

Basel III Liquidity Regulation And Forthcoming Issues: Assessing Overall Picture Of The Liquidity Indicators In Turkish Banking

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Abstract

Despite having adequate capital levels, many banks experienced difficulties during the early liquidity phase of the recent financial crisis since they did not manage their liquidity in a prudent manner. In response, the Basel Committee on Banking Supervision in 2008 published Basel III regulatory framework to offer detailed guidance on the risk management and supervision of funding liquidity risk. This study firstly reviews the Basel III liquidity requirements and the existing literature to assess the forthcoming potential issues, challenges and impacts during the transition period of implementing new rules. Studies show relevant evidence that the actions mandated by the Basel III liquidity rules to create an eligible balance sheet structure can lead banks to low-level profitability. Specifically, our second focus will be on the overall picture of liquidity performance of Turkish banking. The figures reveal that growing credit volume in recent years increased dependency on external funding resources providing appropriate conditions for liquidity risk and financial instability. The results tend to bring pressing need for timely policy measures and strategic actions in the following periods to recover arising liquidity problems.

Keywords: Basel III, Liquidity Requirements, Turkish Banking, Liquidity Indicators

Introduction

Liquidity in banking refers to the ability to find cash needed to meet cash outflow demand. It can come from direct cash holdings in currency or on account basis at the central bank. More commonly, it also includes creditworthy securities with short-term maturity that can be sold quickly with minimum loss. However, the maturity of less liquid assets particularly in a crisis are also important for liquidity. They may mature before cash shortages, thereby providing an extra source of funds. Or they may mature after cash crunch, so that the bank may incur a potentially substantial loss in a fire sale situation. On the other hand, a bank's liquidity position can be affected by some contingent commitments to pay out cash for, such as, lines of credit or demand deposits.

The recent financial crisis revealed that to effectively perform financial systems, banks must not only own assets which worth significantly more than liabilities; they also need to have enough liquidity to cover unexpected cash outflows. A solvent bank, holding assets exceeding its liabilities on value basis, can still face a bank run if it falls into liquidity shortages due to maturity mismatches. Banks mostly take demand deposits and other short-term funds and end them back out at longer maturities. This is possible because deposits will remain available or equivalent deposits can be obtained from others as needed. Therefore, banks can lend out the funds for longer periods even when demand deposits can theoretically all be withdrawn in a single day. If depositors lose confidence in a bank or in the banking system, they can withdraw their funds en masse causing a bank run. To some extent, central banks aid with liquidity crises to restore market confidence. A national system of deposit insurance is a powerful protection tool against bank runs to reduce liquidity problems, but it does not eliminate them. On the other hand, the banks that engage in capital market businesses often rely on short term borrowing.

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The inability to roll over debt through capital markets can confront these banks with a run causing a similar effect to deposit withdrawals. Thus, establishing quantitative requirements on banks for the liquidity levels is vital to tackle any issues that rise during crisis periods (Elliott, 2014).

Bank for International Settlements (BIS) defines liquidity as the ability of a bank to fund increases in assets and meet obligations as they come due, without incurring unacceptable Losses (BCBS, 2008). Liquidity is affected by a number of exogenous factors such as efficient market infrastructure, low transaction costs, large number of buyers and sellers, and transparent characteristics of traded assets. On the other hand, some endogenous forces also influence liquidity crucially triggered especially by the dynamic reactions of market participants in the face of uncertainty and changes in asset values. As long as favourable conditions continue, liquidity is easily available and cheap; however, under stress conditions, liquidity becomes very scarce and expensive, and it may become even effectively unavailable (Crockett, 2008).

Measuring liquidity is one of the most vital activities of banks. By assuring a bank's ability to meet its liabilities as they come due, liquidity management can reduce the probability of an irreversible adverse situation. Due to the maturity transformation of short-term deposits into long term loans, some banks are not able to meet cash flow and collateral needs efficiently and experience problems with performing daily operations. This liquidity risk arising from funding that banks face during crisis periods can lead to asset sales which decreases asset prices. Banks also exposure market liquidity risk with which a bank cannot easily offset or eliminate a short position at the market price because of inadequate market depth or market disruption. Both of these risks strongly interact with each other especially during crisis periods (Drehmann and Nikolau, 2009).

Liquidity risk arise from three main sources. The first one is related to the liability side of balance sheet. Large uncertainty on the volume of deposit withdrawals and/or the renewal of rolled-over inter-bank loans are the reasons. This happens when the bank is under suspicion of insolvency or when there is a temporary aggregate liquidity shortage. The liquidity risk coming from second source occurs on the asset side of balance sheet due to the uncertainty on the volume of new requests for loans that a bank will receive in the future. The last source of liquidity risk are off-balance sheet operations such as credit lines, commitments and the positions taken by banks on derivative markets (Rochet, 2008).

Any operational loss can trigger a loss spiral as the market participant may have to adjust his portfolio by selling assets at lower prices, so it can keep the leverage ratio constant. These sales can decrease prices further with a vicious circle in which margin spiral reinforces the loss spiral. Therefore, funding problems force investors to change their positions creating a mechanism with more losses and higher margins. This can explain how a relatively small shock can cause liquidity to dry up suddenly. For example, during global financial crisis, unexpected levels of central bank funding support were needed by the financial institutions to maintain adequate level of liquidity. Despite an extensive support, a number of banks failed because they were heavily exposed to maturity mismatch both through their balance sheet and off-balance sheet vehicles and through their increased reliance on repo financing (Brunnermeier, 2009). In response to the freezing up of the interbank market, the European Central Bank and U.S. Federal Reserve injected billions of dollars into the interbank market to meet the demand for overnight credit. However, some banks still needed extra liquidity supports mainly due to continuing liquidity problems resulted in larger volume liquidity injections into the market (Orlowski, 2008).

