

Strategic Balance Sheet Management by CFOs

Market Risk and Liquidity Risk

B. Mahapatra
Reserve Bank of India

Structure

- Introduction
- Market risk management
- Conclusion
- Liquidity risk management
- Conclusion

Introduction–What does a CFO do?

- Traditional view
 - Financial gate keeper
 - Managing financial risks of a corporation (bank)
 - Financial planning, reporting, analysis, etc.
- Contemporary view
 - Strategic partner and adviser as per McKinsey survey
- Blend of the two

Introduction - Risks in banking

- Primordial risks – God-made – for good society – intermediation function
 - Credit risk
 - Liquidity risk – maturity transformation
- Man-made risks – for what? – deregulation - efficiency? – competition? – free market economy?
 - Market risk – end of 3-6-3 banking and fixed Fx rates

Typical Balance Sheet Structure

LIABILITIES		ASSETS	
Capital	1%	Cash & Balances with RBI	6%
Reserves & Surplus	6%	Balances with Banks and Money at Call and Short notice	3%
Deposits	79%	Investments	29%
Borrowings	9%	Loans and Advances	58%
Other Liabilities & Provisions	5%	Fixed Assets	1%
		Other Assets	3%
	100%		100%

(Based on March 31, 2011 figures from RBI website)

- 90% of liabilities and 95% of assets are exposed to market risk and liquidity risk
- Inflexibility or rigidity of the balance sheet
- Assets and liabilities – many items – different amounts – different maturities – with different interest rates - how to manage the risks?
- Asset-Liability Management (ALM) or what is called strategic balance sheet risk management entered the lexicon of banking

Market Risk

- Market risk is the risk of losses in the on-balance sheet and off-balance sheet positions due to movements in the market prices
- Market risk can come in the form of
 - Interest rate risk
 - Equity price risk
 - Foreign exchange risk
 - Commodity price risk, etc.

- In strategic balance sheet risk management or ALM, we are concerned with the banking book, and not so much with the trading book
- Banking book market risks are
 - Interest rate risk in the banking book – NII at risk or Earnings at Risk (EaR) than VaR, due to changes in interest rates
 - Foreign exchange risk, equity prices risk and commodity prices risk in both banking and trading books

- ALM guidelines of February 1999
 - Traditional gap analysis between RSA and RSL
 - Impact on NII or earnings – earnings perspective
- ALM guidelines of November 2010
 - Duration gap analysis between DA (MDA) and DL (MDL)
 - Duration gap and modified duration gap and duration or modified duration of equity (MDE)
 - Impact on market value of equity (MVE) – economic value perspective

Interest Rate Sensitivity

- Changes in interest rates impact a bank's
 - Earnings through changes in its Net Interest Income (NII) - earnings perspective, and
 - Market Value of Equity (MVE) or net-worth through changes in the economic value of its interest rate sensitive assets, liabilities and off-balance sheet positions – economic value perspective.
- RBI has been monitoring the impact of change in Interest Rate on banks' financial position through a set of returns.
- IRS Return, *applicable till Feb 2012*, captured domestic operations in Rupee only with last reporting Friday as reporting reference date.
- This return basically facilitated to monitor the impact of interest rate change on earnings of banks based on traditional gap analysis approach (earnings perspective).

Interest Rate Sensitivity

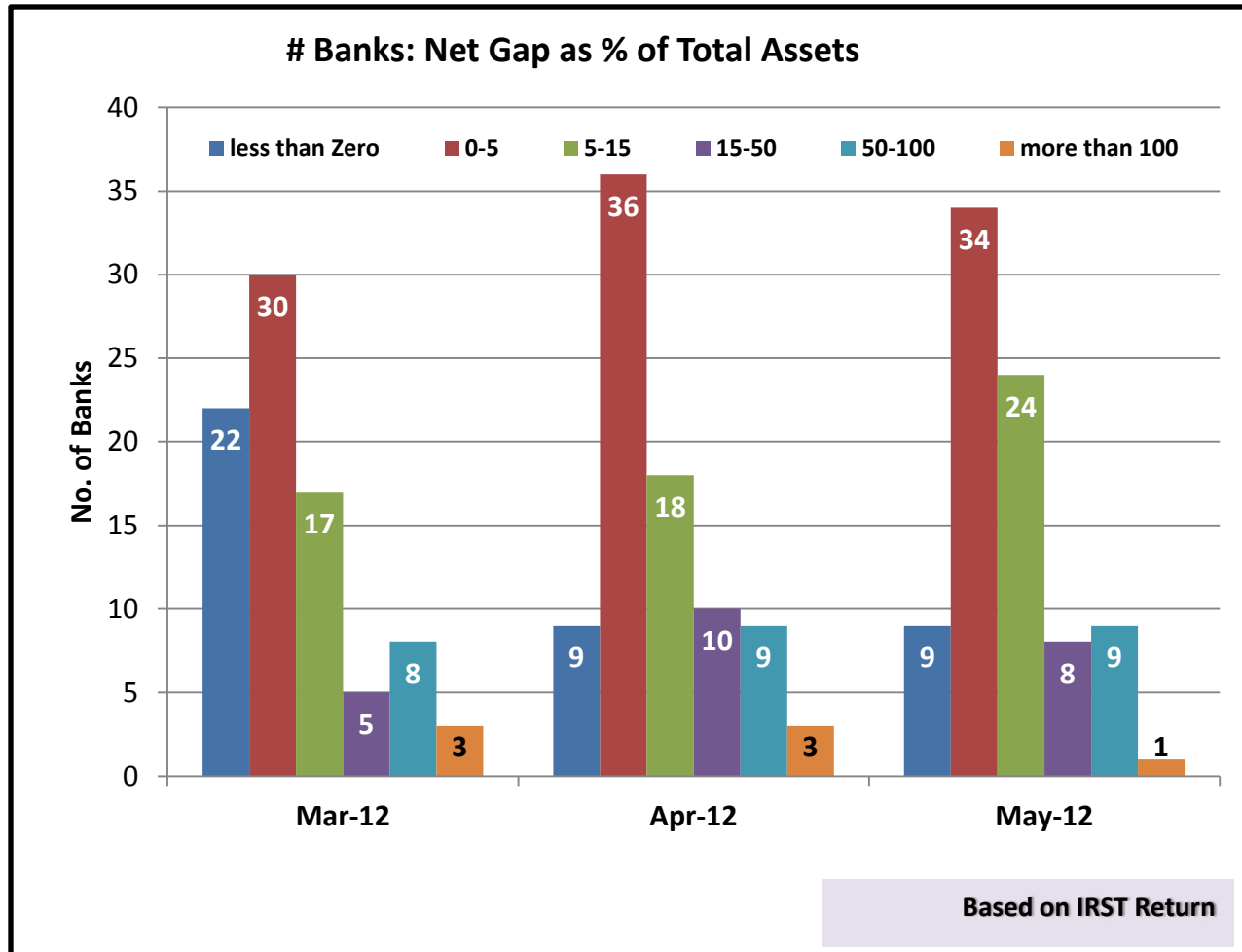
- To monitor the impact on MVE/Networth (economic value perspective), a new monthly return (quarterly till March 2012), being called as IRSD (Interest Rate Sensitivity Return under Duration Gap Analysis), was introduced recently and which is effective from June 2011
 - ❖ Covers global operations
 - ❖ Currency-wise reporting: All the currencies where the assets/liabilities in that particular currency is more than 5% of bank's global assets/liabilities
 - ❖ Reporting reference date – month/quarter end
 - ❖ Captures – time bucket wise RSA and RSL, instrument wise weighted average MD, MD gap, and change in MVE for 100, 200, 300 bps change in interest rate
- The IRS was also modified on the same lines of IRSD and was renamed as IRST

Interest Rate Sensitivity

Availability of Data

- IRST – From Mar-12 to May-12 (monthly)
- IRSD- From Jun-11 to Mar-12 (quarterly)
- Certain observations are furnished through the following slides based on the available data from IRST and IRSD

