6 (5)
iii. 95-100	0	1	0	2	0	0	0	0	1	7 (5)	1	10 (8)
<100	1	2	0	2	1	2	7	7	28	39 (33)	37	52 (46)
iv.100-105	2	2	4	6	2	3	0	0	2	0	10 (10)	11 (11)
v.>=105	3	2	16	12	11	8	0	0	4	2 (1)	34	24 (23)
>=100	5	4	20	18	13	11	0	0	6	2 (1)	44	35 (34)
Total	6	6	20	20	14	13*	7	7	34	41 (81)	81 (81)	87 (80)

*one OPRB viz. 'SBI Commercial & International bank' was merged with State Bank of India during 2011-12; figures in bracket exclude the seven new foreign banks that started operation in India during 2011-12; authors' calculation.

Table 5: NSFR and Size of banks

Asset Size (in ₹ billion)	NSFR (%)							
	<90	90-95	95-100	<100	100-105	>105	>=100	Total
<i>End March 2011</i>								
<=500	25	2	1	28	4	13	17	45
500-1000	1	2	0	3	2	9	11	14
<1000	26	4	1	31	6	22	28	59
>=1000	5	1	0	6	4	12	16	22
Total	31	5	1	37	10	34	44	81
<i>End March 2012</i>								
<=500	28	4	7	39	1	10	11	50
500-1000	2	1	2	5	4	4	8	13
<1000	30	5	9	44	5	14	19	63
>=1000	6	1	1	8	6	10	16	24
Total	36	6	10	52	11	24	35	87

Authors' calculation

4. Ways to enhance NSFR and its impact on profitability

To meet the target NSFR of 1.0 or greater, either stable funding sources must be increased or illiquid assets should be decreased [King(2010)]. Banks that have NSFR lower than 100 per cent may have to resort to a number of alternatives to achieve the ratio of 100 per cent and above. For this, banks either have to increase ASF or decrease RSF or do a mixture of both. To increase ASF, a bank has to increase capital and/or such other liabilities that have higher ASF factor. Such liabilities are long term deposits, long term borrowing etc. To decrease RSF, it has to take higher exposure to such assets that have lower RSF factors i.e. assets that are very liquid in nature e.g. cash, investments in government and other approved securities etc. and reduce their exposures to loans, higher-yielding securities such as corporate bonds, equities, other securities and OBS exposures. However, all such measures to enhance NSFR would have a cost on the bank. Increase in capital will have a bearing on return on equity assuming all other factors to remain same. Increase in other liabilities e.g. long term deposits, long term borrowing etc. will increase the interest expenses of the bank while increase in investments in 'government and other approved securities' and reducing other investments may reduce a bank's interest income. Alternatively, in the face of likelihood of having a liquidity need, sometimes the banks (lender) may refuse to lend [Diamond and Rajan (2001)], leading to some amount of contraction in loan portfolio; this may result in some gain in NSFR ratio. However, we have not considered the option of explicit contraction of loan portfolio in this study.

One of the important indicators to measure impact of increasing NSFR could be through net interest income (NII) i.e. interest income minus interest expense. NII will decline if a bank raises long term deposits and long term borrowing keeping all other items same. Expanding investment on government and other approved securities and reducing other investments (like investments in corporate bonds, shares etc.) a bank will decline its interest income and hence NII (as the rate of interest on 'government and other approved securities' is likely to be less than that on other investments due to association of higher risk with the latter). To maintain the NII at least at the same level, a bank has to increase its interest income and that will be possible only through an appropriate increase in its lending rate. The lending rate is measured here by the percentage ratio of interest income on loans to total loans.