Deposits are the major resources to invest in long-term assets, such as loans. For this reason, banks may be vulnerable to liquidity shocks arising mainly from the liability side of their balance sheets. If a large fraction of depositors increase their demand for cash, the bank may need to liquidate illiquid assets with a loss to recover liquidity balance; otherwise liquidity shortages may turn into a solvency crisis (Aspachs et Al, 2005).

The recent crisis showed that inadequacy of the liquidity risk management in many financial firms was one of the critical issues. In reaction, to raise the standards of the liquidity risk management and supervisory practices the Basel Committee has updated and issued their "Principles for Sound Liquidity risk Management and Supervision" in 2008 (BCBS, 2008). In addition to strengthening the resiliency of international banks to liquidity shocks and to further harmonise the liquidity risk supervision, the G20 requested the Basel Committee to define a liquidity risk framework that would promote stronger liquidity buffers at financial institutions. The liquidity risk framework has been issued, as part of the Basel III regulatory reform package on 16 December 2010 (BCBS 2010).

2-Methodology and Data

The broad objective of this study is to better understand issues and challenges of Basel III liquidity standards, and to elaborate on liquidity structure of Turkish banking interacting with the main indicators of sectoral balance sheet. We employed aggregated year-end data from 2005 to 2014 which is obtained from the regular statistical reports of the Banks Association of Turkey (TBB). Our proxy for the evaluation of the liquidity structure in Turkish banking are liquidity gap and liquidity ratios techniques which are two conventional basic methods implemented for measuring the liquidity risk in banking. The liquidity performance over several years will be tabulated and portrayed graphically to see whether the performance trend of Turkish banking is falling, rising or relatively constant.

Measuring liquidity is one of the most vital and difficult activities of banks since underlying factors that generate the exposures can be dynamic and unpredictable. Banks utilize a number of measurement methods based on the type of risk they analyse. According to the Joint Forum's Working Group on Risk Assessment and Capital (2006), the major techniques to measure liquidity risk focus stock-based approach, cash flow analysis approach and unadjusted maturity mismatch approach. Based on the dataset obtained from the TBB, we employed gap analysis method which aims at safeguarding the bank's ability to meet its obligations and to calculate and limit the liquidity maturity transformation risk, based on the measurement of liquidity-at-risk figures. The method adopts cash flow as the core of liquidity risk and involves the construction of maturity ladders to calculate a cumulative net excess or deficit (liquidity gap) of funds at selected maturity dates. A maturity ladder is used to compare a bank's future cash inflows to its future cash outflows over a series of specified time periods. Cash inflows arising from maturing assets, saleable non-maturing assets and established credit lines that can be tapped. Cash outflows include liabilities falling due and contingent liabilities, especially committed lines of credit that can be drawn down. The liquidity gap is the difference between assets and liabilities at both present and future dates. At any date, a positive gap between assets and liabilities is equivalent to a deficit (Bessis, 2009).

A number of liquidity ratios identify main liquidity trends. Bank have high-liquid assets, significant volumes of stable liabilities such as retail deposits or maintaining credit lines with other financial institutions, so the bank can get appropriate, low-cost funding quickly when needed. Most of the studies in this area uses liquidity ratios extensively (Aspachs et Al, 2005; Moore, 2010; Rychtárik, 2009).

3-Literature Review

One of the most frequently cited theoretical paper on liquidity was conducted by Diamond and Dybvig (1983). Diamond (2007) also cited several important and more recent contributions to the literature. They exhibited a careful and rigorous analysis in which banks create liquidity, and they also show the economic basis for the demand for liquidity in the marketplace, both by consumers and businesses. Their modeling is valuable in providing a clear analysis of the role of banks in which banks provide an essential service to the economy. Banking system works very effectively in normal times unless some economic events triggers depositors or other bank creditors to wish to withdraw their funds all at the same time.

Another valuable academic literature that explores the importance of liquidity on an empirical basis was enacted by Dick-Nielsen, Feldhütter and Lando (2012) by utilising principal components analysis, a statistical method, to combine several possible liquidity metrics into an overall measure or index of liquidity.

O'Hara (1995), defined a liquid market as one in which buyers and sellers can trade into and out of positions quickly without having large price effects. So that a liquid market has the ability to absorb large liquidity demands without generating excess volatility.

Barth, Caprio, and Levine (2001) examined a number of banking sector laws and regulations database using various surveys of regulators around the world. Their studies were the first to compile and analyze the relationship between alternative regulatory strategies and outcomes. They found that laws and regulations ease private sector monitoring of banks, facilitate greater market monitoring and improve bank performance and stability. In addition, they assessed that fostering official regulatory framework and disciplinary powers to tighten capital standards does prevent banking system from corruption in lending or lowering banking system fragility.

Laeven and Levine (2008) extend this analysis to show that the impact of regulations on bank risk taking also varies with the comparative power of shareholders within the corporate governance structure of each bank. Cihak and Tieman (2008) analyzed the quality of regulation and supervision in high-income countries utilizing both Barth, Caprio and Levine's survey data and assessments. They found that financial sector regulation and supervision is generally of higher quality than in lower income countries. They also revealed that the correlation between survey data and Basel regulatory data tend to be low due to differences in implementation in practice.

