Liquidity Transfer Pricing – Current Challenges and a Way Forward

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Contents

Current Market Scenario ................................................................. 3
Regulatory Developments ................................................................. 5
Challenges Related to Liquidity Transfer Pricing ................................ 7
   Classification ............................................................................ 9
Setup of Liquidity Management within Treasury .............................. 10
Implications of LTP on the Net Interest Margin ................................. 11
The Path Forward ........................................................................ 13
Before the global financial crisis of 2007-2008, liquidity was taken for granted. The assumption was that funds were always available at no or very low cost. As a consequence, banks lacked strong liquidity practices, and a series of business models – for example, state financing – relied upon the refinancing of long-term assets with short-term liabilities to ensure profitability.

The financial crisis played a role in liquidity risk management and is becoming an important strategic and tactical topic for both banks and regulators. Banks now believe that liquidity can only be obtained at a price, at least for the foreseeable future, and that there will be very few “lenders of last resort” in crisis situations. Liquidity is at or near the top of bankers’ priority lists and may remain there for some time to come.

In December 2010 the Basel committee introduced liquidity standards as a part of the Basel III capital regime, including the liquidity coverage ratio (LCR) and the net stable funding ratio (NSFR). The effect was to increase banks’ short-and long-term resilience. The LCR addresses whether banks have adequate high quality assets to survive stressed liquidity conditions over a 30-day period, while the NSFR guides banks to adopt more stable sources of funding over the long-term. In addition to these two ratios, monitoring tools to track the diversification of funding sources, encumbrances on assets, and to alter disclosure to supervisors were also introduced as part of the Basel III initiative. The Enhanced Disclosure Task Force (EDTF) also issued additional requirements – generally in line with Basel guidelines – to alter disclosures to market participants.

Banks are undertaking initiatives in a number of areas to meet these requirements:

- **Aligning risk appetite and Liquidity Transfer Pricing (LTP)** – Banks have long been assessing their liquidity buffer needs under simple scenarios. These rough, static indicators may be inadequate for the dynamic pricing of liquidity in line with business strategy and a particular bank’s liquidity profile. The indicator needs additional support from appropriate policies and procedures to manage liquidity risk in accordance with the institution’s liquidity risk appetite.

- **Altering governance** – The internal bodies commonly responsible for allocating balance sheet and liquidity limits are the asset liability committee (ALCO) and the board of directors. Related to recent turmoil and regulatory scrutiny (such as, German MaRisk, Section 4.4.1), chief risk officers are now more often being involved in the decision making process.

- **Instituting stress testing** – Stress testing and contingency plans have been established by a number of major financial institutions and the frequency of stress testing has also changed. Access to the right data is essential for carrying out meaningful stress tests. Banks are still working on improving the linkage between stress testing and contingency planning so that the new stress test results can be incorporated into contingency plans.

- **Changing transparency and disclosure** – Up to now, there has been only a limited change in the levels of transparency, with some banks sharing information about the composition of their funding sources and liquidity reserves – as well as stress testing results – in their annual reports. Many banks will need to make significant investments to fulfil the strengthened disclosure norms in standards in areas such as Enhanced Disclosure Task Force (EDTF).

- **Altered reporting** – With banks facing increased management needs for monitoring of decision making indicators as well as regulatory requirements for disclosure, banks want group wide consistent liquidity reporting as well as the capability to cope with entity- or regional level- specific needs or regulations. Changed reporting goes hand in hand with a consistent data hub at the group or regional level. Automated reporting solutions may help address the increasing complexity in reporting (such as greater frequency and higher volume of reports) and in covering different liquidity metrics and taking into account different asset classes and currencies.

- **Effective management of the liquidity cushion** – Maintaining a cushion for unexpected liquidity flows comes at a cost. Often the income earned on the cushion is lower than the costs of funding it. As part of an effort to generate additional income, a number of banks are giving increasing consideration to the repo and securities lending business. Managing the specific risks of these instruments, however – such as concentration and correlation risk or the risk of significant devaluation of the collateral during the default – involves new counterparty credit risk management capabilities.