4.1 Proposed measure to increase NSFR at system level to 100 per cent and required change in lending rate

We observed earlier that NSFR at system level (all SCBs taken together) were less than 100 per cent (Tables 2&3). Now, to increase the NSFR to 100 per

cent at system level, we propose to restructure the balance sheet at system level (i.e. aggregate balance sheet of all SCBs). On ASF side, we propose to increase term deposits and long term borrowing and reduce current deposits and short term borrowings. On RSF side, we reallocate the entire investments on bonds, shares etc. (defined as other investments) to the investments on 'government and other approved securities' with maturity up to one year. Thus our approach to implement the process of restructuring of assets and liabilities in balance sheet is as below:

Restructuring of liabilities to the extent possible → possible increase in ASF → required decrease in RSF to achieve $ASF \approx RSF$ → restructuring of assets.

The suggested steps to restructure balance sheet are broadly to shift deposits towards more stable category and resorting to long term borrowings on liability side and shifting of investment from others to investments in 'government and other approved securities' on assets side (detail shown in Annex 3). Increase of term deposits and long term borrowings will raise interest expenses. We assume this increased amount as ΔIE_{dep} and ΔIE_{bor} respectively⁶. On the other hand, shifting of other investments to 'government and other approved securities' will reduce interest income on investments. We assume this reduced amount as ' ΔII_{inv} '. Interest income on 'government and other approved securities' and 'other investments' are not available separately. We have estimated the same based on National Stock Exchange (NSE) g-sec index and treasury bill (TB) index. We have used NSE g-sec index for estimating the rate of return for investment in 'government and other approved securities' with maturity more than one year. NSE TB index is used for estimating the rate of return for investments in the same categories of securities but with maturity up to one year. NSE TB index is also used to estimate the rate of return on 'other investment' (as the amount on 'other investment' is shifted to investments in 'government and other approved securities' with maturity up to one year as part of restructuring discussed above)⁷. Based on these two rates of return, we have estimated the income on investments post restructuring the balance sheet and then estimated ' ΔII_{inv} '. Now, to retain its net interest income post restructure, the bank has to increase its interest income on loans by an amount equal to $\Delta IE_{dep} + \Delta IE_{bor} +$

⁶ ΔIE_{dep} and ΔIE_{bor} were estimated by applying current cost of deposits and current cost of borrowing to additional deposits and additional borrowing respectively; cost of deposits and of borrowing were compiled based on data published in RBI(2012b).

⁷ NSE index for G-sec is published in terms of Principal Return Index (PRI) and Total Return Index (TRI). TRI captures the change in total returns that consists of the price return from changes in the market value of the securities; income return from coupon payment and changes in level of accrued interest and reinvestment return from reinvestment of cash flows received. PRI captures the changes in the clean price of the security. We have used the growth in TRI over a one year horizon (end March 2012 over end March 2011) and adjusted that for the growth in PRI for the same period to estimate the rate of interest return on investment. In case of NSE index for TB, TRI is equivalent to PRI and we have used the growth in PRI for the same period as mentioned above to estimate the rate of return in TB.

ΔI_{Inv} , that estimates the required increase in average interest on loans. $\Delta I_{E_{dep}}$, $\Delta I_{E_{bor}}$ and ΔI_{Inv} as per cent of total assets are estimated as 0.20, 0.00⁸ and 0.18 respectively totalling to 0.38, which is the cost as per cent of total assets to meet NSFR of 100 per cent at system level. This tantamount to have a point estimate of increase in lending rate by 50 basis points at system level. Such Increase in lending rate however will go down if the banks increase their income from other sources like, increasing income from insurance and mutual fund related activities, etc., reducing free/subsidised services to customers except where it is absolutely necessary from country perspective. Thus a better estimate of required adjustment in lending rate for movement of the Indian SCBs towards 100 per cent NSFR will be around 40 to 50 basis points. However, banks may be able to contain the increase in lending spread by raising their non-interest income. Non-interest income accounted for around 11.5 per cent of total income of all SCBs at end March 2012. It is observed that an increase of five per cent in such income may reduce the increase in lending spread by eight to ten basis points to meet NSFR of at least 100 per cent.

