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Article

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A proposal designed for calibrating the liquidity coverage ratio for Islamic banks

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Abstract

Purpose – This paper aims to critically investigate the liquidity risk management of Islamic banks and develop an alternative regulatory framework appropriate for liquidity management of these banks.

Design/methodology/approach – The specific risk profile of an Islamic bank requires developing a new and more efficient regulatory framework, which relies on risk-sharing and symmetric information among parties. The paper makes a differentiation between small local banks and internationally active Islamic banks and proposes to apply liquidity requirements only for internationally active Islamic banks.

Findings – A new proposal for the liquidity coverage ratio (LCR) of Islamic banks is developed in this paper towards mitigating risks and concurrently protecting the interests of investment account holders. Minimum and maximum thresholds are proposed for each liquid asset in this new LCR framework. An alternative liquidity approach is discussed to complement the proposal and several policy options are suggested.

Originality/value – As participation banks are exposed to market liquidity and market risks, more high-quality liquid instruments within a risk-sharing regulatory framework may provide the inner adjustment process through which any mismatch regarding maturity, risk, value or linkage with the real economy is corrected systematically. It offers policy implications for regulators, supervisors and international organizations.

Keywords Framework, Islamic banking, Liquidity, Regulation, Liquidity risk

Paper type Conceptual paper

Introduction

The contemporary banking system is more complex than 10 years ago because of the introduction of many regulations including liquidity coverage ratio (LCR) by the Basel Committee on Banking Supervision (BCBS), which is one of the global standard setters working on the prudential regulation of banks. Concurrently, the Islamic Financial Services



Board (IFSB), another global standard setter, concentrates on Islamic banks and introduces many rules and regulations for these banks. At present, the IFSB standards cover many issues related to Islamic finance. However, most of these standards are similar to those of the BCBS. For this reason, a major challenge to the growth and expansion of Islamic finance is the lack of relevant regulatory and supervisory standards specifically appropriate to Islamic finance. There are some concerns about the effects of Basel standards including the Basel III liquidity standards on Islamic banks' portfolio selection. The Basel III liquidity framework might lead to implementation challenges for Islamic banks in the coming years due to the limited availability of high-quality liquid assets and difficulties in calibrating the structure to suit the practices of Islamic banks.

Islamic banks have some structural differences from conventional banks in the context of contracts and the liability side of their balance sheet (Verhoef *et al.*, 2008). Deposits of Islamic banks are composed mainly of three classes of accounts: current account deposits, saving deposits and investment deposits. Investment accounts are divided into restricted and unrestricted investment accounts. Even in the case of the latter, account holders have an option to withdraw their investments before maturity. There is a possibility of premature withdrawal by account holders when there is a mismatch between investors' expectations of return and the actual return. In a perfect liquidity management system, it may be theoretically possible to estimate the likely demand for withdrawal. If this estimation is nearly perfect, these banks need to keep only that estimated portion as liquid cash or near-cash items. In practice, however, most Islamic banks hold high levels of excess cash.

It is accepted that short-term instruments are more liquid than long-term assets. Short-term excess liquidity is managed through the money markets. Several countries have developed money markets for Islamic banks where they can convert their assets into liquid assets when needed. These mechanisms allow Islamic banks to manage liquidity while staying profitable. Islamic banks may have excess liquidity because of the regulatory framework that requires achievement of the requirement of the LCR standards. This excess liquidity can decrease Islamic banks' profits and limit their market share. The foregoing discussion highlights the importance of liquidity risk management. Accordingly, this paper seeks to recommend an alternative mechanism for the liquidity requirement of Islamic banks to mitigate certain risks. For this generic purpose, first, this paper summarizes discussions in the literature about the liquidity of Islamic banks and then critically analyses regulatory issues. In this context, a new framework for liquid instruments will be developed. A new approach is offered in this paper to increase the transparency of liquidity investments of Islamic banks.