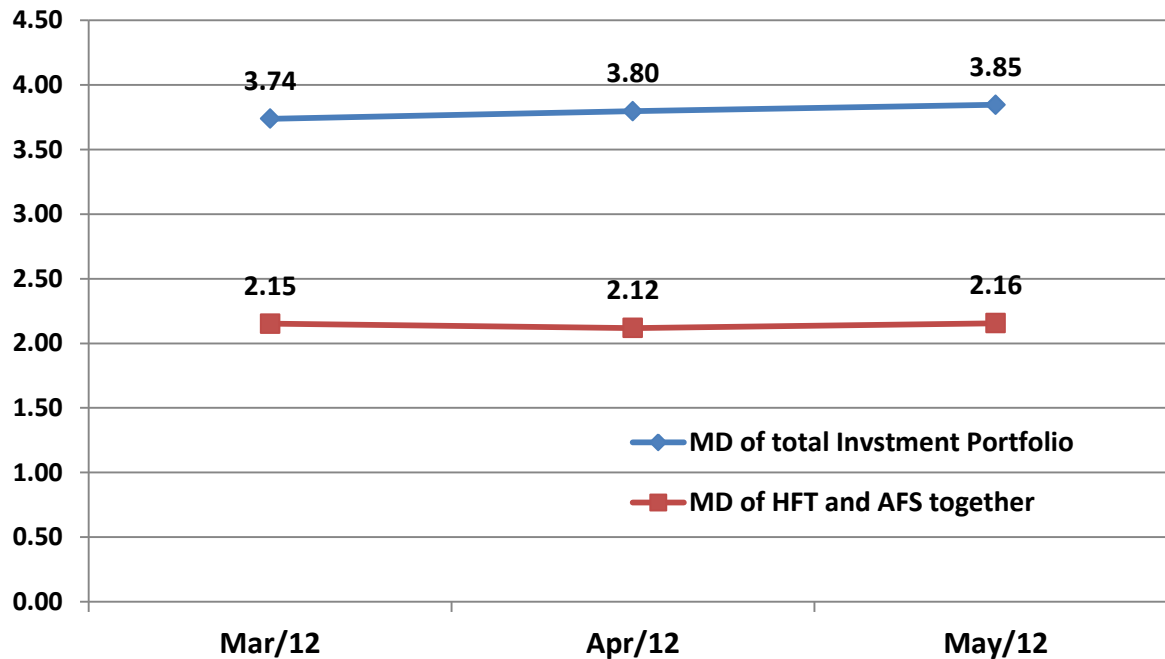
Interest Rate Sensitivity



- Banks do manage well the gap in their rate sensitive Assets and Liabilities
- The Net Gap (gap between RSA and RSL plus net gap in OBS exposures) have been below 50% for majority of banks, while it was more than 50% for about 10 banks in May-12.
- The said 10 banks constituted less than 0.01% of total Assets of the system.
- What is your strategy?
- Structural rigidities?

Interest Rate Sensitivity

Modified Duration (MD) at System Level

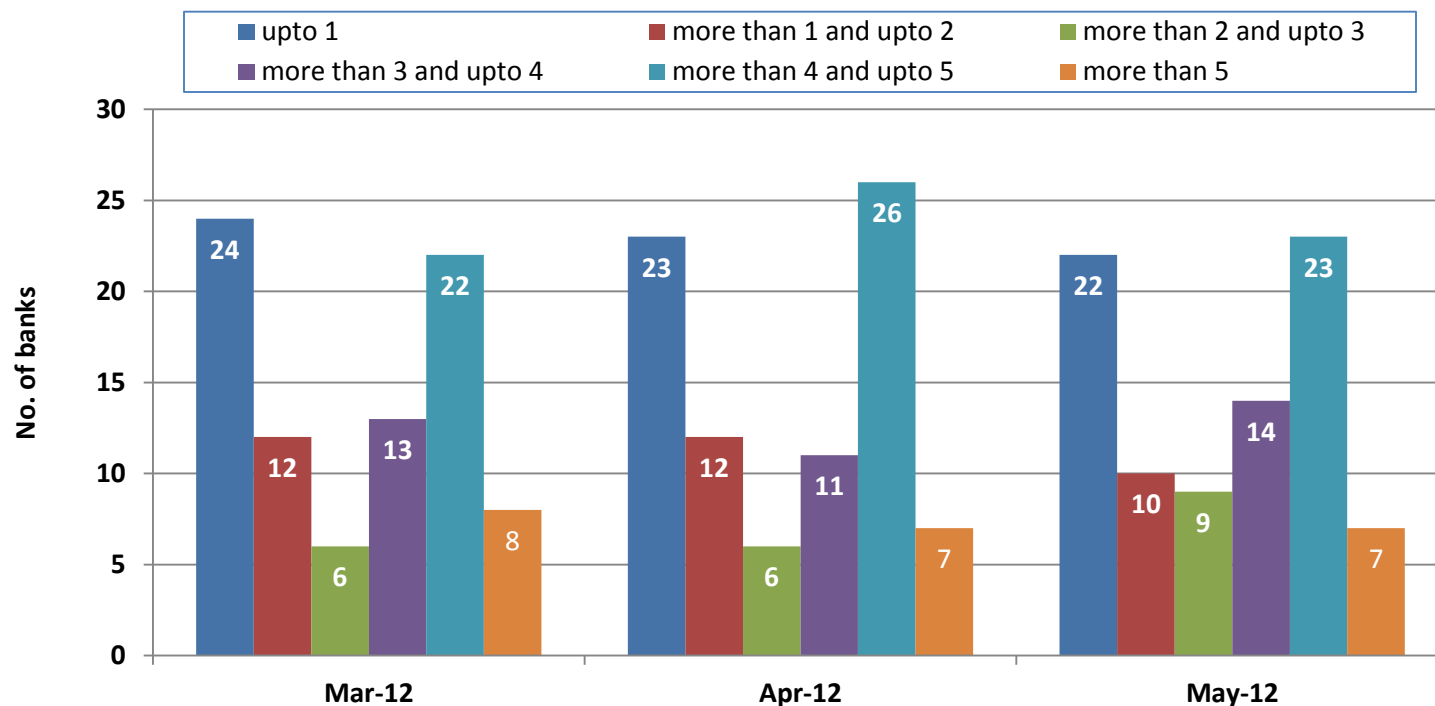


Based on IRST Return

- MD of an investment measures the approximate percentage change in its value for a 100 basis point change in the rate of interest.
- MD of HFT and AFS category taken together at system level has been in the range of 2.12 and 2.16 and MD of total investment portfolio in the range of 3.74 and 3.85
- The MD for the entire investment portfolio has been higher compared to HFT and AFS portfolio mainly due to longer maturity of the instruments in HTM category

Interest Rate Sensitivity

Banks: Modified Duration of Total Investment Portfolio

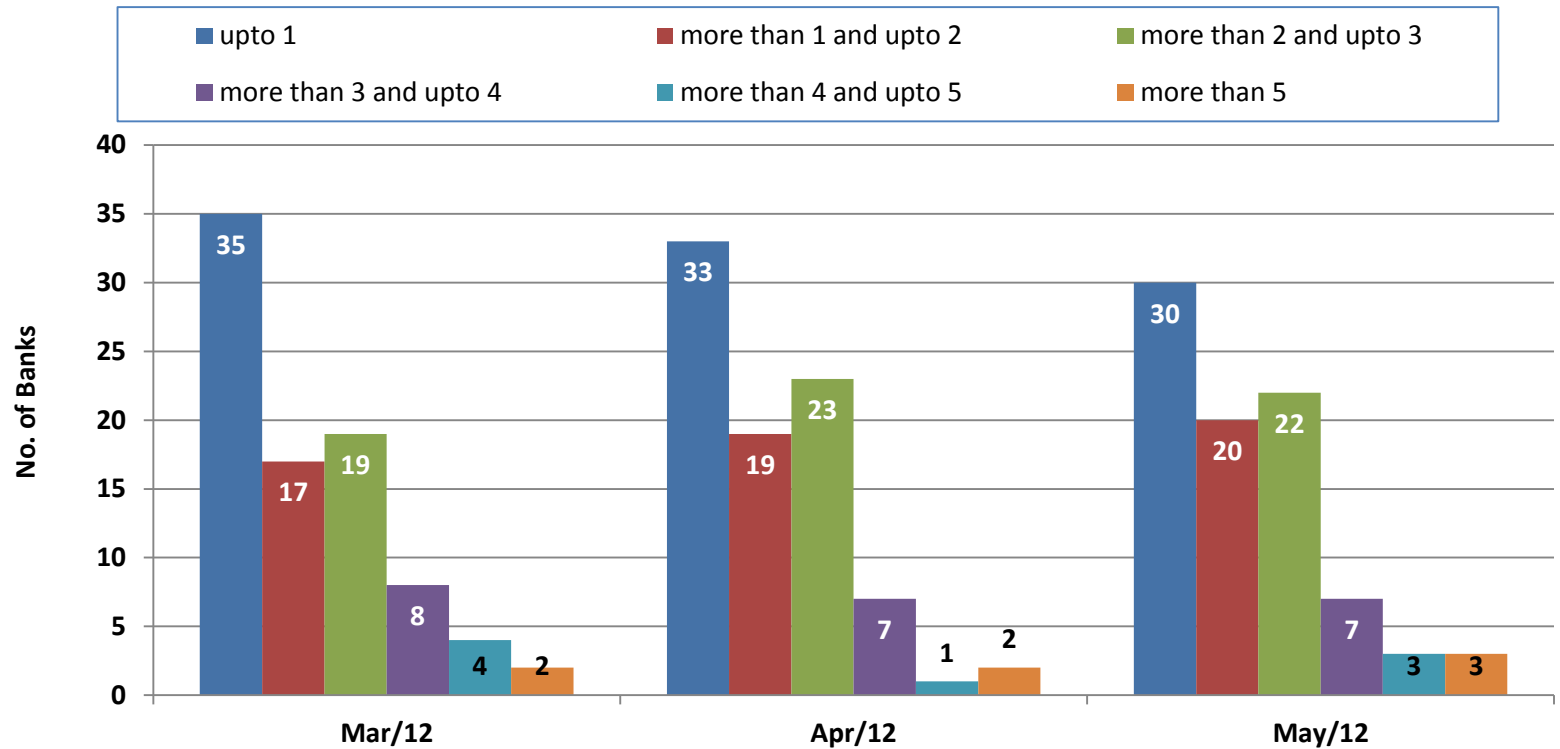


Based on IRST Return

- The total investment portfolio of more than 30 banks appears to be less sensitive with MD below 2
- The MD for 7 banks was more than 5 at end May 12