IMF(2011) presented some estimates of NSFR region wise⁹ and showed that the NSFR for North American and Asian banks remained above 100 per cent in 2009, while the ratio remained below 100 per cent in European banks. King (2013) presented NSFR compiled based on income statement and balance sheet data from Bankscope for all banks in fifteen countries as of year end 2009. The countries were, Australia, Canada, Chile, France, Germany, Hong Kong, Italy, Japan, Korea¹⁰, Mexico, Netherlands, Spain, Switzerland, United Kingdom and the USA. Results presented by King (2013) showed that the NSFRs of representative banks in the United States, Japan, Hong Kong, Chile and Korea exceeded the target NSFR. In the remaining ten countries, the representative banks had NSFRs below the required threshold. Results presented in the paper further suggested that strategies to increase the NSFR would reduce bank NIMs in these ten countries by 79 basis points on average. Chun et. al. (2012) in their study finds that countries such as Brazil, China, India, and Mexico require the banks to increase in lending rate ranging from 13.2 basis points to 29.7 basis points. It should however be noted that in case of India they compiled the figure based on data pertaining to 28 banks (names of the banks were not disclosed) while in our study we have included all the 87 SCBs (excluding RRBs).

4.2 NSFR at system level excluding Foreign Banks

⁸ negligible amount.

⁹ IMF(2011) stated NSFR was calculated based on publicly available data for each of 60 globally oriented banks in 20 countries and three regions (Europe, North America, and Asia).

¹⁰ we understand the country referred as 'Korea' in King (2013) would be 'South Korea'; however, through out his paper, King used the word 'Korea' only.

As we have seen from Table 2 that, NSFR of 'FB' group is significantly lower than all the other groups. If we exclude this group of banks and compile the NSFR for Indian banks only at aggregate level, then the ratios are estimated at 95.9 and 93.5 per cents at end March 2011 and 2012 respectively. Following the restructuring proposals suggested in the previous section to meet NSFR of at least 100 per cent, ΔI_{dep} , ΔI_{bor} and ΔI_{inv} as per cent of total assets are estimated as 0.04, 0.00¹¹ and 0.18 respectively totalling to 0.22 which is the cost as per cent of total assets to meet NSFR of 100 per cent at system level. This leads to have an increase of around 35 to 40 basis points in lending rate for Indian SCBs as a group. This suggests that, Indian SCBs would have become more competitive on lending front on implementation of 100 per cent NSFR.

4.3 NSFR at system level after Basel III implementation

BCBS (2010c) introduced a framework to promote the conservation of capital and the build-up of adequate buffers above the minimum that can be drawn down in periods of stress (also referred as Basel III capital ratios). Therefore, in addition to the minimum capital requirement [as per cent of risk weighted assets (RWAs)], banks will be required to hold a capital conservation buffer (CCB) of 2.5% of RWAs in the form of common equity. RBI already issued guidelines in this regard [RBI(2012f)] and as per these guidelines, Basel III capital ratios would be fully implemented as on March 31, 2018 in India¹². Thus, with full implementation of capital ratios and CCB, the capital requirements for SCBs in India would be at least 11.5 per cent (minimum CRAR plus CCB).

At present, minimum CRAR to be maintained by an SCB is at least 9 per cent. It was however observed that at system level, the CRAR maintained was at least five per cent above the prescribed minimum (14.5, 14.19 and 14.25 per cents respectively at end March 2010, 2011 and 2012). If it is assumed that banks will continue to maintain excess CRAR at the level as at end March 2012 (i.e. 5.25 per cent above minimum prescribed), then after the implementation of Basel III capital ratios, system level capital as per cent to RWAs will be around 16.75 per cent at end March 2018. It is estimated that compound annual growth rate (CAGR) of RWAs during 2009 to 2012 was around 12 per cent. Assuming the same CAGR for RWAs till end March 2018 (the time of full implementation of this ratio), it is found that total capital (tier I & II) would grow at CAGR of 15 per cent to maintain CRAR of 16.75 per cent at end March 2018. Assuming NII to total assets at end March 2018 at the same level as that maintained at end March 2012 and further assuming CAGRs in RWAs

¹¹ negligible amount.