This paper is structured as follows: the second section discusses the literature on the subject matter. The third section then elaborates the regulatory issues for Islamic banks' liquidity management. The fourth section outlines the differentiation between local and internationally active Islamic banks. The fifth and sixth sections propose the design of a new LCR and highlight the areas of transparency and symmetric information, respectively. The seventh section suggests a new alternative liquidity approach (ALA) and is followed by the conclusion with policy recommendations.

Literature discussions

There are few studies in the literature related to the effects of standards on Islamic banks. Akhtar (2007) suggests that regulators should adopt different approaches for Islamic banks. Mongid (2015) explores the liquidity risk management of small Indonesian Islamic banks and claims that liquidity risk of Islamic banks is determined by capital adequacy as well as asset management and leverage. Mat Nor *et al.* (2017) study the risk management

applications of full-fledged Islamic banks versus Islamic windows in Malaysia and the sustainable rate of growth within restricted minimum requirements of liquidity. They also discuss other requirements and find that the LCR of Islamic banks has exceeded the minimum requirement of the Basel Accord. Furthermore, Islamic banks and Islamic windows are compliant with the risk management framework imposed by the regulatory body (Mat Nor *et al.*, 2017). Their results show clear messages for reforming the banking environment in terms of growth and its comparative advantages, specifically with regard to efficiency. Sarker (2016) examines monetary policy instruments introduced by central banks in several Muslim countries and finds only a few available instruments for Islamic banks to manage their liquidity risk. For this reason, he tries to recommend new instruments for liquidity risk management of Islamic banks. Islamic banks in many countries show greater potential for growth, which intensifies the specific challenges for these banks that need to be evaluated differently from conventional banks. For this reason, the specific needs of Islamic financial institutions should be taken into consideration when the regulatory framework is developed (Hesse *et al.*, 2008).

Islamic financial institutions showed greater resilience (Bourkhis and Nabi, 2013) and better financial performance during crises owing to their asset quality despite the lack of high-quality liquid instruments. Even though Islamic banks have to keep significant funds as cash to meet regulators' requirements, Ismal (2010) highlights that Indonesian Islamic banks have historically managed liquidity well despite operating in a fragile industry. He shows the trade-off between self-insurance against liquidity risks and opportunity costs of holding liquid assets. A proper understanding of the macroeconomic situation and regulatory framework is, therefore, important for addressing this trade-off. Aysan *et al.* (2013) claim that sovereign *shukūk* issuances will help liquidity risk management of Islamic banks. On the other hand, Alam (2013) finds that regulations increase the technical efficiency of Islamic banks and suggest that Islamic banks appear to be technically efficient in stricter regulatory conditions. It is claimed that tighter regulatory conditions improve the risk-transfer ability of banks, which results in avoiding risk-sharing contracts. Since Alam's (2013) study covers data for the period 2006-2010, new studies are needed to evaluate the effects of Basel reforms on Islamic banks' efficiency that are based on more granular data. However, all these studies evaluated the performance of Islamic banks before the introduction of the LCR requirements.

Although Basel regulations were developed for internationally active and large banks, most Islamic banks are small and have applied these liquidity standards. Moreover, this greater degree of resilience may be related to small bank effects (Hasan and Dridi, 2010). The majority of these small banks are scale inefficient in the sense that both profitability and capitalization are the primary determinants of Islamic banking efficiency (Rosman *et al.*, 2014). In this context, Saeed and Izzeldin (2016) suggest that a decrease in default risk is associated with lower efficiency levels. Macroeconomic control variables can also influence the behaviour of Islamic banks in managing liquidity according to Mohamad *et al.* (2013) based on evidence of Malaysian banks. The same result was found by Krasicka and Nowak (2012), who suggest that Malaysian Islamic banks have responded to economic and financial shocks in the same way as Malaysian conventional banks. Using parametric and non-parametric classification models, Khediri *et al.* (2015) find that Islamic banks are, on average, more liquid and profitable than conventional banks. Soylu and Durmaz (2013) show that participation banks in Turkey have effective and reasonably strong rates of profitability, despite a lower level of profitability than conventional banks. The participation banks in Turkey are noticeably influenced by interest rates (Ergeç and Arslan, 2013). Being influenced by interest rates may relate to being governed by the same banking law and not

having any money market specifically for them. On the other hand, specific studies on determinants of liquidity management of Islamic banks have shown that the probability of occurrence of irregular liquidity withdrawals and a liquidity run are very moderate in these banks. This may be the direct result of the satisfactory performance of Islamic banks and the confidence of their depositors (Ismal, 2010).