Interest Rate Sensitivity

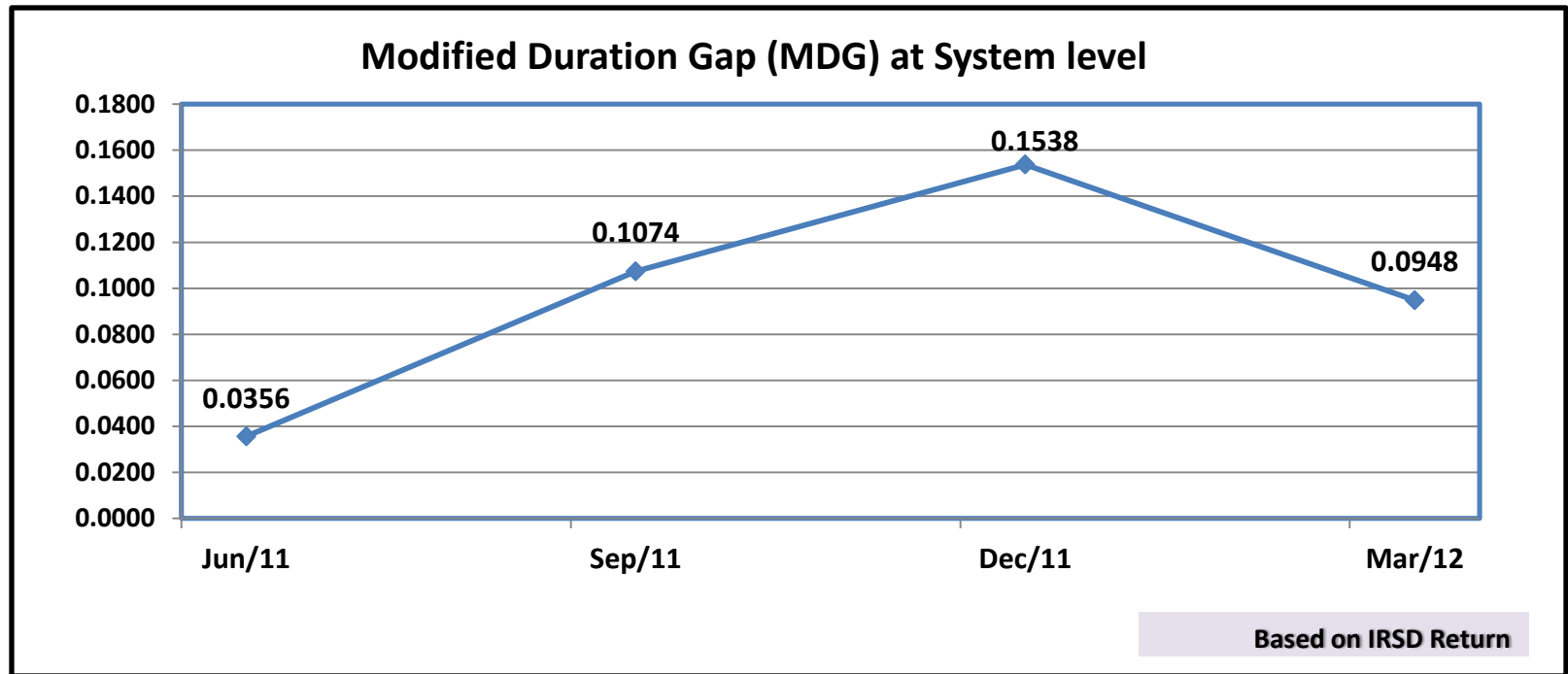
Banks: Modified Duration of AFS and HFT together



Based on IRST Return

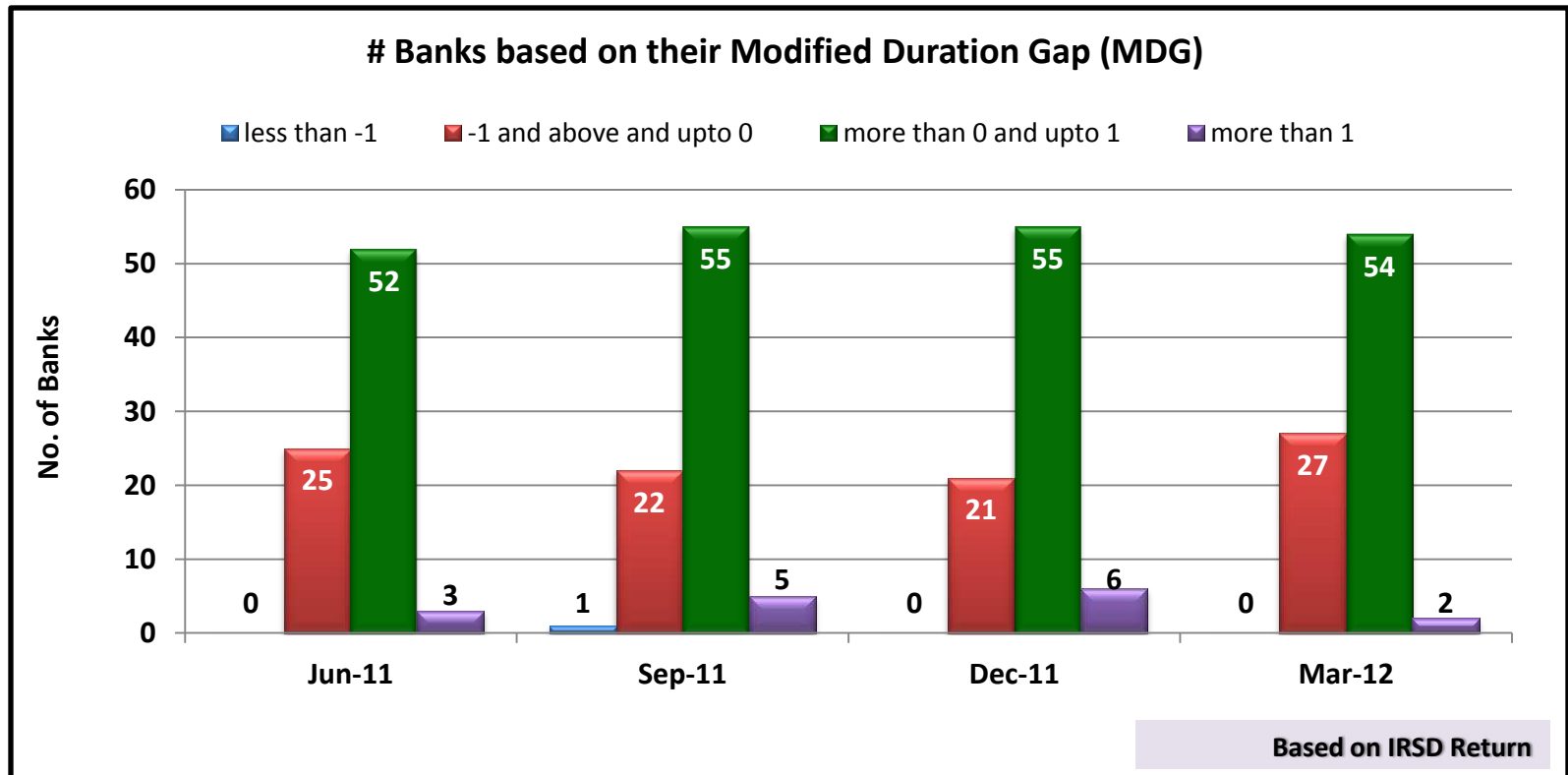
- MD of HFT and AFS portfolio taken together have been below 3 for majority of banks
- The MD has been above 4 for about 3-6 banks