¹² As per RBI(2012f), these guidelines would become effective from January 1, 2013 in a phased manner and will be fully implemented as on March 31, 2018.

and total capital as stated above (12 and 15 per cents respectively), it is found that lending spread has to increase by around 40 basis points to achieve NSFR at least 100 per cent at end March 2018, the time of full implementation of this ratio. Increase in lending spread reduces to 30 basis points if we do the exercise excluding 'FB' group [CRAR of all SCBs excluding FB was 14 per cent at end March 2012 (5 per cent above the minimum prescribed) and CAGRs of RWAs and total capital of all SCBs excluding FB were found at 13 and 16 per cents respectively]. Table 7 summarises the increase in lending spread as discussed above. As may be seen from the table that Indian SCBs is likely to be more competitive on lending front on implementation of 100 per cent NSFR.

Table 7: Increase in lending spread to maintain NSFR at least 100 per cent

	Likely increase in lending spread (in BPs)	
	As at end March 2012	at end March 2018
All SCBs (incl. FB)	40 to 50	30 to 40
All SCBs (excl. FB)	30 to 40	20 to 30

There may also be a situation in future that credit intensity of growth picks up further due to greater focus on manufacturing, more financial inclusion, entry of young population now to the mainstream work force etc. This may result into higher growth in risk weighted assets. Assuming a growth of 15 per cent in such scenario in RWAs during 2009 to 2012 instead of 12 per cent as discussed above, it is found that total capital (tier I & II) at system level would grow at CAGR of 18 per cent to maintain CRAR of 16.75 per cent at end March 2018. Due to more infusion of capital, likely increase in lending spread (as shown in Table 7) would come down by around five to eight basis points under such scenario.

5. Conclusion

In the aftermath of the financial crisis that began in 2007, BCBS came out with a few measures to strengthen quality of capital and enhancing liquidity resilience. The purpose of these measures that are termed as Basel III was to bring stability to the financial system. Basel III brought the concepts of two new liquidity standards viz. Liquidity Coverage Ratio (LCR) and a Net Stable Funding Ratio (NSFR). While the purpose of LCR is to improve a bank's ability to withstand a month-long period of serious liquidity stress, the purpose of NSFR is to reduce the maturity mismatch between assets and liabilities at the bank over a medium and long term period. NSFR is the percentage ratio of a bank's available stable funding (ASF) to its required stable funding (RSF) and should be above 100 per cent. These ratios will be introduced after an observation period. As per BCBS (2010a), the NSFR will be introduced by 1 January 2018. For banks in India, final guidelines on Basel III

liquidity framework would be issued once the same is revised by BCBS [RBI (2012a)]. It is observed that many banks in India had positive gap in the time bucket with residual maturity 'one year and above' i.e. assets with remaining maturity 'one year and above' exceeded liabilities of same remaining maturity period at end March 2011 and 2012. This prompted us to compile and study NSFR of banks in India as the ratio helps to gauge the liquidity risk exposure of banks in medium to long term. Accordingly, this paper has made an attempt to compile NSFR for scheduled commercial banks (SCBs) (excluding regional rural banks) in India based on balance sheet data published by banks. A few assumptions are made to compile the ratio due to non-availability of certain information in public.