Sundararajan, Marston, and Basu (2001) focused on the relationship between an overall index of Basel regulatory data and nonperforming loans and loan spreads for a sample of 25 countries. They did not find a significant correlation of these measures of soundness. Podpiera (2004) extended the number of countries and found that higher compliance with the data of Basel regulation lowers nonperforming loans. Das et al. (2005) assessed the relation between bank soundness and a broader concept of regulatory governance. He found that better regulatory governance is associated with sounder banks, particularly in countries with better institutions.

Demirgüç-Kunt and Detragiache (2010) concluded that existing regulations and their application are associated with bank soundness for the on-going reform process. They found no evidence of a robust statistical relationship linking better compliance with Basel core principles and improved bank soundness. However, they stated that compliance with a specific group of principles, those giving supervisors powers to regulate bank licensing and structure is associated with riskier banks, potentially suggesting that such powers may be misused in practice.

A number of literature related to the infrastructure and implementation side of Basel III requirements are also included in our investigations (BCBS, 2008; BCBS, 2010; BCBS, 2013).

4-The Structure of Global Liquidity Standards

4.1-Regulatory Body

The Bank for International Settlements (BIS) delivers particular financial services to central banks and also serves as a tool to encourage cooperation between them. In addition, it provides support services to several multi-lateral bodies focused on the world's financial systems. Prominent among these are the Financial Stability Board (FSB) and The Basel Committee on Banking Supervision (BCBS). FSB was charged by the heads of the Group of Twenty Countries (G-20) with the mission of promoting financial stability around the world. The BCBS was established in 1974 by banking regulators from a number of industrialized countries, with a core membership concentrated in the traditional banking powers within Europe, plus the US and Japan. Since 2009, in addition to group of ten countries all of the other G-20 economies and also some banking locales such as Hong Kong and Singapore are represented in BCBS. The Basel Committee functions as an informal forum formulating broad supervisory standards, guidelines and statements for the best practice in bank supervision. Basel I, Basel II and Basel III that are called as Basel Accords are major global voluntary regulatory standards issued by the BCBS. Although the Basel accords are not formal treaties and the members of the committee do not always fully implement the rules in national law and regulation, they have led to much greater uniformity of the requirements around the globe than existed prior to Basel I.

4.2-Basel I Framework

Basel I was introduced in 1988 and mainly focus on credit risk and appropriate risk-weighting of assets (RWA). Assets of banks were classified and grouped into five categories in line with their credit risk levels. The tier 1 capital ratio (tier 1 capital / all RWA), the total capital ratio ((tier 1 + tier 2 + tier 3 capital) / all RWA) and leverage ratio (total capital/average total assets) are major components. Banks are required to hold capital equal to 8% of their RWA. Off-balance-sheet items are also required to be reported within the RWA. Until 2013, more than 100 countries adopted the principles of the said framework progressively at varied levels.

4.3-Basel II Framework

Although introduced in 2004, Basel II was started to implement in 2008. This regulation was intended to create an international standard for banking regulators to check the minimum level of required capitals to secure banks against financial and operational risks. Supporters of this regulation believe that international financial system could be protected from problems leading to bank collapse as a result of financial crisis.

Basel II comprises risk and capital management requirements to reinforce that a bank has adequate capital for the risks exposed following its lending and investment practices. Namely, regulation was focusing on the idea that the greater risk to which the bank is exposed, the greater the amount of capital the bank needs to hold to keep its solvency and overall economic stability.

4.4-Basel III Framework

As a result of numerous weaknesses experienced in the global regulatory framework and in banks' risk management practices during recent fiscal crises, regulatory authorities have discussed several new measures to increase the stability of the financial markets. One of the most important topics was strengthening global liquidity rules. It aims at improving the banking sector's ability to absorb shocks arising from financial and economic stress. Basel III regulatory framework was introduced with several new or enhanced rules. The two new liquidity ratios, the short-term Liquidity Coverage Ratio (LCR) and the longer-term Net Stable Funding Ratio (NSFR) require banks to increase high-quality liquid assets and obtain more stable sources of funding, while requiring they adhere to sound principles of liquidity risk management. By introducing these new ratios, the Basel Committee seeks to achieve the following goals (BCBS, 2010):

- Promote short-term resiliency of bank's liquidity risk profile
- Improve the banking sector's ability to absorb shocks arising from financial and economic stress
- Provide a sustainable maturity structure for assets and liabilities
- Incentivize banks to fund their activities with more stable sources of funding

In January 2013, the BCBS released the last revision LCR package incorporating various refinements to the LCR to address issues identified by national authorities and the international banking community (BCBS, 2013).

A comprehensive set of regulatory measures developed in this accord were aimed at enhancing the resiliency of banks and banking systems globally against financial shocks arising during periods of stress, improving risk management and governance and strengthening banks' transparency and disclosures. The banking industry argues that Basel III will seriously affect the world's financial systems and economies. Toughened capital and liquidity requirements are expected to make national financial systems and, eventually, the global financial system safer. However, enhanced safety could come at a cost, as it is expensive for banks to hold additional capital and to be more liquid. On the other hand, serious dispute that loans and other banking services could also become more expensive and harder to obtain.