Interest Rate Sensitivity



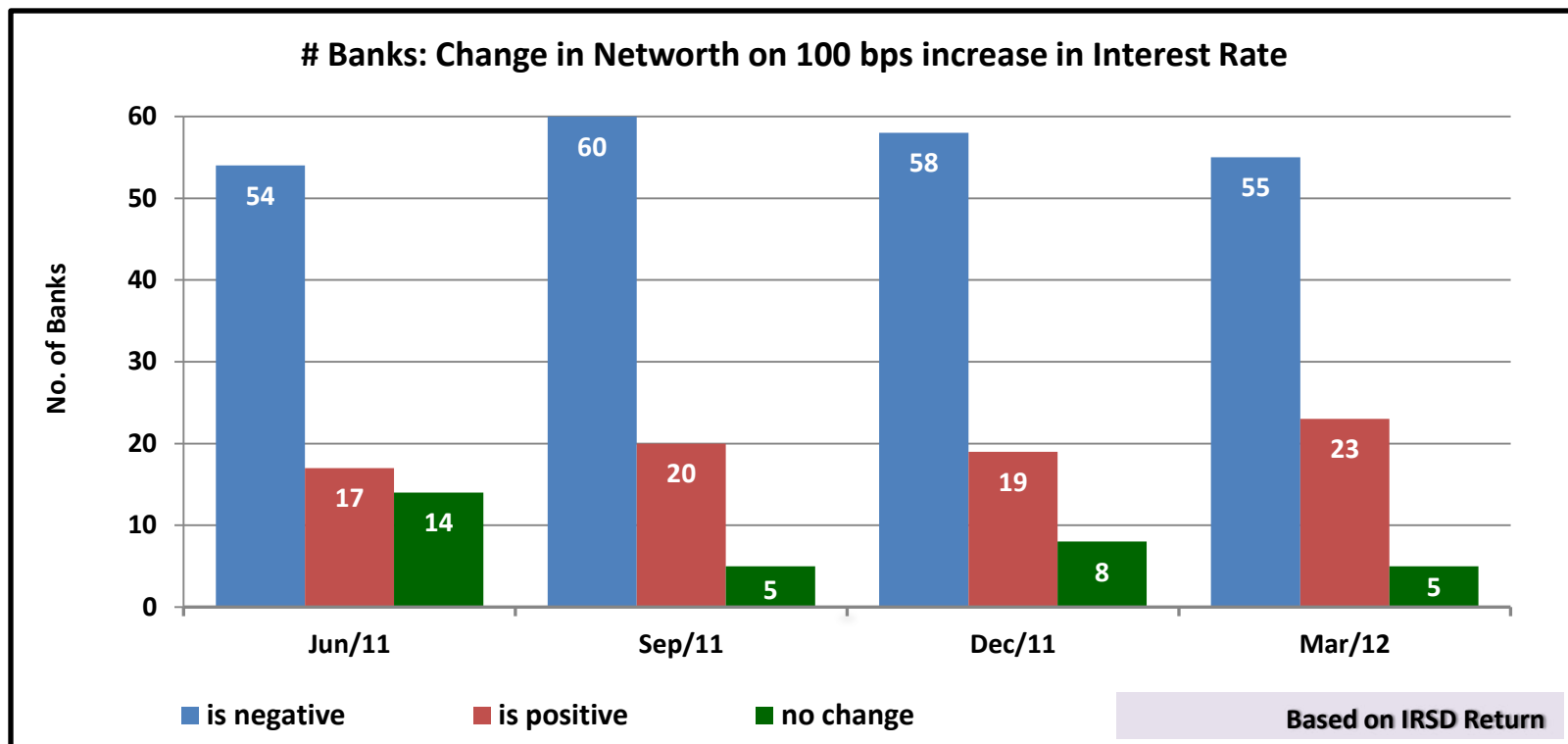
- The MDG reflects the degree of duration mismatch in the Risk Sensitive Assets and Risk Sensitive Liabilities in a bank's balance sheet.
- If this gap is large, the bank is more exposed to the interest rate shocks.
- Vulnerability of SCBs to interest rate shocks has come down in Mar-12 compared to Dec-11. In fact MDG at system level increased from 0.0356 in Jun-11 to 0.1538 in Dec-11 and then decreased to 0.0948 in Mar-12.

Interest Rate Sensitivity



- The modified duration gap (MDG) between -1 and 1 for most of the banks indicate that change in interest rate will not have much impact on networth of banks, at system level.

Interest Rate Sensitivity



- The networth of majority of banks (i.e., 54 to 60 banks) would be negatively impacted with an **increase** of 100 bps in interest rate. On the other hand, if the interest rate **decreases** by 100 bps, the networth of these banks would be positively impacted
- The change in interest rate would have no effect on networth of 5 to 14 banks
- What is your position?

Interest Rate Sensitivity

Share of Capital Charge for different Risks in Total RWAs

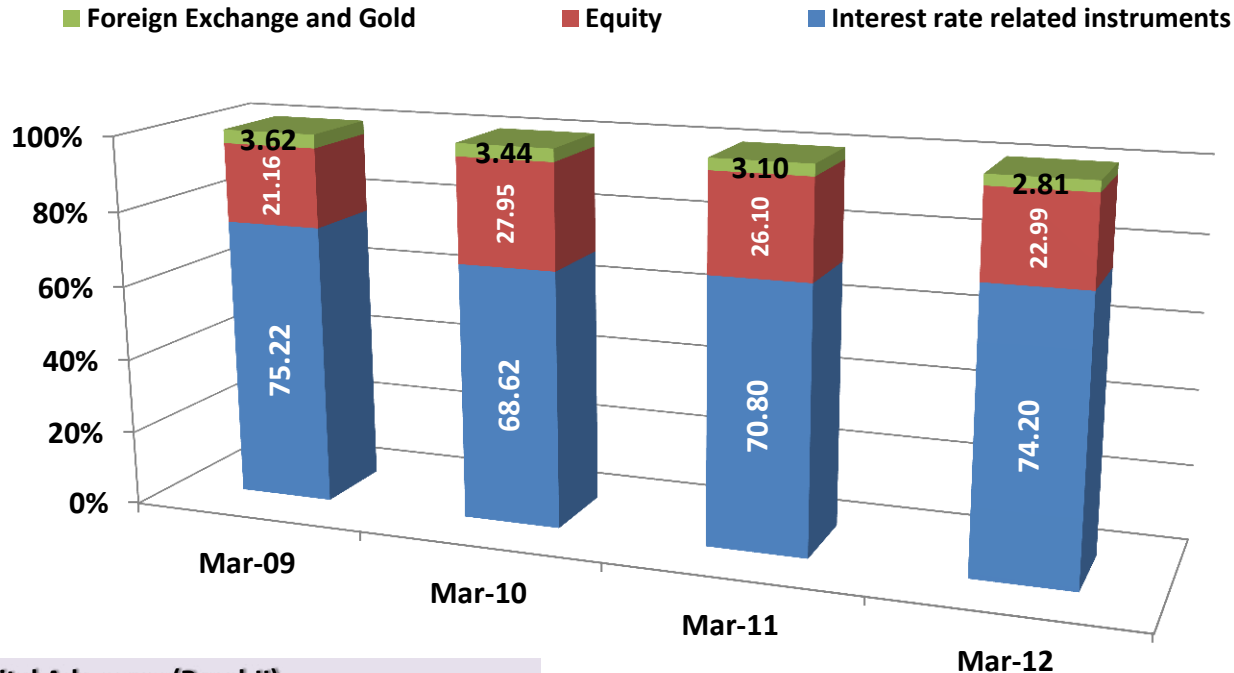


Return on Capital Adequacy (Basel-II)

- Share of Market Risk related Risk Weight Assets in the Total Risk Weight Assets of the Scheduled Commercial Banks has been lower at around 6-7%.

Interest Rate Sensitivity

Share of different class of Instruments in the Total Capital Charge for Market Risk



Return on Capital Adequacy (Basel-II)

- In terms of capital charge, at system level,
 - ❖ Interest rate related instruments constitute around 68% to 75% of the Market Risk.
 - ❖ Around 21% to 28% of the market risk comes from equity.
 - ❖ Foreign exchange and gold contributes less than 3-4% of Market Risk.

Conclusion

- The capital charge is for the trading book (AFS and HFT – both interest rate and equity positions) and for both banking and trading book for FX and gold
- Is there a case for Pillar 2 capital charge for interest rate risk in the banking books of banks?