- **Building an IT infrastructure to help manage liquidity standards** – As is the case with other firm-wide risks, liquidity risk involves a large amount of data being assembled across the group. The IT infrastructure may have to support a consistent representation of the data as well as an alignment between external reporting and internal management needs. The IT system may also have to be very responsive to reflect updated liquidity risk numbers. As it may be more cost efficient and to help avoid reconciliation efforts, consideration should be given to not setting up an infrastructure that is parallel to the one already used for other reporting needs. For example, the same infrastructure can be used to determine FinRep, CoRep and liquidity third parties.
Regulatory Developments

Better liquidity transfer pricing (LTP) practices typically require banks to have sound liquidity risk policies and procedures in areas where regulations can play a critical role. In the past, financial crises may have stemmed from breakdowns in the markets as well as from a lack of regulatory oversight.

A recent study conducted by the Financial Stability Institute, which analyzed 38 large banks from nine countries, showed several shortcomings in the context of the allocation of liquidity costs and benefits. The key conclusions drawn by the study included:

- Many banks lacked LTP policies and employed inconsistent LTP regimes;
- Some institutions did not charge liquidity costs to assets and liquidity credits to liabilities; and
- Measuring costs on an average basis does not cover long-term agreements – it penalizes long-term funding and rewards long-term liabilities – and does not take market changes into account.

The Financial Stability Institute noted that the most striking example of poor practices identified in the survey related to how banks failed to account for the costs, benefits and risks of liquidity in all or some aspects of their business activities. These banks came to view funding liquidity as essentially free, and to see essentially zero liquidity risk. These banks attributed no charge to some assets for the cost of using funding liquidity, and conversely attributed no credit to some liabilities for the benefit of providing funding liquidity.

A bank, therefore, might have to establish a robust liquidity risk management framework to ensure maintenance of sufficient liquidity. The Basel Committee on Banking Supervision (BCBS) has introduced 17 principles for managing and supervising liquidity risk which are also reflected in the European Union’s Capital Requirements Directive IV (CRD IV). These principles highlight the importance of governance structure, measurement and management, and public disclosure, as well as the role of supervisors in ensuring sound liquidity risk management and supervision.

The Committee of European Banking Supervisors (CEBS), now the European Banking Authority, has also discussed the role of “an effective allocation mechanism for liquidity costs, benefits and risks”. It issued guidelines on Liquidity Cost Benefit Allocation in October 2010 specifying the requirements of the Basel Committee on Banking Supervision. The main effect of the CEBS’s five guidelines was the provision of high-level guidance for institutions establishing funds allocation mechanisms, including liquidity costs, benefits and risks.

The guidelines discussed the role of establishing such a liquidity cost benefit allocation mechanism, and banks might want to align this mechanism with their existing risk and profitability management approaches to set the right incentives and avoid arbitrage. They may consider integrating it to the governance, risk tolerance and decision making processes of their risk management framework. The mechanism could also be supported by a governance structure of an adequate size and sophistication.

The scope of the liquidity cost benefit allocation mechanism may have to be determined in order to address all significant elements of the assets, liabilities and off-balance sheet items while embodying robust and comprehensive methodologies.

In conforming with the regulatory developments and linking strategy with regulations, the Financial Services Authority (FSA) in its paper “Liquidity Transfer Pricing: A Guide to Better Practice” (published in December 2011) acknowledges a lack of detailed guidelines that has left some supervisors and banks asking what, exactly, constitutes “better practice.” The FSA identifies what it considers to be “better practices” for LTP in regards to governance, using LTP to manage on-balance sheet funding, liquidity risk, and managing contingent liquidity risk. It recommends that while banks should, at least, consider all better practices promoted in the paper, only those that are appropriate and that will most likely improve the institution’s LTP process should be adopted.

Finally, while the LCR/NSFR ratios introduced as a part of Basel III could increase the resilience of banks, today banks face significant shortfalls in meeting the requirement of an LCR above 100 per cent. According to an IMF study released in September 2012, the European Union faced a shortfall of $1.2 trillion in terms of the net liquid assets needed to meet this requirement of a sufficiently high LCR. Another concern is that banks may find themselves using their funding for investments in liquid assets (or those meeting the guidelines) rather than increasing their loan portfolios, thus reducing the funding available for corporate borrowers.
Over the past two years, there have been several amendments to the way LCR is to be calculated. In January 2013, the Basel committee revised the dates for LCR introduction. While the original plan was for banks to achieve LCR of over 100 per cent by January 2015, the revised minimum ratio is now 60 percent as of January 2015 and will be increased in equal increments to reach the 100 percent rate by January 2019. Additionally, the definitions for eligible liquid assets have been loosened by introducing level 2 assets – such as corporate bonds with sufficient rating – as well as equity. Essentially, these changes have been confirmed in the final implementation negotiations on March 20th. In addition, NSFR will just be used for observation purposes and no minimum standard has been set.