4.4.1-Liquidity Coverage Ratio (LCR):

The LCR regulates minimum liquidity levels to be held by banks starting in 2015. The LCR sets a minimum supervisory standard to ensure that banks have an adequate amount of unencumbered high quality liquid assets (HQLA) to meet liquidity needs for a 30 calendar day stress scenario. The LCR is calculated by dividing the bank's amount of high quality liquid assets by the total net cash outflows over 30 day period. In order to qualify as HQLA, the minimum requirements include that assets must be unencumbered and immediately convertible into cash at any time during the 30-day stress period, with no restrictions. The BCBS establishes two categories of assets that can be included in the HQLA irrespective of their residual maturity. Coins and banknotes, central bank reserves, marketable securities and some qualified sovereign or central bank debt securities are considered to be Level 1 assets without limit restriction. Level 2 assets are divided into two categories: Level 2A and Level 2B. These two Levels may not comprise more than 40% of the stock of HQLA after haircuts have been applied. Level 2A assets are subject to a 15% haircut to their current market value and include: qualified marketable securities which are assigned under 20% risk weight group of the Basel II framework and qualified corporate debt securities with high credit rating. Level 2B assets are subject to a larger haircut than that applied to Level 2A assets. They include residential mortgage backed securities that meet certain qualifying conditions and are subject to a 25% haircut. Corporate debt securities that received credit rating between A+ and BBB- are subject to 50% haircut, and common equity shares that are issued by out of financial institution, subject to 50% haircut, are also level 2B assets. The BCBS has developed several alternative treatments for holdings of HQLA (BCBS, 2013), although the details of those alternative treatments will not be addressed here.

Total net cash outflows' denominator of the LCR Formula is equal to a given banks' total expected cash outflow less its expected cash inflow, during the specified 30 calendar day stress scenario. Retail deposits, unsecured wholesale funding and secured funding are the elements of cash outflows. Total expected cash outflows are calculated by multiplying the outstanding balances of related liabilities and off-balance sheet commitments by the rates at which they are expected to run off or be drawn down. A bank's maturing contractual inflows such as secured lending transactions and interest payments constitute expected cash inflows whose inflow rates change depending on the quality of collateral. Total expected cash inflows are calculated by multiplying the outstanding balances of various categories of contractual receivables by the rates at which they are expected to flow in, up to an aggregate cap of 75% of total expected cash outflows.

As some assets are related to ongoing business relationships and would be difficult to completely run off, it is deemed that as to what percentage of assets maturing in the 30 day period will be rolled over. Liquidity rules also designate the percentage of liabilities with indefinite maturity that will be run off. It is considered that retail deposits tend to be sticky if they stay within deposit insurance guarantee limits, while corporate deposits are assumed to be less sticky and to run off in higher volume.

Banks are required to keep LCR's of 100% or more to cover their expected outflows over the assumed 30-day stress period. However, the BCBS secured that national regulators have the flexibility to allow the ratio to fall below 100% during trouble times. Nevertheless, banks in normal times will almost certainly target a ratio above 100% in order to maintain a safety buffer to protect them from potential regulatory actions.

The LCR will start to be effective on 1 January 2015, with a minimum requirement set at 60%. The minimum requirement will rise in equal annual steps to reach 100% on 1 January 2019. Countries that are receiving financial support for macroeconomic and structural reform purposes may choose a different implementation schedule for their national banking systems, consistent with the design of their broader economic restructuring programme (BCBS, 2010; BCBS, 2013).

4.4.2-Net Stable Funding Ratio (NSFR):

The NSFR ensures that banks keep a stable funding structure on their balance sheets with the liquidity of assets and off-balance sheet activities over a one-year time horizon. Adequate stable sources prevent a bank from failing and potentially distorting financial markets. This is managed by limiting banks' overreliance on short-term funding relative to the liquidity risk characteristics of their on and off balance sheet items.

The amount of available stable sources and the amount of required stable funds are the two main components of NSFR. The regulation requires that the ratio be kept above 100% on an on-going basis, with some flexibility for crisis times. The NSFR is as follows:

$$\text{Available Amount of Stable Funding} / \text{Required Amount of Stable Funding} \geq 100\%$$

Stable sources of funds consist of Tier 1 and Tier 2 capital, other preferred shares, liabilities with maturity of more than one year, and portions of those liabilities with short or unspecified maturities, such as demand deposits. The amount of available stable funding (ASF) is primarily measured based on the maturity of a bank's liabilities and the propensity of different funding sources to withdraw their funding. The required stable funding, on the other hand, is a function of the liquidity characteristics and residual maturities of the various assets and off-balance sheet exposures held by that institution. Longer-term liabilities are generally considered to be more stable than short-term liabilities. Fund sources provided by retail or small business customers are considered to be more stable than funding of the same kind from other counterparts. A bank's capital and liabilities are assigned one of five carrying values related to the relative stability of funding. ASF is calculated by multiplying the total amounts in each category with corresponding ASF factor ranging from 0% to 100%.

The amount of required stable funding (RSF) which is denominator in the NSFR formula, is measured depending on the liquidity risk characteristics of a bank's assets and off-balance sheet activities that are assigned one of seven RSF factor categories. The total RSF is equal to the sum of the amount in each RSF category multiplied by the associated RSF factor. The RSF factors are aimed at referring those of assets that would have to be funded because they may be rolled over, unable to be monetized through sale or used as collateral in a secured borrowing transaction on an extended basis without significant costs. RSF factors allocated on assets are based on their residual maturity and liquidity values.

Banks assets, such as securities subject to reverse collateral swaps, are generally excluded from the calculation. However, securities that have been invested in securities for which a bank does have beneficial ownership are to be included in the calculation. On the other hand, the NSFR assumes that banks may intend to extend existing credits to maintain customer relationships and that investors will exercise any option to extend maturity. In addition, the NSFR requires stable funding for some proportion of lending to the real economy in order to ensure the continuity of this type of intermediation. More liquid assets or those that are likely to be available as a source of liquidity during an extended period of stress receive lower RSF factors and require less funding than less liquid assets.