Conclusion

- Portfolio immunization or matched book is an impossibility for banks – if matched book is possible, then banks do not need treasurers or CFOs – clerks can manage banks
- Traditional wisdom says banks should create strategic gaps to make money, based on their views on movement of interest rates
- What does the modern CFO think?

Liquidity Risk

- Liquidity risk is the inability to meet obligations as they become due, without adversely affecting a bank's financial condition

- RBI's liquidity risk guidelines
 - Statutory Liquidity Ratio – stock approach
 - ALM circular – February 1999 – Board governance
 - Revision in 2008 to make it more granular
 - Addressing the issues of inter-connectedness
 - Inter-bank liability limit
 - Call money borrowing / lending limit, etc.
 - Limits on bank's investments in financial services companies

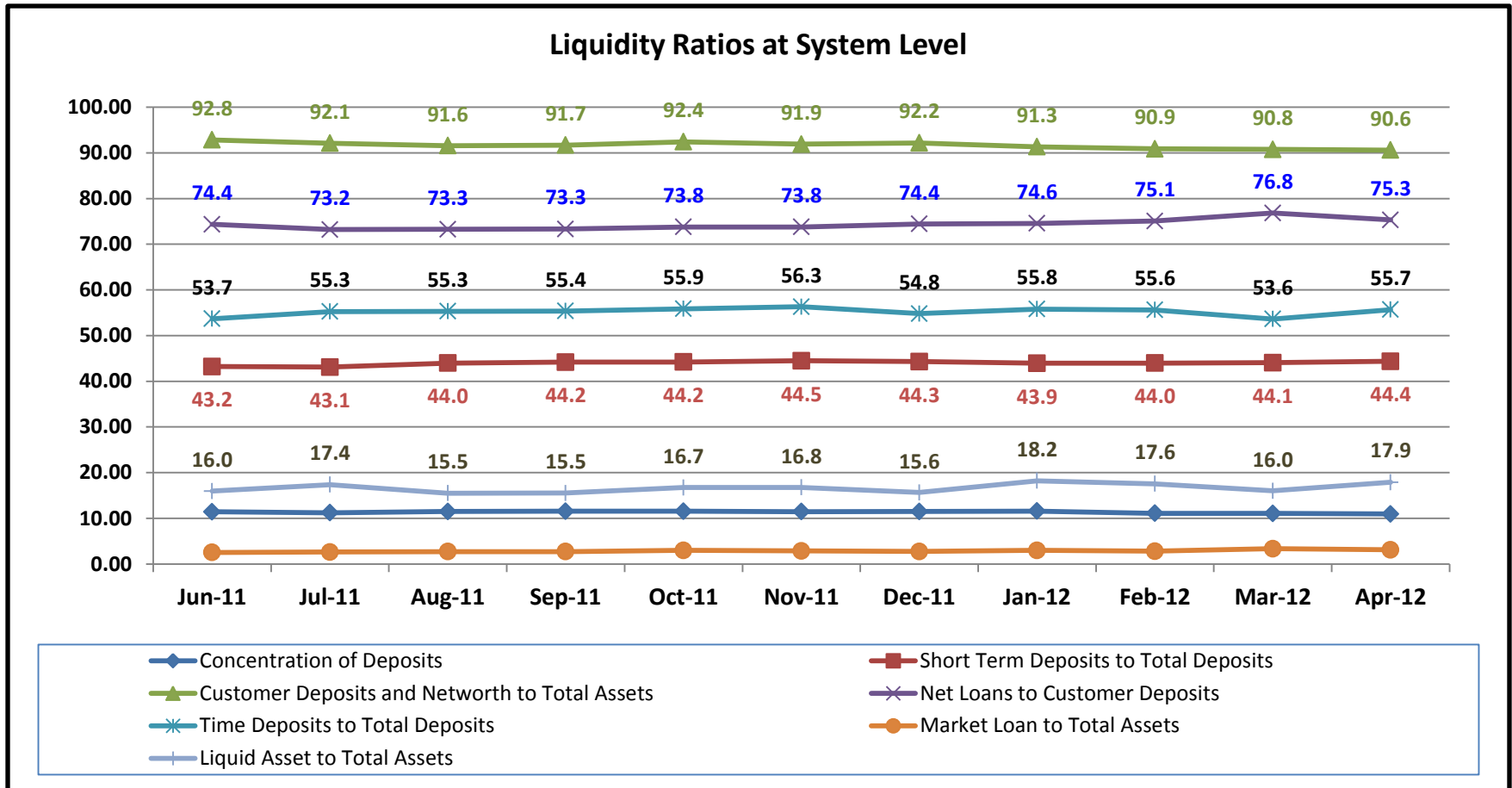
Liquidity: Indian Banks

- RBI monitors banks' liquidity strength along with their ALM based on a structural liquidity return submitted fortnightly, with a lag of about one week, by banks.
- While a set of liquidity ratios are used to monitor the liquidity position of banks, time bucket (up to one year) wise cumulative gap in total inflow and outflow is used to monitor ALM of banks.
- This monitoring is basically done for Indian banks. Foreign banks' funding sources have been different in comparison to Indian banks. Foreign banks rely more on borrowed funds, especially from abroad.

Liquidity: Indian Banks

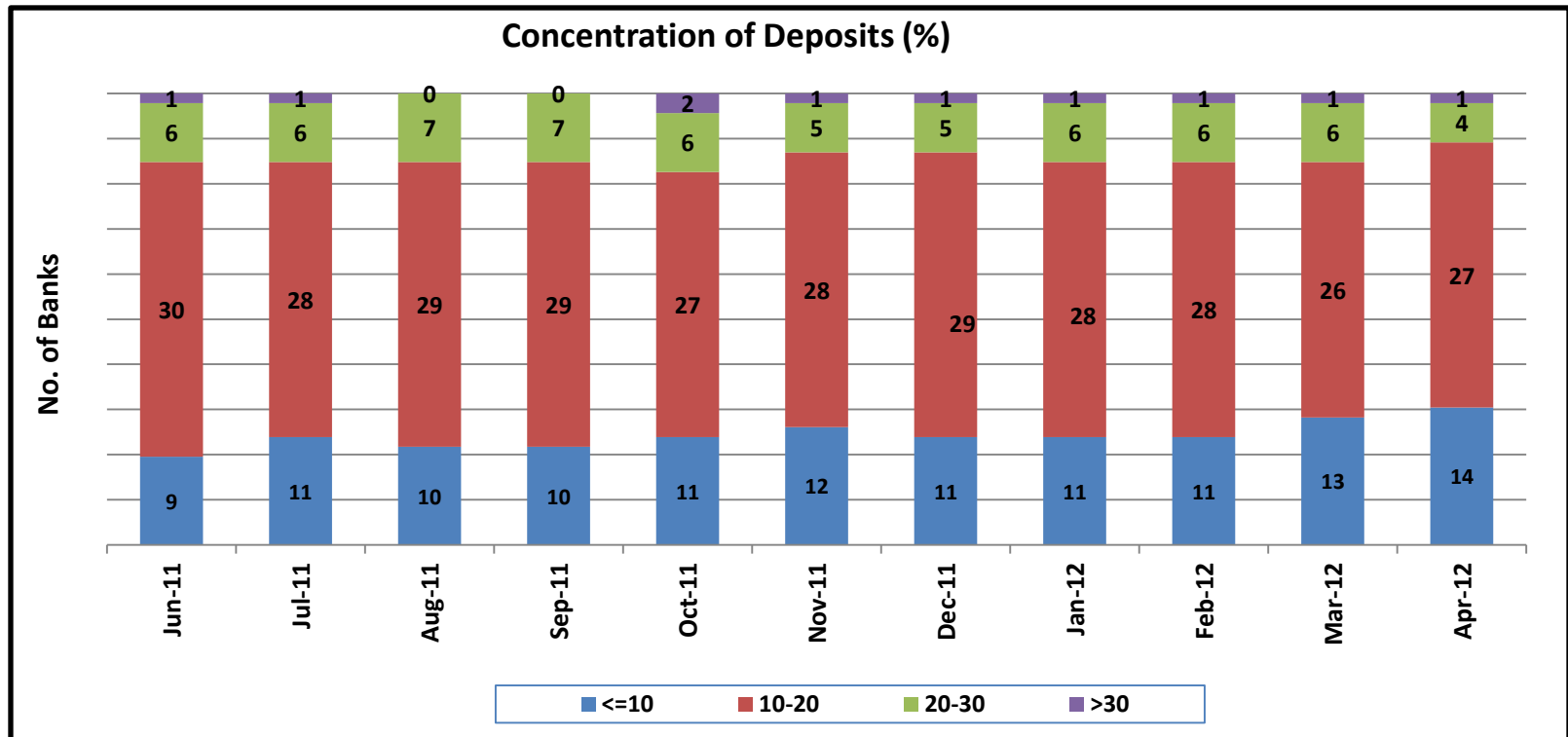
Some important Liquidity Ratios	
Ratios	Formulae
Concentration of Deposits	Deposits of top 20 depositors / Total deposits.
Short Term Deposits to Total Deposits	Total Deposits of Maturity up to 1year / Total Deposits
Customer Deposits & Net Worth to Total Assets	(Customer Deposits + Net worth) / (Total Assets - Cash Funds)
Net Loans to Customer Deposits	Net Advances / Customer Deposits
Time Deposits to Total Deposits	Time Deposits / Total Deposits
Market Loan to Total Assets	(Borrowings from Inter Bank/Call + Borrowings from RBI + Borrowings from Banks/FIs) / Total Assets
Liquid Assets to Total Assets	(Cash Funds + Current Account (1 to 28 days) + Money at Call Short Notice (1 to 28 days) + AFS+ HFT) / Total Assets