Asset and liability management is very critical for Islamic banks' liquidity risk management. Mohammad (2013) discusses this issue for Islamic banks, defining asset and liability management as the ability to find funding from short-term deposits to finance longer-term projects. Mohammad (2013) classifies the basic causes of liquidity risk for Islamic banks as follows:

- limited availability of a Sharī'ah-compatible money market;
- the slow development of financial instruments;
- avoidance of the commonly available interest-based conventional instruments for liquidity management;
- the inability to trade many products;
- dependence on current accounts; and
- differing rulings between various Sharī'ah scholars.

In certain jurisdictions Islamic banks are also required to apply the standards developed by the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI). The AAOIFI accounting standards are mandatory in eight countries. AAOIFI has a programme for certification of auditors, accountants, Sharī'ah scholars and Sharī'ah trainers (Song and Oosthuizen, 2014).

Adam and Thomas (2004) claim that the regulatory framework should protect the confidence of Muslims in the system as well as their investments. As this structure punishes Islamic contracts by imposing a higher risk weight for partnership-based contracts than fixed-return contracts, Islamic banks restrict their activities and are reluctant to introduce new products based on risk sharing. It is claimed that the risk-sharing feature of Islamic banks may facilitate absorption of external shocks and restrain against cash outflows. That is because there would be better transformation between liabilities and assets under the risk-sharing system (Chapra, 1985; Mirakhor, 2012; Maghrebi and Mirakhor, 2015). Akkizidis and Khandelwal (2008) suggest that any significant losses on *mushārahah* contracts (partnership) may debilitate any further continuation of the business. Ashraf *et al.* (2016) studied the impact of the Net Stable Funding Ratio (NSFR) on the financial stability of Islamic banks and found that the modified NSFR would have a positive influence on the financial stability of Islamic banks. They find that the marginal impact of the NSFR on stability weakens as the size of the bank increases. This means that if Islamic banks continue to grow, the positive implications of the NSFR on this sector would diminish.

Mirakhor (2012) explores the characteristics, operations and benefits of a comprehensive risk-sharing financial system for long-term economic and social prosperity to present the development of Islamic finance as a complete financial system. In this mechanism, a free flow of information in the market may increase efficiency (Mirakhor, 2010) and decrease vulnerabilities. To reinforce the efficiency of market operations, trust needs to be established among participants, transaction costs to be minimized, and rules set up to internalize externalities of two-party transactions. Trust can be reinforced by decreasing asymmetric information and providing the regulatory base for different expectations and beliefs of investors. Akın and Dolgun (2016) propose to apply the Chicago plan for Islamic banks and regard it as a conventional version of the Islamic precepts of risk-sharing, deposits for safe-

keeping only and prohibition of debt financing. See also [Ng et al. \(2015a\)](#), [Ng et al. \(2015b\)](#), [Nagayev et al. \(2016\)](#), [Mirakhor et al. \(2017\)](#) and [Ndieye et al. \(2018\)](#).

Regulatory issues for Islamic banks' liquidity management

It is suggested that the implementation of reforms, especially in Islamic banks, needs to be sequenced, taking into account several factors. Central banks' policies have important implications for all kinds of banks' risk-transferring or risk-sharing abilities. According to [Delis et al. \(2017\)](#), the propensity for risk taking is negatively related to monetary policy rates. That is, as monetary policy eases, banks assume a higher percentage of riskier assets. Moreover, central banks' treatment of assets and liquidity tools are applicable to all banks. If a central bank develops special products for these institutions, Islamic banks in its jurisdiction will manage liquidity much better because of their confidence in the lender of last resort mechanism. While the role of the central bank would be limited in a truly Islamic system, in today's real global world, there is a need for a prudent central bank that tries to level the playing field for Islamic banks.