Although need insignificant immediate funding, off-balance sheet liquidity exposures may turn into significant burden on funding over a longer time horizon. As a source of liquidity, off-balance sheet exposures comprise credit and liquidity facilities and other contingent funding obligations. Irrevocable and conditionally revocable credit and liquidity facilities to any client are assigned a 5% RSF factor by the BCBS. National supervisors are left to their discretion to specify RSF factors for other off-balance sheet activities based on their national circumstances.

The NSFR is a helpful rule as long as focusing on avoiding extreme mismatches. NSFR could become too normative in constraining bank business models, without a sufficient analytical basis. It may be too retributive if used for shorter-term funding to support longer-term investments. On the other hand, the specific weighting applied to different sources and uses of stable funding may create the wrong incentives even if the overall levels are broadly right (BCBS, 2010).

5-Challenges, impact and consequences of Liquidity Regulation

During the crisis, commercial and investment banks relied on short-term market funding to finance assets of longer-term holding periods. The roll-over of the short-term market funding to finance illiquid assets caused loss of confidence in the markets. Since firms could no longer fund their activities, they resorted to fire sales of portfolios (Bindseil and Lamoot, 2011).

Basel III liquidity regulation constitute a liquidity buffer to ensure short-term liquidity under stressed conditions and to support more sustainable funding of assets with a tenure of more than one year. Such a required liquidity buffer in the balance sheet is likely to result in reduced earnings mainly because of holding non-interest-bearing cash reserves and high-quality assets with lower return rates. However, if the market volume with limited qualifying asset classes will meet demand for the liquidity requirements is not clear. Prices for qualifying assets will most probably increase substantially while values of assets not qualifying for liquidity ratios will drop, possibly leading to write-offs of such assets. The impact on funding is expected to be more severe compared to the capital requirements. In order to meet the demand for long-term financing by issuing securities, banks are required to focus on attracting deposits. Researches indicate that banks in Europe and the United States will have to raise about €1.9 trillion of short-term liquidity and about €4.5 trillion of long-term funding. The short-term liquidity gap is about 50 percent of all the liquidity that banks currently hold (McKinsey, 2010).

The empirical studies reveal that changes in capital and liquidity regulation affect economic activity via an increase in the cost of bank intermediation. Banks increase lending rates to compensate for the cost of holding more capital and liquidity. Owing to the imperfect substitutability between bank credit and other forms of market financing, this leads to lower investment and lower output. However, the results prove that there is a clear role for liquidity to prevent banking crises and economic downturns. These results are consistent with the proposition that the reforms are likely to increase financial stability by strengthening the quality of both banks' capital bases and funding structures (Yan et al, 2011).

As the Basel III regulation will change the behaviour of banks, a number of wider effects may arise on financial markets. In the transitional phase, adjustments of banks' balance sheets to meet the new liquidity standards will affect supply and demand in capital markets and could lead to relative price changes. On equity markets, rising demand from banks is expected. The quantitative impact study by the BCBS shows that banks worldwide need additional capital of EUR 175 billion to reach a core capital ratio of 4.5% and around EUR 600 billion for the 7% requirement. For comparison, euro area bank equity issuance has been USD 20 to 50 billion annually since 2005. The worldwide figure ranged from USD 50 to USD 150 billion.

The new liquidity requirements could influence fixed-income markets. The quantitative impact study by the BCBS shows that the shortfall of liquid assets to meet the LCR is around EUR 1.7 trillion for the worldwide banking sector. The LCR will change the relative preferences for banks to hold certain asset classes. This can shift demand to sovereign bonds, covered bonds and high-quality corporate bonds and away from less liquid assets, such as other bank bonds, securitized assets and lower quality corporate bonds. In order to reduce the maturity mismatch, the NSFR will urge banks to look for more stable sources of funding. To limit funding costs, banks will try to raise more retail deposits. Banks also could issue covered bonds, or issue more long-term unsecured bonds. Reducing maturity mismatches to meet the NSFR is a big challenge for banks in the coming years. The study of the BCBS shows that the shortfall of liquid assets to meet the NSFR is around EUR 2.9 trillion for the worldwide banking. Term funding markets may expand in response to increased supply by investors and the higher yields. It could make short-term investors willing to make longer term investments, particularly if the market liquidity of long-term paper improves relative to shorter-term paper. In the first quarter EUR 100 billion of covered bonds was issued in Europe and observers expect this asset class to grow further (Wellink, 2011).

As a result, liquidity is no longer a readily available source. Banks have to show ultimate attention for its careful management as a strategic need for survival. Delivery of supervisory requirements as is scheduled should be also the major focus of international policy as it seems that the increased cost of funding and the unfavourable conditions on the interbank market may make liquidity a strategic resource. Therefore, any alternative strategy can also potentially lead to increased cost and reduced profitability. Banks should develop a new business strategy and model based on higher investments and increased business activity to increase qualifying asset classes and to promote deposit business as stable funding. An increased competitive pressure and enforced lending spreads seem to be major obstacles for banks to work with. Given the expected future increase in costs, a bank will have to consider the overall impact and consequences in a consolidated way prior to taking decisions on what strategy to implement. The impact and consequences of Basel III framework extend beyond restricting the ability to generate revenues and profits, even forcing banks to reconsider business strategy and business conduct in some cases. Overall, the impact and consequences are expected to be far-reaching from a financial and a business perspective. The most substantial types of expected direct impact and consequence in terms of liquidity can be listed as below (Ernst&Young, 2011):

- Operational burden: Increasing requirements on risk management operations, substantial impact on related fields like IFRS and accounting, data management, trading operations and tax.
- Liquidity requirements: Increased requirements in liquidity risk management, change in asset allocation due to adjusted qualifying criteria.
- Consequences: Higher operational costs, losses due to asset reallocation, margin pressure on lending activities, margin pressure on saving activities, restrictions on growth and economies of scale and drop in profitability.