While this could ease the pressure on banks, it remains to be seen if the guidelines are adopted by all the other regulators in a uniform manner, as individual country regulators may adopt different standards as well.
Challenges Related to Liquidity Transfer Pricing

Liquidity Transfer Pricing is a technique designed to integrate different liquidity cost components—in addition to already-allocated funding costs—and to include benefits for provision of liquidity.

**Liquidity costs (and benefits)** – In order to reflect the demand for, and supply of, liquidity in a meaningful way, liquidity consumers have to pay a transfer price to the liquidity suppliers via treasury’s liquidity book. Using a product’s expected and empirical cash flow patterns, the liquidity costs and benefits rely on the period-based liquidity spread based upon the bank’s rating. For some products or balance sheet items, this calculation might use both deterministic and non-deterministic cash flows.

**Liquidity risk costs** – The transfer prices covering liquidity risks can be split into two groups, depending on the key drivers as well as the instruments needed to mitigate those risks.

- **Cost of the liquidity cushion.**
  These are costs for the provision of a liquidity cushion for unexpected cash flows derived from product models which are based on individualized parameters. The liquidity cushions which cover these uncertain product cash flows consist, for example, of facilities, repo deals and asset sell-offs. Liquidity cushion costs are allocated by causation principle to specific balance sheet items or product portfolios.

- **Cost of the liquidity reserve.**
  Liquidity reserve has two main purposes: Coverage of additional stress scenarios (on top of the already modeled variety) as well as assurance of regulatory compliance (such as reaching, for example, LCR or NSFR targets). The amount of the liquidity reserve can therefore be determined in a way that delivers a positive difference of net outflows and inflows, even in a stress event, as well as achieving minimal target key performance indicators (KPIs). The liquidity reserve consists of assets which can be sold even if a haircut has to be accepted and are not part of the liquidity cushion. Usually securities not used for collateral are not taken into account.

To implement an LTP system, companies may want to consider first, the correct classification and modeling of liquidity costs / benefits and liquidity risk costs at the product level, and, second, reliable liquidity management including the implementation of a liquidity book and liquidity risk book.
Classification

A classification of product characteristics along contract and cash flow designs is presented in Figure 1.

Common examples of the four categories include term deposits (DET / EXP), fixed term loans with prepayments (DET / UNEXP), credit lines (NONDET / EXP) or current accounts (NONDET / UNEXP).

Table 1 presents an illustrative scheme of various product / balance sheet items characteristics which form a key modeling and decision platform for setting proper liquidity and fund transfer pricing.