In this context, an important issue of an asset's liquidity is whether it is considered "central bank eligible". An asset is accepted as central bank eligible if it can be used as collateral for the central bank open market operations. The BCBS considers the harmonization of collateral frameworks as an almost impossible task. Hence, the BCBS deemed harmonization of the definition of central bank eligibility infeasible. This acceptance, if done, would permit the treatment of Islamic assets as eligible assets for central banks. For these reasons, central banks in Muslim countries should be receptive to Islamic assets as eligible collateral for open market operations. As Islamic banks are small, treatment of their assets as eligible for open market operations would not cause any problems to the interbank money markets and monetary policy transmission channels.

A major challenge to the growth and expansion of Islamic finance is the lack of regulatory and supervisory standards specifically appropriate to Islamic finance. At present, the IFSB is the standard setter whose standards cover many issues related to Islamic finance. However, most of these standards are similar to those of the conventional system. IFSB standards recommend risk-based supervision of Islamic banks. On a general level, supervisory authorities appear to apply the same generic supervisory framework to both Islamic and conventional banks. They also use the same approaches, methodologies, processes and procedures. To deal with risks proactively, an appropriate stress testing framework formulated according to the Islamic bank's specificities needs to be developed by the IFSB with improved data focusing on the key features of Islamic banking. On an idiosyncratic level, the IFSB should advise and apply a compliance approach to Islamic banks.

It may be appropriate to apply risk management techniques equally to both Islamic and conventional banking. In this approach, a generic framework requires the application of generic processes and methodologies ([Song and Oosthuizen, 2014](#)). However, a global standard setter for Islamic banks should be careful when setting these standards. For example, if this body focuses solely on risks, local supervisory authorities should also only have to focus on risks. It is expected that an Islamic bank would conduct sound risk management and ensure that it has the appropriate capabilities, systems, procedures and governance to manage and mitigate risks. Accordingly, risk management prescriptions contained in the legal and regulatory framework typically apply to all banks in a jurisdiction. Thus, an Islamic bank is required to take account of the specific Islamic banking factors which may impact its risk profile. For this reason, the IFSB should develop rules that can accommodate these specific factors, analyse the markets, expand the playing

field and focus on the religious aspects of products and contracts to cover the extraordinary features of these banks. At the specific level, the IFSB can enforce different regulations appropriate to the risk profile of a typical Islamic bank rather than those applied to conventional banks. These differences would arise from the application of Shari'ah prescriptions and include factors such as the structure and legal form of the transactions, the assets and liabilities arising from the businesses, risks that were undertaken and the party absorbing the risk. Consequently, the IFSB conceptual regulatory framework should go beyond risk management. As the risk aspects are covered well by the Basel regulations, the IFSB should complement these standards by concentrating on the development of other regulations for Islamic banks.

There are some tools of liquidity management for Islamic banks in a few countries such as *shukūk* (Islamic financial certificates), *tawarruq* (tripartite cost-plus sale), participation papers (Dusuki, 2007), Cagamas *muḍarabah* (profit sharing) bonds, interbank deposits, interbank loans, interbank *murābahah*, central bank *wadi'ah* (saving custody) acceptance, Islamic repo and interbank *wakālah* (agency) (Verhoef *et al.*, 2008). Malaysian Islamic banks are fortunate that they have some liquidity management tools. However, participation banks in Turkey do not have such a wide choice of instruments. They have to invest in *shukūk*, commodity *murābahah* or keep cash. Obviously, these tools are not adequate for ensuring an efficient risk management of Turkish participation banks because of the gap between supply and demand for these instruments. According to IFSB (2014) research, high-quality liquid assets of seven countries mainly consist of Level 1 assets. This research shows that Islamic banks store 30 per cent of their liquid instruments in central bank accounts or cash accounts. One of the reasons may be to protect themselves against market liquidity and constraints related to regulatory standards. Many metrics are used for evaluating the liquidity of assets including bid-ask spread (the difference between demand price and supply price of an asset), turnover ratio (the percentage of an asset that has been replaced at a given time) and illiquidity (Amihud *et al.*, 2005). By applying these metrics, the liquidity level of assets is determined.