The mechanisms that banks can use to insure against liquidity difficulties and crisis focus on three strategies (Aspachs et Al, 2005):

- 1) Holding high liquid assets as a cushion on the asset side of the balance sheet such as cash, deposits with central banks and other banks, sovereign securities or reverse repo transactions that reduce the liquidity risk on bank viability.
- 2) Build up interbank credit line that meet liquidity demand. The strategy focus on the liability side of the balance sheet and is strongly linked with market liquidity risk.
- 3) Increasing central bank debts on the liability side of the balancesheet, when needed. This strategy depends on the statutory role of the central bank, that acts as a Lender of Last Resort to provide emergency liquidity assistance to particular illiquid institutions and to provide aggregate liquidity in case of a system-wide shortage.

6-Analysis of Liquidity Indicators in Turkish Banking

6.1-General Outlook

Many banks in the 2008 global financial crisis have defaulted not because of lack of profits but because of short term liquidity problems. The initial signs of a liquidity crisis in the banking sector generally took the form of a liquidity deficit on the balance sheets (Özdiñçer and Özyıldırım, 2008). To alleviate these implications, expansionary monetary policies have been utilized by advanced countries.

The strategy had important consequences beyond the borders of the original country such as sustained large capital inflows towards emerging countries. Concurrently, rapid credit growth fueled by easier access to foreign funds raised financial stability issues (Alper et Al, 2012).

As with many other countries, Turkey pursued a similar macroprudential policy framework in reaction to the consequences of the crisis. The early recovery of the Turkish economy resulted in an externally financed demand boom, creating a very challenging macro-financial environment. Credit-dependent, import intensive domestic demand is being fueled by low-cost foreign financing and an overvalued real exchange rate. The current account deficit increased sharply together weakening Turkey's resilience in some areas. Capital inflows were based on hot money flow and short-term external debt volume climbed sharply to 15 percent of GDP. In response to manage these risks the Central Bank of Republic of Turkey (CBRT) included financial stability in its policy framework alongside price stability differentiating and increasing TL and FX reserve requirements (RRs) in several steps. The aim was to lengthen maturities and increase the cost of funding to discourage very short-term capital inflows. However, state banks with lower loan to deposit ratios had more space to grow lending and thus gain market share, making the private banks hesitant to pass on any increases in funding costs. Recent bank funding trends are increasing vulnerabilities for the sector since the advantages of minimal FX exposure, primarily deposit-based funding, and strong liquid portfolio of government securities are not available anymore. Because, the recent rapid credit growth has outpaced deposit growth, with the loan to deposit ratio now having reached close to 100 percent, leading to increased reliance on wholesale FX funding. External funding conditions have undoubtedly been affected by funding strains in international Markets due to the possible de-leveraging by European banks. Repeated rollovers of funding swaps with a shorter maturity than the duration of assets they fund also exposes banks to interest rate risk. The Turkish banking sector also experiences a large structural maturity mismatch since the large majority of deposits have maturities of less than three months. In addition, banks also rely significantly on short-term CBRT repo funding. Despite, corporate loans are also generally of short maturity, banks have a significant overall maturity mismatch, exposing the sector to funding rollover and interest rate risks. Deposits are extremely concentrated in a way that the largest 0.1 percent of accounts hold more than 46 percent of systemwide deposits (IMF, 2012).

6.2-Quantitative Findings

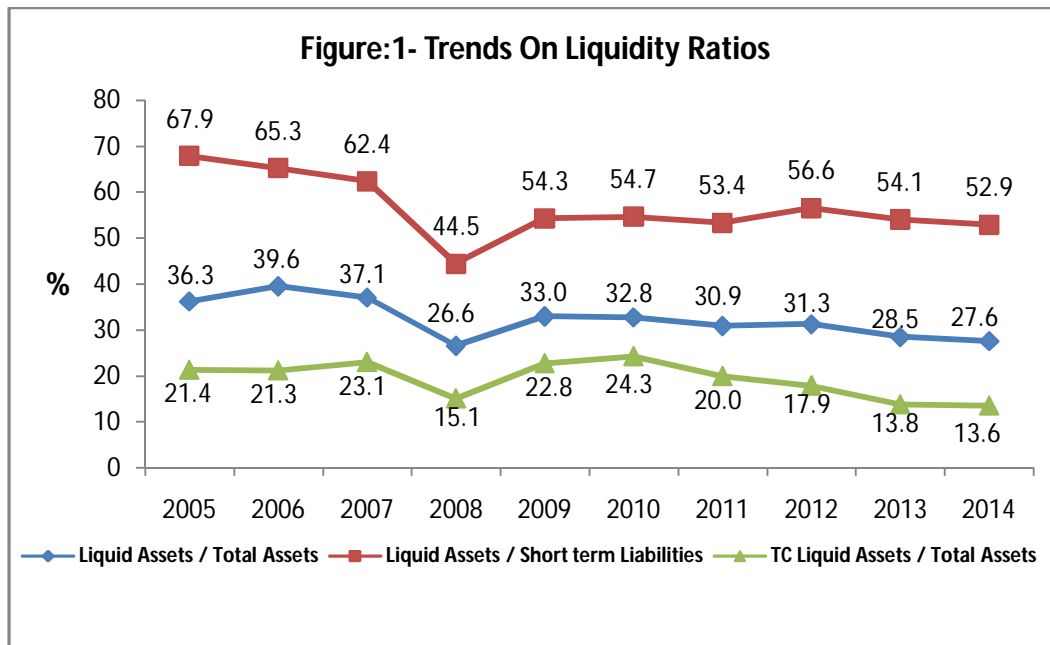
Table: 1- Net Liquidity Gap = Total Assets - Total Liabilities (According to their Outstanding Maturities)