Table 1. Illustrative Classification of Balance Sheet Items

<table>
<thead>
<tr>
<th>Products</th>
<th>Interest Rate</th>
<th>CF-Timing</th>
<th>CF-Amount</th>
<th>Liquidity Costs</th>
<th>Liquidity Risk Costs</th>
<th>Holding Period</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assets</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash reserve</td>
<td>Variable</td>
<td>Non-Deterministic</td>
<td>Deterministic</td>
<td>Expected Value</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Loan and advances to customers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed-rate loan</td>
<td>Fix</td>
<td>Deterministic</td>
<td>Deterministic</td>
<td>Empiric Value</td>
<td>Stress Scenario</td>
<td>Non-Tradable</td>
</tr>
<tr>
<td>Overdraft</td>
<td>Variable</td>
<td>Non-Deterministic</td>
<td>Non-Deterministic</td>
<td>Expected Value</td>
<td>Value-at-Risk</td>
<td>Non-Tradable</td>
</tr>
<tr>
<td>Loan and advances to banks</td>
<td>Fix</td>
<td>Deterministic</td>
<td>Deterministic</td>
<td>Contract Value</td>
<td>Stress Scenario</td>
<td>Non-Tradable</td>
</tr>
<tr>
<td>Trading assets</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Floating Rate Notes</td>
<td>Variable</td>
<td>Deterministic</td>
<td>Deterministic</td>
<td>Contract Value</td>
<td>Stress Scenario</td>
<td>Tradable</td>
</tr>
<tr>
<td>Fixed-income bond</td>
<td>Fix</td>
<td>Deterministic</td>
<td>Deterministic</td>
<td>Contract Value</td>
<td>Stress Scenario</td>
<td>Tradable</td>
</tr>
<tr>
<td>Financial investments</td>
<td>Fix/Variable</td>
<td>Non-Deterministic</td>
<td>Non-Deterministic</td>
<td>Expected Value</td>
<td>Stress Scenario</td>
<td>Non-Tradable</td>
</tr>
<tr>
<td>Property</td>
<td>Fix/Variable</td>
<td>Modeled</td>
<td>Modeled</td>
<td>Expected Value</td>
<td>No</td>
<td>Non-Tradable</td>
</tr>
<tr>
<td>Liabilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liabilities to banks</td>
<td>Fix</td>
<td>Deterministic</td>
<td>Deterministic</td>
<td>Contract Value</td>
<td>Stress Scenario</td>
<td>Non-Tradable</td>
</tr>
<tr>
<td>Liabilities to customers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current account</td>
<td>Variable</td>
<td>Non-Deterministic</td>
<td>Non-Deterministic</td>
<td>Expected Value</td>
<td>Value-at-Risk</td>
<td>Non-Tradable</td>
</tr>
<tr>
<td>Demand deposit (3 Month)</td>
<td>Fix</td>
<td>Deterministic</td>
<td>Deterministic</td>
<td>Contract Value</td>
<td>Stress Scenario</td>
<td>Non-Tradable</td>
</tr>
<tr>
<td>Fixed-income savings account</td>
<td>Fix</td>
<td>Deterministic</td>
<td>Deterministic</td>
<td>Empiric Value</td>
<td>Stress Scenario</td>
<td>Tradable</td>
</tr>
<tr>
<td>Trading liabilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Floating Rate Notes</td>
<td>Variable</td>
<td>Deterministic</td>
<td>Deterministic</td>
<td>Contract Value</td>
<td>Stress Scenario</td>
<td>Tradable</td>
</tr>
<tr>
<td>Fixed-income bond</td>
<td>Fix</td>
<td>Deterministic</td>
<td>Deterministic</td>
<td>Contract Value</td>
<td>Stress Scenario</td>
<td>Tradable</td>
</tr>
<tr>
<td>Subordinated capital</td>
<td>Fix</td>
<td>Deterministic</td>
<td>Deterministic</td>
<td>Contract Value</td>
<td>Stress Scenario</td>
<td>Non-Tradable</td>
</tr>
<tr>
<td>Equity</td>
<td>Variable</td>
<td>Modeled</td>
<td>Modeled</td>
<td>Expected Value</td>
<td>No</td>
<td>Non-Tradable</td>
</tr>
</tbody>
</table>

Source: Accenture
Setup of Liquidity Management within Treasury

In order to reflect the different maturity profiles of financial instruments from a liquidity point of view, and to differentiate between expected and unexpected liquidity flows, consideration should be given to separate funding from liquidity management. For that purpose at least two separate books can be established in addition to the classic interest book (the one containing all funding activities):

A liquidity book can be managed for the purpose of transferring liquidity costs and benefits between consumers and providers of liquidity. As shown in Figure 2, this book exchanges nominal payments with liquidity transfer prices in two directions, that is, the liquidity book receives LTP from liquidity users and pays LTP to liquidity providers. Its profit or loss can be seen as the liquidity structural transformation part of the interest rate earnings.

An additional book, the liquidity risk book, can be established to collect premiums for the various liquidity risks arising from products and balance sheet items. In this case (as seen in Figure 2), both assets and liabilities imply cash flows to the liquidity risk book according to their respective risks. The profit or loss of the liquidity risk book is determined by netting collected liquidity risk costs (premiums) to the realized negative net interest rate margins due to instruments serving as liquidity risk cushion or reserve.

Figure 2. Typical Structure of Treasury Books

<table>
<thead>
<tr>
<th>Liquidity Users*</th>
<th>Liquidity Management (e.g., Treasury)</th>
<th>Liquidity Providers*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price for expected cash flows</td>
<td>Interest book</td>
<td>Price for expected cash flows</td>
</tr>
<tr>
<td>Liquidity risk costs</td>
<td>Liquidity book</td>
<td>Liquidity risk costs</td>
</tr>
</tbody>
</table>

*Includes market and external partner

Legend
- Liquidity Transfer Price (LTP)
- Nominal Payment

Source: Accenture
Implications of LTP on the Net Interest Margin

In the example to the right, the concept of LTP is applied to a simple balance sheet to illustrate LTP's effect on liquidity management and risk coverage.