Values of the ratios and observations are presented in the paper only at group level viz. SBI & Associates (SBIA), Nationalised Banks (NB), Old Private Sector Banks (OPRB), New Private Sector Banks (NPRB) and Foreign Banks (FB). The ratio is also compiled for the system (all SCBs taken together). It is seen that NSFRs were below 100 per cent in respect of all the bank groups except 'NB' and 'OPRB' at end March 2011 and except 'NB' at end March 2012. NSFR was below 100 per cent at system level also at end March 2011 as well as at end March 2012. It is also seen that majority of the banks with balance sheet size less than ₹ 1000 billion had NSFR below 100 per cent, while over two third of the banks with balance sheet size ₹ 1000 billion and above had the ratio at 100 per cent and above.

Banks may have to make some restructuring in their balance sheets to increase ASF and reduce RSF to achieve NSFR of at least 100 per cent. This however would likely to put downward pressure on their profitability. To generate same amount of net interest income for maintaining same level of profitability post restructure, a bank would require to increase its lending rate. It is observed that, at system level, lending rate needs to go up by 40 to 50 basis points to meet 100 per cent NSFR. With likely increase in capital of banks with Basel III implementation, increase in lending spread however would be around 30 to 40 basis points at system level. Such increase in lending rate to meet NSFR would come down if banks increase their non-interest income. It is further observed that Indian SCBs would be more competitive on lending front on implementation of 100 per cent NSFR.

The estimates presented in the paper are based on publicly available information and a number of related assumptions. The study however suggests that quite a few banks in India may require to make significant improvement in their balance sheets to achieve NSFR of at least 100 per cent.

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Annex 1: Asset Liability Mismatches in Banks in India as at end March 2011 and 2012

(in per cent)

Residual Maturity-wise Assets & Liabilities	SBIA		NB		OPRB		NPRB		FB		All SCBs	
	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012
1. Assets as per residual maturity (A)												
1.1 Less than one month	9.9	8.1	10.2	9.8	9.0	9.4	10.3	12.3	34.7	34.3	11.7	11.4
1.2 one month and above but less than one year	16.1	17.1	28.7	28.9	30.9	33.8	27.6	25.8	39.5	38.9	26.5	26.8
1.3 One year and above	74.0	74.8	61.1	61.4	60.1	56.8	62.1	61.9	25.8	26.8	61.8	61.8
2. Liabilities as per residual maturity(L)												
2.1 Less than one month	11.0	10.4	12.2	11.2	10.0	9.2	11.4	12.0	37.4	44.4	13.5	13.7
2.2 One month and above but less than one year	30.7	31.5	41.6	45.2	37.5	42.5	35.5	38.2	31.2	28.1	37.5	39.8
2.3 One year and above	58.4	58.0	46.1	43.6	52.5	48.3	53.1	49.9	31.4	27.5	49.1	46.5
3. Gap (A-L)												
3.1 Less than one month	-1.04	-2.24	-2.31	-1.52	-0.87	0.31	-0.92	0.71	-4.54	-15.50	-1.92	-2.36
3.2 One month & above but less than one year	-14.48	-14.22	-13.81	-16.60	-6.38	-8.28	-7.32	-11.49	6.14	4.74	-11.33	-13.29
3.3 One year and above	15.92	17.55	13.17	17.11	8.09	9.32	10.36	14.05	-6.95	-4.83	11.77	14.67

*data at items 1.1 to 1.3 are as % to total assets as per residual maturity; at items 2.1 to 2.3 and 3.1 to 3.3 are as % to total liabilities as per residual maturity; authors' calculation based on data published in RBI(2012b);please also see footnote 3.

Annex 2: Bank Group wise NSFR as at end March 2011 and 2012

(as percentage to total assets)