Years	Demand	1 Months	2-3 Months	0-3 Months cumulative	3-6 Months	6-12 Months	0-12 Months cumulative	over 1 Year	Undistributed	Total cumulative	Total Assets
2005	-20.147	-62.446	-23.939	-106.532	9.817	18.874	-77.841	99.057	-20.355	2.531	295.849
2006	-24.150	-99.625	-12.053	-135.828	16.762	23.830	-95.235	121.036	-25.007	860	344.947
2007	-22.357	-151.180	-16.096	-189.633	63.232	139.275	12.874	34.216	-45.667	793	484.061
2008	-5.060	-157.475	-21.355	-183.890	53.957	135.899	5.966	36.881	-41.661	1.423	463.839
2009	-20.374	-177.974	-20.094	-218.443	68.879	171.595	22.031	36.098	-56.811	1.186	536.901
2010	-28.700	-203.815	-37.551	-270.065	62.481	209.215	1.630	67.548	-69.179	1.319	625.570
2011	-21.413	-197.011	-35.151	-253.575	42.698	198.450	-12.428	73.279	-60.851	0	614.491
2012	-23.321	-199.617	-44.219	-267.156	73.560	201.259	7.663	76.725	-84.388	0	730.278
2013	-22.949	-193.539	-47.789	-264.277	66.376	183.588	-14.312	88.192	-73.880	0	767.635
2014	-33.904	-201.095	-51.474	-286.474	74.989	186.208	-25.277	102.733	-77.456	0	801.689

Source: Calculated and tabulated by the author based on The TBB's data

The table:1 above concentrates on exploring the net liquidity gaps according to different maturity ladders for the years from 2005 to 2014. The findings reveal that poor liquidity conditions maintain during the first quarter of all years in investigated period. The negative net liquidity gaps in first three brackets continue to fluctuate slightly but never turn to positive gap. While positive gap dominate over the ladders for the maturity longer than three months, cumulative balances yield negative gap for all brackets up to one year, if the ladder for undistributed items is taken

into consideration. Consequently, overall picture of time ladders indicate that Turkish banks finance longer term assets extremely with short-term funding resources by employing maturity transformation technique.

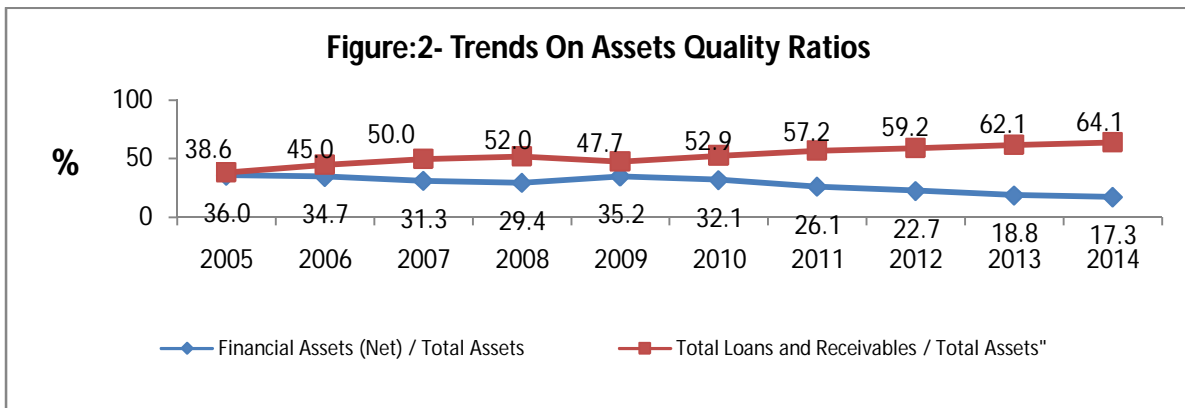


Source: Depicted and calculated by the author based on The TBB's data

Figure:1 represents time series data on liquidity ratios used in banking as a part of CAMEL rating system, a device created by federal banking regulators in the US to assess the overall performance of commercial banks (Rose, 2010).. In order to maintain the adequacy of a financial institution's liquidity position funds management practices should ensure that an institution is able to maintain a level of liquidity sufficient to meet its financial obligations in a timely manner and to fulfill the legitimate banking needs of its community. Liquidity ratios seek to measure the bank's ability to meet customers' withdrawal requests (Comptroller's Handbook, 2007).

The graphical representation reveals that banking sector in Turkey recorded a 52.9 percent of the Liquid Assets to Total Short Term Liabilities ratio in 2014 decreasing from 67.9 percent in 2005. The relative size of this ratio in Turkey averaged 56.6 percent during the investigation period, maintaining a continuous declining trend. Liquid Assets to Total Assets declined from 36.3 percent in 2005 to 27.6 percent in 2014. The relative size of the ratio averaged 32.4 percent in the observation period reaching an all time high of 39.6 percent in 2006 and forming a decreasing trend all years along. As an important liquidity indicator, the ratio reveals that the ability of the Turkish banking to meet short term obligations tend to decrease. This is validated by the Turkish Currency liquid Assets to Total Assets ratio declining from 21.4 percent in 2005 to 13.6 percent in 2014 with a similar formation.