This balance sheet example consists of three items: a loan of 100 monetary units (MU), cash of 20 MU and a term deposit of 120 MU. The net interest margin contribution of the loan is determined by the differences between interest rate, market rate and liquidity spread with respect to the position's volume. The liquidity spread is the difference between a bank's swap curve and its marginal costs of funds curve, or simply speaking, the sum of liquidity costs and liquidity risk costs. In the example, the liquidity spread of each asset is assumed. In reality, it would have to be determined as described in the section classification. The liquidity spread of the loan is 0.5% and includes the premium paid to the liquidity book for using liquidity and the premium paid to the liquidity risk book due to the various liquidity risks arising from the loan.

By including the liquidity spread into the calculation of the net interest margin contribution, the result is a margin of 0.5%. To highlight the possible effects of the LTP, the net interest margin contribution without accounting for the liquidity spread would be 1.0 (since no liquidity spread is deducted within the calculation).

The difference in regard to the net interest margin contribution of a bank's various assets and liabilities can become even more significant, if these specific balance sheet items have more time to mature and bear high liquidity risks. In such a case, the possible opportunity costs for holding liquidity buffers (cushion and reserve), directly or indirectly allocated to these items, would decrease the net interest margin. Table 2 below presents these additional adjustments (from classic fund transfer pricing to LTP) in an illustrative example.
While banks continue to work on their capabilities to effectively manage liquidity and risks, there should be strong emphasis on the integration of LTP into their overall risk strategy (see Figure 3).

**Asset Liability Committee** - The ALCO is the (liquidity) risk governing body in many organizations. It typically approves the treasury, controlling, risk controlling and reporting policies. The ALCO may also include approval of the LTP system and parameters and oversight of the LTP process by senior management on a regular basis. The ALCO might not only set the overall liquidity goals and decide on the (liquidity) risk appetite but also define strategic actions in terms of swaps and liquidity measures, among others, and decide on strategic options such as rates and spreads. In order to align their structural and/or internal view with the recent regulatory requirements to provide sufficient liquidity, banks may want to consider defining their liquidity cushion according to regulatory, strategy and structural dimensions.

**Treasury** - To encourage the right behavior and reflect different maturity profiles, banks might consider maintaining a dual perspective when it comes to their Liquidity Transfer Pricing approach.

- **Liquidity Management**: The treasury would manage short-term liquidity as well as long-term funding and apply the LTP approach across the bank. This would involve defining and sizing the liquidity cushion based on the ALCO guidelines. For optimal effectiveness, a bank may want to consider managing LTP from a central department.

- **Interest Management**: The treasury function could be tapped to manage the interest structure and hedge interest rate risk, using different instruments such as swaps or caps, as well as managing the term transformation of interests.

**Controlling** - Another area of consideration for banks is to have the control function within the organization divide the LTP into ex-ante and ex-post product and segment profitability calculations, as there is often a need for organizations to recognize the split between liquidity and interest costs.

**Risk controlling** - This function could be made responsible for designing and proposing the LTP system, and reviewing and adjusting the LTP parameters. This would involve establishing and developing liquidity risk controlling processes, methods and tools and performing liquidity risk controlling and reporting. With banks gradually coming to appreciate the benefit of splitting liquidity and interest costs, they might also want to consider preparing base data and cash flow split according to interest rate and liquidity aspects in a matrix form (time to maturity at origin vs. time to maturity at calculation time).

**Reporting** - In order to create transparency into costs and benefits delivered by LTP, consideration should be given to establishing relevant reporting processes with respect to speed and accuracy. This would involve providing information to assist in the management of liquidity strategic decision making, while being compliant to regulatory reporting requirements.

As is the case with capital, the liquidity reserves as well as the prices and benefits which are used for raising liquidity are fundamental to banking activities. Therefore, consideration should be given to making liquidity transfer pricing a key part of business decision making.

In the face of a changing global landscape, we consider it essential for banks to have a risk management function which is integrated, comprehensive and holistic. Such an approach could enable banks to react faster than their peers in the present volatile and competitive market.
Notes


BaFin (German Regulator), "Minimum Requirements for Risk Management" (German text), December 2012. Access at: www.bafin.de/SharedDocs/Downloads/DE/Rundschreiben/dl_rs1210_marisk_pdf.ba.pdf


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