		SBIA		NB		OPRB		NPRB		FB		All SCBs	
	Weight (in %)	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012
Number of reporting banks		6	6	20	20	14	13	7	7	34	41	81	87
1.ASF Items													
1.1 Capital	100	0.07	0.07	0.49	0.40	0.44	0.35	0.31	0.27	7.15	6.96	0.82	0.77
1.2 Reserves and Surplus	100	5.21	5.99	5.08	5.42	7.26	7.09	10.22	9.82	9.35	9.10	6.28	6.57
1.3 Savings deposits excl. 23% of NRD	80	19.81	19.94	14.25	13.87	12.13	11.61	12.61	12.65	5.82	5.12	14.09	13.75
1.4 Term deposits from banks with residual maturity one year and above	100	0.66	0.72	2.28	2.49	2.64	3.14	1.77	1.37	0.44	0.59	1.82	1.94
1.5 Term deposits from others (excl. NRDs of 55%) with residual maturity													
(i) Less than one year	80	9.22	11.26	20.79	21.91	17.51	18.87	9.53	10.84	8.95	8.76	14.87	16.14
(ii) one year and above	100	28.80	30.18	27.81	26.67	33.13	30.68	22.63	21.19	12.15	12.68	25.81	25.10
1.6 Borrowings from RBI	100	0.10	0.04	0.45	0.75	0.19	0.60	0.45	1.93	4.38	5.98	0.63	1.14
1.7 Total borrowing excluding borrowings from RBI with residual maturities one year and above	100	4.63	4.56	3.88	3.36	1.53	1.70	9.11	8.33	3.09	2.25	4.61	4.15
1.8 Other Liabilities (including current deposits, NRDs and term deposits to banks with remaining maturity less than one year)	0												
Total ASF		68.51	72.74	75.03	74.88	74.84	74.04	66.64	66.40	51.32	51.44	68.93	69.56
2.RSF Items													
2.1 Unencumbered cash and balances with RBI	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.2 Encumbered cash	100	3.14	3.23	2.38	2.34	2.73	2.54	3.15	3.03	4.31	3.87	2.81	2.75
2.3 Balances with banks and money at call and short notice	100	2.13	2.72	2.46	2.99	1.26	1.88	2.54	2.26	5.58	5.34	2.56	2.94

Annex 2 (contd.): Bank Group wise NSFR as at end March 2011 and 2012

(as percentage to total assets)

	Weight	SBIA		NB		OPRB		NPRB		FB		All SCBs	
		2011	2012	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012
2.4 Investments in government and other approved securities with residual maturities													
(i) Less than one year	0												
(ii) one year and above	5	0.87	0.84	0.82	0.84	0.75	0.73	0.56	0.56	0.23	0.28	0.73	0.73
2.5 Others investments	100	4.59	3.73	4.80	4.20	9.05	8.20	12.01	11.35	10.90	10.78	6.44	5.86
2.6 Loans with residual maturity													
(i) Less than one year	85	13.54	13.18	21.52	21.05	21.26	22.95	17.37	15.57	23.03	22.58	19.21	18.70
(ii) one year and above	100	46.22	49.56	37.25	39.32	34.74	34.42	35.83	38.20	12.71	12.82	37.24	39.24
2.7 All other Assets	100	3.63	3.79	2.21	2.21	2.30	2.43	3.74	4.28	15.78	16.09	3.69	3.86
2.8 Contingent liabilities													
(i) Liability on account of outstanding forward exchange contacts	2.5	0.67	0.66	0.56	0.65	0.85	1.23	4.41	4.28	44.39	37.02	4.15	3.82
(ii) Guarantees given on behalf of constituents	2.5	0.25	0.27	0.17	0.18	0.13	0.13	0.39	0.36	0.35	0.34	0.23	0.24
(iii) Acceptances, endorsements and other obligations	2.5	0.26	0.23	0.13	0.14	0.12	0.08	0.22	0.24	0.28	0.29	0.18	0.18
(iv) Others	2.5	0.16	0.18	0.04	0.04	0.02	0.02	0.04	0.04	2.31	1.54	0.22	0.17
Total RSF		75.46	78.39	72.34	73.94	73.23	74.63	80.25	80.18	119.88	110.95	77.48	78.50
3. NSFR (ASF/RSF in %)		90.78	92.79	103.72	101.27	102.20	99.22	83.04	82.81	42.81	46.36	88.96	88.61