Figure:2-3 below explore assets quality ratios from CAMEL system that reflect the quantity of existing and potential credit risks associated with the loan and investment portfolios, other real estate owned, and other assets, as well as off balance sheet transactions. Asset Quality ratios measures the quality of the bank's assets, the recoverability of the risk assets and the revenue earning potential of the bank. The higher the quality of a bank's assets, the more stable and consistent its profit potential (Comptroller's Handbook, 2007).

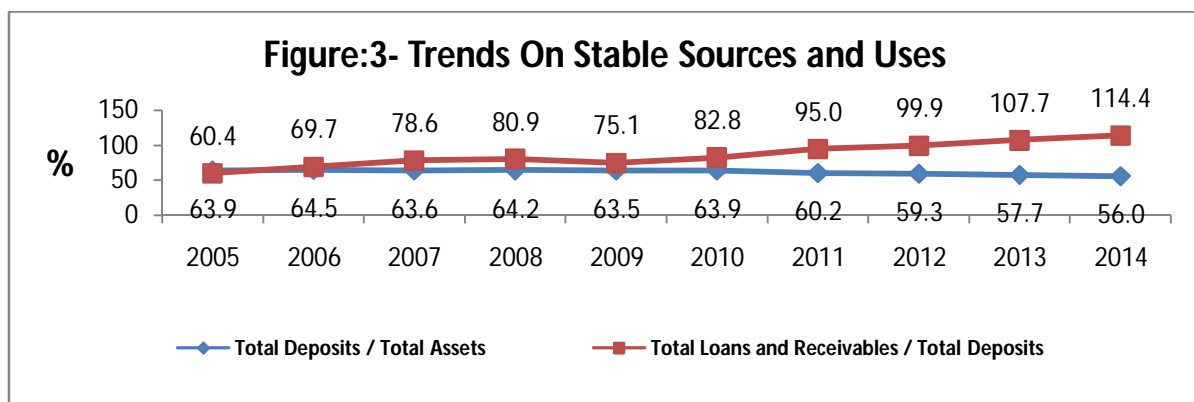


Source: Depicted and calculated by the author based on The TBB's data

The graphical representation above shows that credit volume in Turkish banking boosted after recent financial crisis of 2009. Total Loans and Receivables to Total Assets ratio recorded a rising trend from 38.6 percent in 2005 to 64.1 percent in 2014. The relative size of this ratio in Turkey averaged 52.9 percent during the investigation period. But, Financial Assets(Net) to Total Assets declined sharply from 36 percent in 2005 to 17.3 percent in 2014, recording an average of 28.4 percent. Opposite identical trends between two ratio represent that a trade off occurred in Turkish banking in favor of total loan portfolio for the preference of keeping profitability stable to the cost of liquidity.

The Figure:3 below reveals that total savings in Turkey tend to decline. Total Deposits to Total Assets ratio recorded a decreasing trend from 63.9 percent in 2005 to 56.3 percent in 2014. The relative size of this ratio in Turkey averaged 61.7 percent during the investigation period reaching an all time high of 64.5 percent in 2006. In contrast to stable funding sources of deposits, Total Loans and Receivables to Total Deposits ratio which indicates uses of funds almost doubled in the observation period. It increased sharply from 60.4 percent in 2005 to 114.4 percent in 2014, recording an average of 86.4 percent. The increasing gap between two ratio represent that external funds are needed more than before to meet increasing demand for credits.

As referred above, NSFR requires to be more than 1, which means the sources of funding should be bigger than the uses of funding. As previous studies have used the same approach, we can assess Turkish banking accordingly by translating the NSFR into a Loans-to-Deposits ratio(Yan et al, 2011). As a result, increasing external funding in Turkish banking could worsen funding profile in the sector. On the other hand, Wong et al. (2010) estimate that a one percentage-point increase in NSFR roughly corresponds to a decrease of 46 basis points in the Loans-to-Deposits ratio on average, with the assumption that there is a linear relationship between the two ratios. If we accommodate this for Turkish banking, It seems that a decreasing trend in assets sizes and lower profitability may be expected.



Source: Depicted and calculated by the author based on The TBB's data

7-Conclusion

As planned, Basel III standards started to implement on 1 January 2015 with the minimum requirement of 60% and will rise in equal annual steps until to reach 100% on 1 January 2019.

Now, Basel III requirements expose banks across the globe to major challenges regarding their capital and liquidity requirements as well as their risk management. The shrinkages of the balance sheets and net incomes, the rise in lending rates and the decline in lending volumes are short term expected effects in banking. Banks should identify the necessary steps for compliance and develop a comprehensive plan to address the issues and concerns raised by the new rules. They should deal actively with the new regulations by taking actions to meet eligibility criteria or adjust their funding strategy, to comply with Basel III before the regulatory timeline.

Our investigations on liquidity indicators of Turkish banking indicate that banking system faces funding risks because loan-to-deposit ratio has already exceeded 100%. Despite aggregate liquidity position is still adequate, recent bank funding trends are increasing vulnerabilities for the sector since the advantages of minimal FX exposure, primarily deposit-based funding, and strong liquid portfolio of government securities are not available anymore. Due to the competition, banks have been under pressure to shift loan investments towards higher margin but higher risk. Rising external funding trend have to bring structural policy measures into prominence to avoid an erosion of liquidity buffers, to increase qualifying asset classes and to promote deposit business as stable funding.

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