Differentiation between local and internationally active Islamic banks

Basel Accords are basically designed for internationally active banks; those that have international connections, have correspondent relations, and invest in international financial centres. Small local banks are concentrated in one region or in one nation and have no international activities. Although Basel II and Basel III standards were originally designed for internationally active banks, most regulators apply these standards to all banks. The findings of Aldasoro and Faia (2016) have reinforced differentiating the LCR requirements for different banks because imposing LCR differentially across banks is highly effective in delivering a more stable system. As our study shows that liquidity risk management poses particular challenges to Islamic banks, this paper proposes to exempt small banks from the LCR requirements.

Basel III standards give discretionary powers to the regulatory bodies for country-specific applications. It is possible to use these powers to expand the level playing field for Islamic banks. However, many Muslim countries' regulatory authorities strictly follow Basel standards without using their discretionary powers to facilitate the growth and expansion of Islamic banks. Small local Islamic banks should be excluded from the Basel Accords that were developed specially for internationally active banks. It is proposed that these small Islamic banks keep cash, *shukūk*, risk-sharing infrastructure project financing and partnership-based products on the asset side of their balance sheets (Table I).

It is possible to propose a framework for Islamic banks that is fully based on risk sharing. In this framework, Islamic banks would act similarly to mutual funds, managing both asset and liability-side risks with risk-sharing instruments. As mutual funds are currently not under the Basel framework, they can quickly issue risk-sharing based instruments. However, in this model, these institutions have to manage liquidity more carefully because on the liability side they will have investment papers, and on the asset side they will have short-term and long-term financing, including diminishing *musharakah* (shared ownership with a leasing sale-back arrangement) and private equity financing or venture capital. Our model stands at the border of the current framework, proposing some changes to regulations in the existing framework to expand the playing field for Islamic banks. Such changes would allow Islamic banks to expand financial inclusion of a large and now-excluded segment of the society when a framework or model more amiable to their beliefs is adopted.

Designing a new liquidity coverage ratio

The results found by [Aldasoro and Faia \(2016\)](#) provide strong evidence for differentiating the LCR requirements for different banks. They show that imposing LCR differentially across banks is highly effective in delivering a more stable system. As the current liquidity risk management poses particular challenges to Islamic banks, this paper proposed in the previous section the application of the LCR only to internationally active banks. It is a challenge for Islamic banks to maintain an appropriate level of resources for liquidity management purposes and to simultaneously optimize the return on such resources by finding appropriate investments for their surplus liquid resources. As in Islamic banking, compatible liquid assets are very scarce in interbank markets ([Kammer et al., 2015](#)), an Islamic bank with surplus often makes use of commodity *murabahah* (cost-plus financing) transactions for its liquidity management.

In developing a structure for liquidity management, the specifically appointed individuals in charge of managing the liquidity strategy may set liquidity risk limits conditional on the bank’s size and complexity. These limits are reviewed by supervisors. It is advised for a bank to analyse its stress resistance under different scenarios and to have information systems in place to check whether it complies with the policies. Additionally, the bank is expected to carefully assess cash inflows against outflows to identify potential shortfalls under several scenarios, and to make sound assumptions about future funding needs. The bank can develop contingency plans specific to its needs, charting strategies for emergency situations. Internal control systems, both conventional internal auditing and Sharī’ah screening and auditing, are very important for ensuring a sound liquidity risk management process. These control activities should be reported to relevant bodies or stakeholders as well as Sharī’ah advisory boards. It is recommended that stress tests be

Assets	Liabilities
Cash and cash equivalents – less than 5 per cent of total assets	Investment accounts
<i>Ṣukūk</i>	<i>Wadi’ ah</i> Accounts
Risk-sharing infrastructure financing	Tier 2 <i>Ṣukūk</i>
Partnership-based financing – at least 30 per cent of assets	Paid-in capital
Others (<i>Murābahah</i> , <i>Ijarah</i> [lease]) – Less than 50 per cent of total assets	Others (undistributed profit, etc.)