Liquidity: Indian Banks



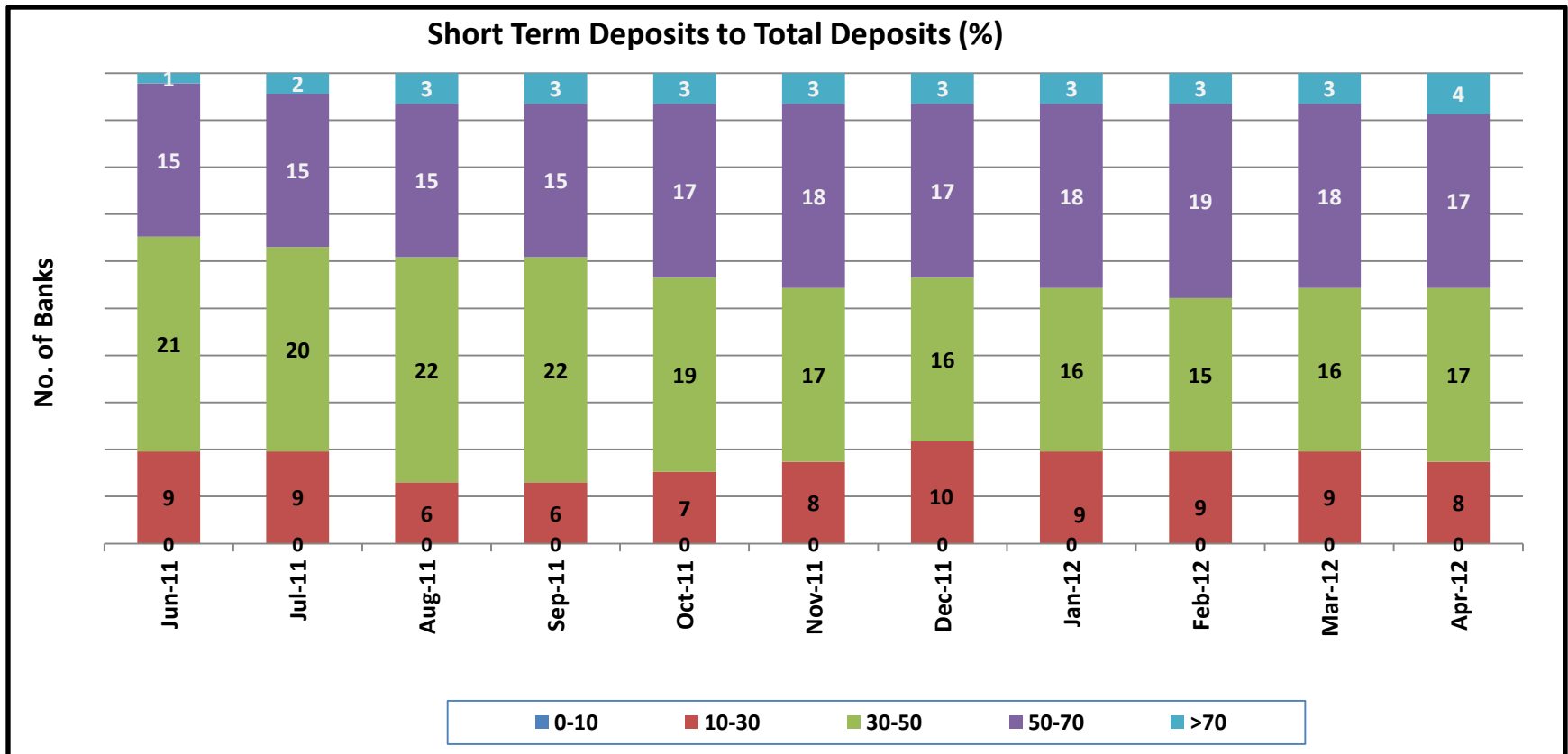
- The liquidity ratios at system level are NOT of much significance due to netting effect. However, it gives an over all idea.

Liquidity: Indian Banks



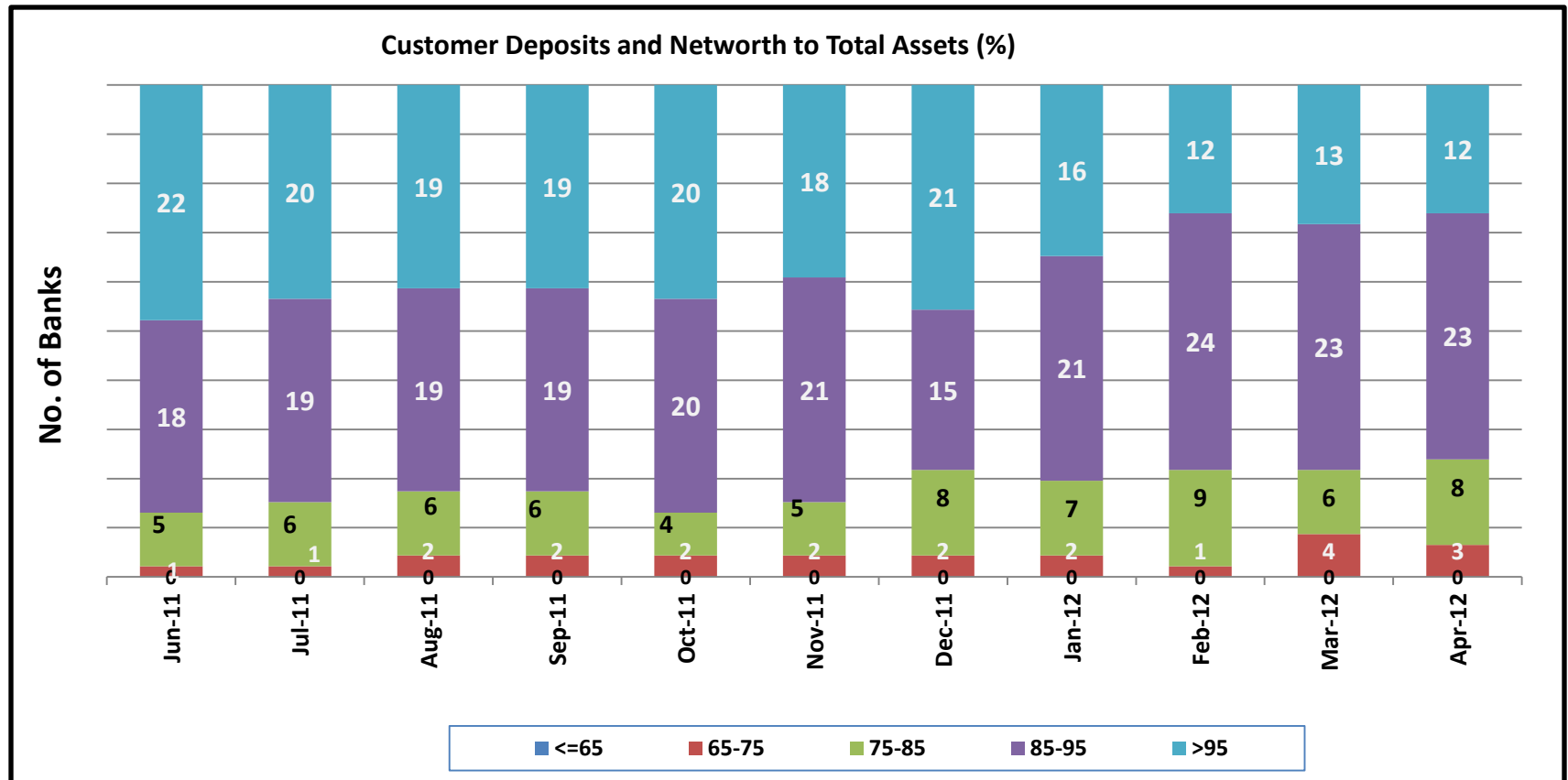
- Concentration of deposits is measured by the ratio Deposits of top 20 Depositors to Total Deposits
- Banks have reduced their dependence on large deposits. The concentration of deposits has been weakening over the period. No. of banks with ratio above 20% declined from 7 in June 2011 to 5 in April 2012. In fact during 2009-10 and 2010-11 the no. of banks with this ratio more than 20% were in the range of 12-15.