Source: Authors' calculation based on data published in RBI(2012b); all the ASF and RSF values shown above are as % to total assets; amount of NRD for bank group wise is compiled based on share of NRDs to total deposits in respective group as published in RBI(2011);

Annex 3: Restructuring of Balance Sheet items to meet NSFR at least 100 per cent at end March 2012 at system level*

	(as percentage to total assets)						
	Weight (in %)	Assets/ Liabilities before Restructure	Change	Assets/ Liabilities after Restructure	ASF or RSF before Restructure	Change	ASF or RSF after Restructure
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. ASF items							
1.1 Capital	100	0.77	0.00	0.77	0.77	0.00	0.77
1.2 Reserves and Surplus	100	6.57	0.00	6.57	6.57	0.00	6.57
1.3 Savings deposits excluding 23% of NRDs	80	17.18	0.86	18.04	13.75	0.68	14.43
1.4 Term deposits from banks with remaining maturity one year and above	100	1.94	0.00	1.94	1.94	0.00	1.94
1.5 Term deposits from others (excluding NRDs) with residual maturity							
(i) less than one year	80	20.18	1.00	21.18	16.14	0.81	16.95
(ii) one year and above	100	25.10	1.26	26.36	25.10	1.26	26.36
1.6 Borrowings from RBI	100	1.14	0.00	1.14	1.14	0.00	1.14
1.7 Total Borrowings (excluding borrowing from RBI) with residual maturity one year and above	100	4.15	0.42	4.57	4.15	0.42	4.57
1.8 Other Liabilities (including current deposits, NRDs and term deposits to banks with residual maturity less than one year)	0	22.97	-3.54	19.43	0.00	0.00	0.00
Total ASF					69.56	3.17	72.73

Annex 3 (contd.): Restructuring of Balance Sheet items to meet NSFR at least 100 per cent at end March 2012 at system level*

	Weight (in %)	Assets/ Liabilities before Restructure	Change	Assets/ Liabilities after Restructure	ASF or RSF before Restructure	Change	ASF or RSF after Restructure
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
2. RSF items							
2.1 Unencumbered Cash and balances with RBI	0	1.75	2.75	4.50	0.00	0.00	0.00
2.2 Encumbered cash (for operating expenses, provisions and contingencies during the year)	100	2.75	0.00	2.75	2.75	0.00	2.75
2.3 Balances with banks and money at call and short notice	100	2.94	0.00	2.94	2.94	0.00	2.94
2.4 Investments in government and other approved securities with residual maturity							
(i) less than one year	0	6.42	5.86	12.28	0.00	0.00	0.00
(ii) one year and above	5	14.68	0.00	14.68	0.73	0.00	0.73
2.5 Others Investments	100	5.86	-5.86	0.00	5.86	-5.86	0.00
2.6 Loans with residual maturity							
(i) less than one year	85	22.00	0.00	22.00	18.70	0.00	18.70
(ii) one year and above	100	39.24	0.00	39.24	39.24	0.00	39.24
2.7 Other Assets	100	4.36	0.18	4.54	3.86	0.00	3.86
2.8 Contingent liabilities							
(i) Liability on account of outstanding forward exchange contacts	2.5	152.72	0.00	152.72	3.82	0.00	3.82
(ii) Guarantees given on behalf of constituents	2.5	9.40	0.00	9.40	0.24	0.00	0.24
(iii) Acceptances, endorsements and other obligations	2.5	7.22	0.00	7.22	0.18	0.00	0.18
(iv) Others	2.5	7.00	0.00	7.00	0.17	0.00	0.17
Total RSF			0.00		78.50	-5.86	72.64
3. NSFR (ASF/RSF in %)					88.61		100.12

*all Scheduled Commercial Banks (excluding RRBs) taken together; figures under columns (2) to (7) are as % to total assets; authors' calculation.