Liquidity: Indian Banks



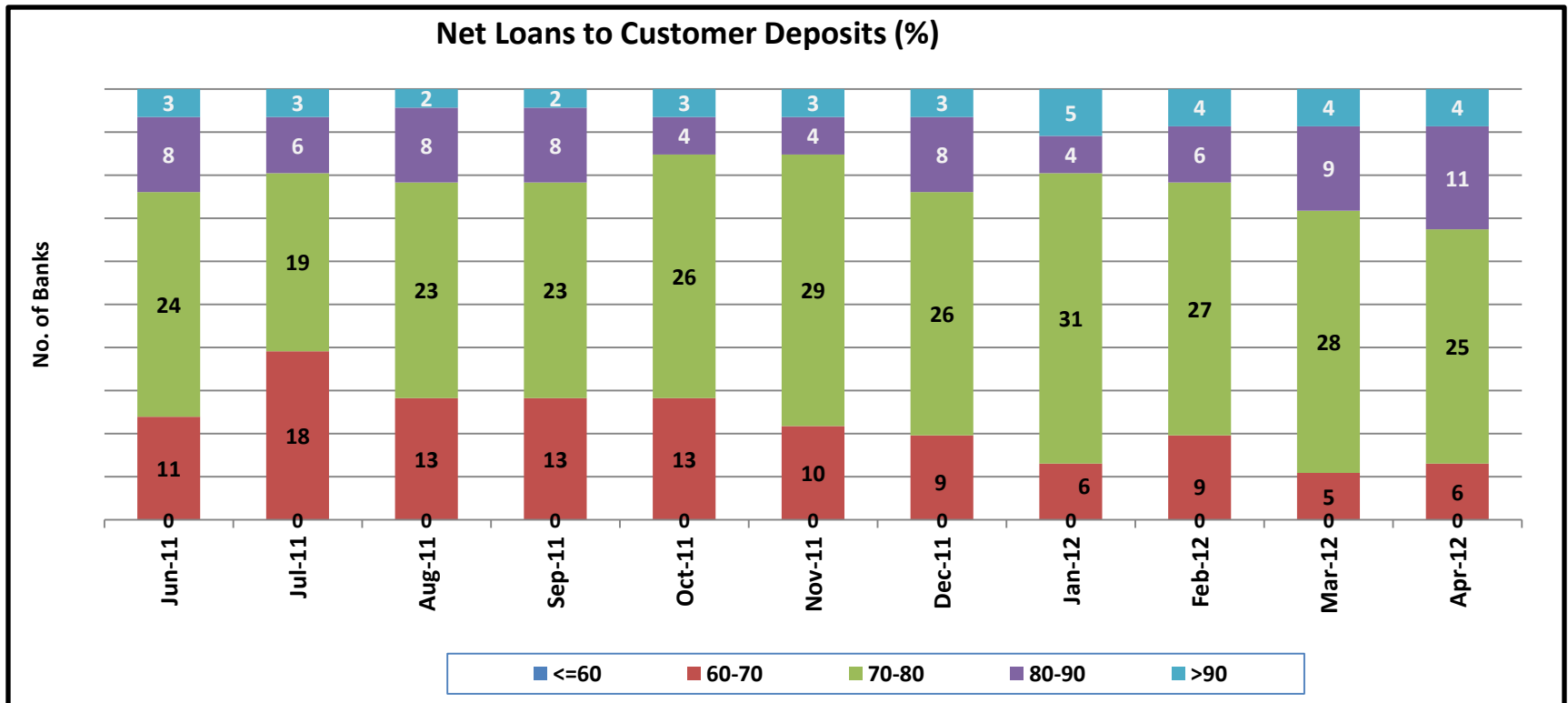
- Short-term deposits are total deposits with residual maturity upto one year.
- Lower ratio indicates better funding quality
- In terms of this ratio, 3 to 4 banks' funding appears to be highly vulnerable

Liquidity: Indian Banks



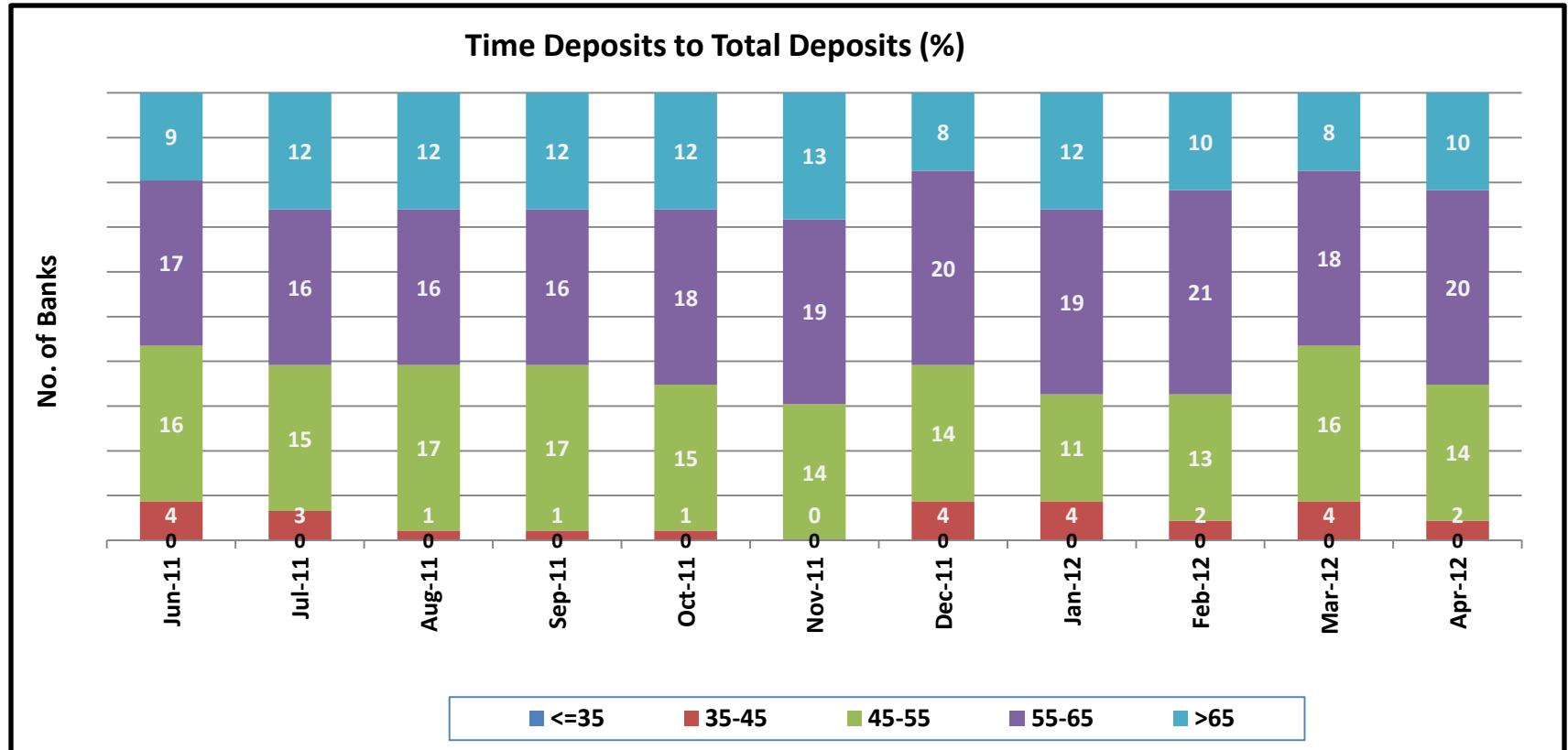
- Higher ratio indicates stable funding. This ratio has not been so impressive for about 4 banks.

Liquidity: Indian Banks



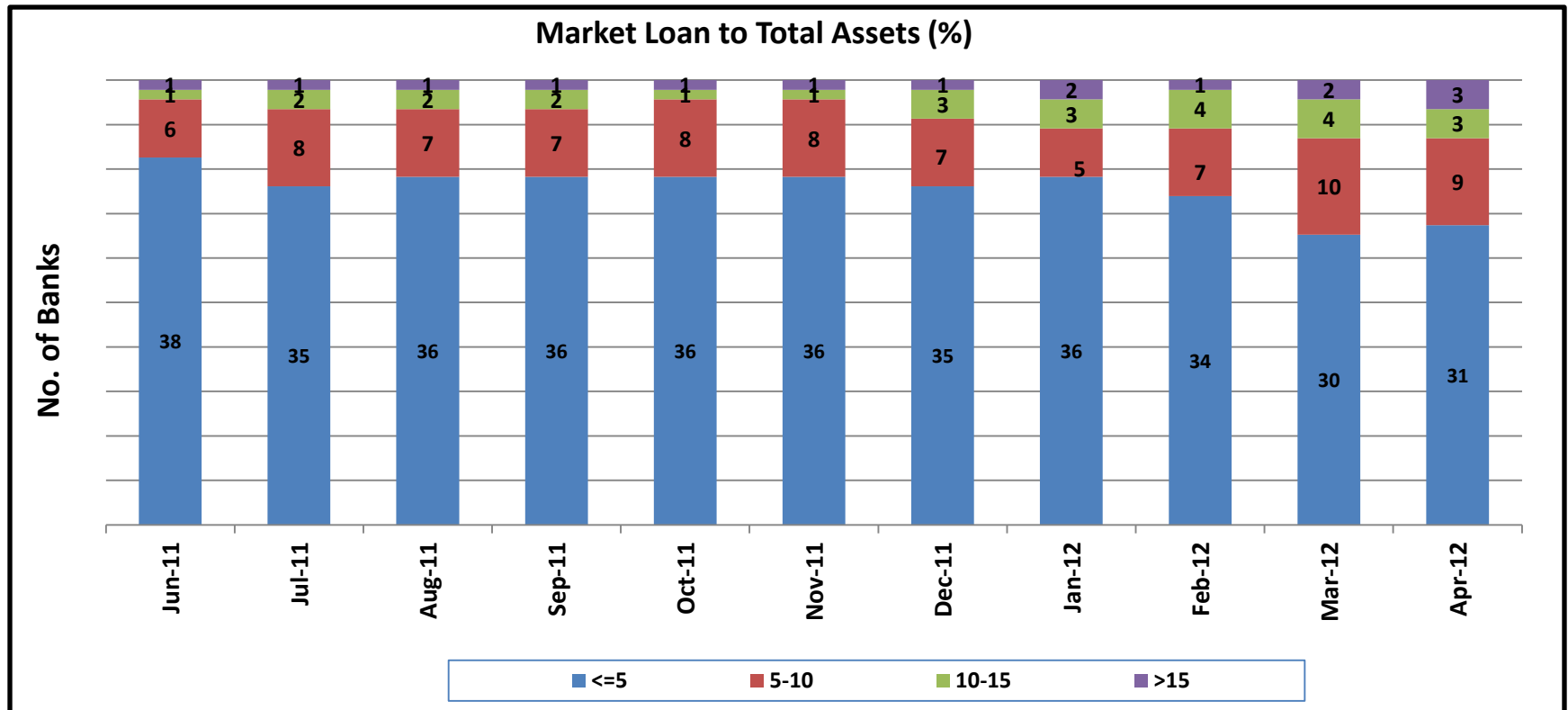
- This ratio may be treated as a refined version of CD ratio.
- While a moderate value of this ratio indicates stable funding of loans and advances, a very high value indicates funding of loans and advances by means other than deposits.

Liquidity: Indian Banks



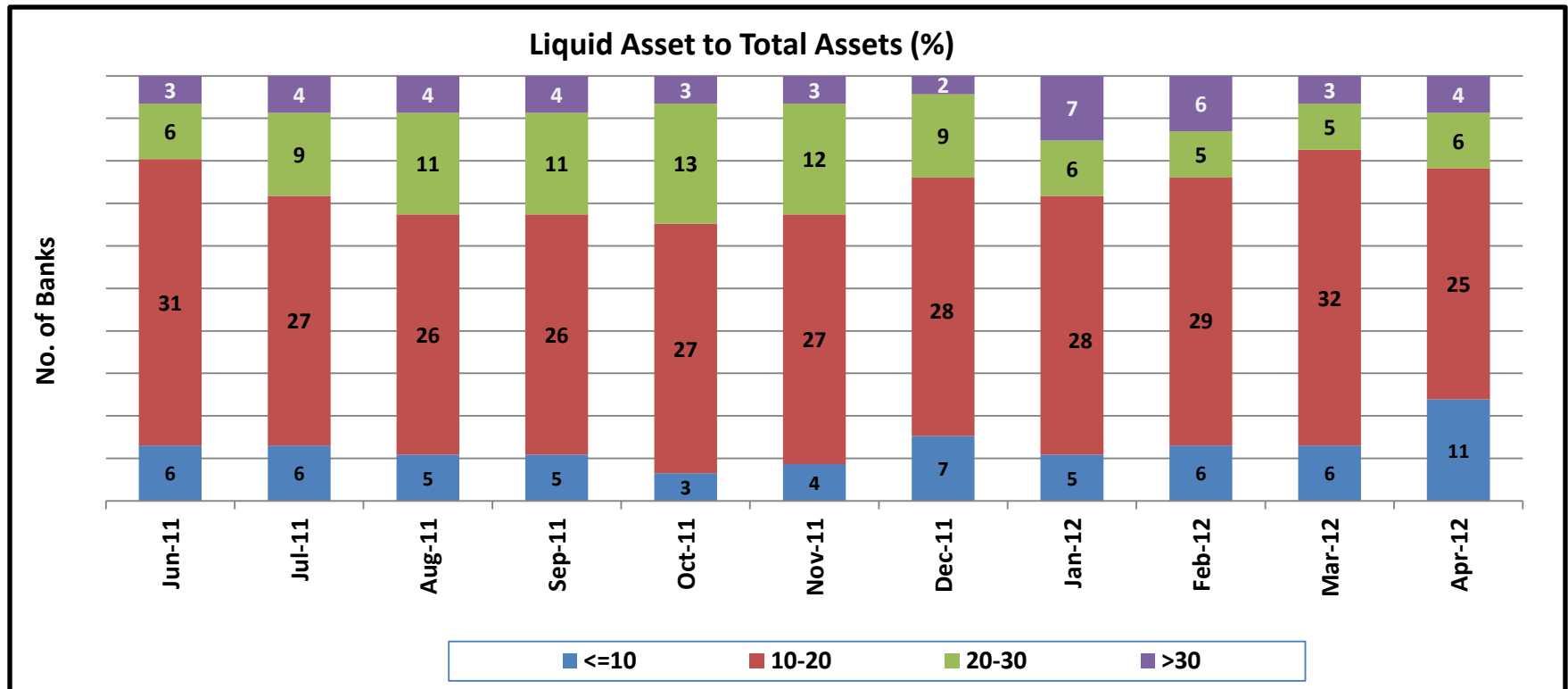
- A high ratio is supposed to be stable source of funding, but more expensive.
- The ratio has been very poor for few banks indicating volatile deposit base.

Liquidity: Indian Banks



- High ratio is an indicator of volatile source of funding.
- In terms of this ratio, the source of funds of majority of banks appears to be stable with ratio less than 5%. However, a few Indian banks rely more on borrowed funds.
- **Of late, a number of banks have increased their ratio – Why?**

Liquidity: Indian Banks



- Liquid assets cover – cash fund, investments in AFS and HFT categories, Current Account (1 to 28 days) and Money at Call Short Notice (1 to 28 days)
- The ratio has been quite poor for a few banks and moderate (10-30%) for majority of banks

Lessons from the Global Financial Crisis

- Risky to depend on wholesale funding markets
- Liquidity crisis can lead to insolvency
- Solvent banks went into liquidity problems
- Accounting and valuation issues
- Funding liquidity risk – bank's inability
- Market liquidity risk – market illiquidity, lack of depth, disruption, etc.

Response to the Crisis

- Basel Committee's ***Principles for sound liquidity risk management and supervision*** (September 2008)

Response to the Crisis - Basel III

Liquidity Ratios

- Short horizon (30-day stress period) –
Liquidity Coverage Ratio (LCR) = Stock of high quality liquid assets / Total net cash outflows over the next 30-day period $\underline{= 100\%}$
- Structural or stable liquidity – Net Stable Funding Ratio (NSFR) = Available Stable Funding (ASF) / Required Stable Funding (RSF) $> 100\%$

Basel III – Liquidity Monitoring Tools / Metrics

- Contractual maturity mismatch
- Concentration of funding
- Available unencumbered assets
- LCR by significant currency
- Market related monitoring tools

Conclusion

- Lessons from global financial crisis
 - Back to basics
 - Find natural hedges than synthetic ones
- Unfinished agenda
 - Intra-day liquidity management
 - Liquidity management through increasing use of CCPs for OTC transactions – addressing issues of inter-connectedness

- Thank you