Source: Authors’ own

Table I.
Proposed balance sheet for small Islamic banks

performed regularly and that the results be actively integrated into the bank's liquidity risk management strategies. The bank should also consider the potential behavioural response of counterparties under the assumed stress situations and be aware of the fact that a stress event could affect its customers' use of intraday liquidity, which can threaten the liquidity position of the bank. The qualitative information, such as the aspects of liquidity risk in which the bank is involved, the assumptions used in the measurement of risk and the limits imposed on liquidity positions should all be disclosed by the banks. The new framework will be based on the recommendations made so far. The main objective of the new LCR for only internationally active banks is to keep funding liquidity (i.e. the ease with which funding can be obtained) and market liquidity (i.e. the ease with which market instruments can be traded) stable (Brunnermeier and Pedersen, 2007). In this context, it is possible to design a new LCR by protecting resilient and stable funding of the internationally active banks:

$$\text{Co}(t) - w\beta \leq \text{If}_t + \text{LA}_t - C \quad (1)$$

where $\text{Co}(t)$ is cash outflows, If_t is cash inflows, LA_t represents liquid assets and C is cash account. β added to the left side of the equation is the coefficient of cash outflows from the restricted investment accounts, and it is specified as 40 per cent of the restricted investment accounts. The main logic behind this coefficient is simple: it is assumed that participation banks have 40 per cent and investors have 60 per cent profit share of investments according to the general practice among participation banks in Turkey. This equation shows that the LCR has to be larger than 60 per cent of net cash outflows.

For Islamic banks, the right-hand side of the equation should be larger than the left-hand side, as Islamic banks take deposits from customers for both investment and saving purposes. Saving accounts are exposed to cash outflows, while investment accounts are expected to be stable. For this reason, a 100 per cent level of LCR would not be appropriate for Islamic banks. The variable C represents cash account on the asset side of the participation banks' balance sheets. As participation banks can keep cash arbitrarily, there is a need to restrict these arbitrary actions. The cash account should be limited to 20 per cent of LCR. According to the newly designed LCR proposed here, participation banks have to keep 60 per cent LCR. Moreover, the β coefficient would be 40 per cent of restricted investment account cash flows and would be deducted from net cash outflows.

According to the discussion, this paper proposes a change to the framework of LCR for Islamic banks. It suggests dividing the new LCR into three components: cash-based LCR, highly liquid instruments-based LCR and net cash outflow. Cash-based LCR would cover cash and central bank reserves and would be limited to 20 per cent of net cash outflow. Highly liquid instruments-based LCR are limited to an interval between 50 and 90 per cent. The new LCR is proposed to have a ceiling of 110 per cent and a floor of 60 per cent. In this framework, banks have to control their cash and other asset stocks. This means that regulators will control both the floor and ceiling of the high-quality liquid instruments. There is no need to only concentrate on cash or central bank reserves. The minimum and maximum threshold for the new LCR framework can be seen in (Table II).

Highly liquid instruments, from an Islamic perspective, are instruments that are based on real assets, have a transparent mechanism, are structured to safeguard the interests of both *muḍarīb* (capital user/entrepreneur) and *rabb al-māl* (capital owner) and have active (first and secondary) markets. These products are expected to be sold very easily in the markets because they have a real right to recourse to the asset and have a secondary market. The model proposed here simplifies the LCR for Islamic

Table II.
Minimum and
maximum threshold
for new LCR
framework

Instruments	Minimum (%)	Maximum (%)	Maximum share for a group (%)
Cash	5	10	
Central bank reserves	5	10	20
<i>Şukūk</i>	15	25	
Risk-sharing instruments	10	20	
Perpetual <i>Şukūk</i> or long-term securities	10	10	
<i>Esham</i> (Sharī'ah-based fixed- return instrument for investment used by the Ottoman government)	3	5	
Exims (trade-based short-term Sharī'ah-compliant instrument)	4	10	
Other new structured liquid instruments	4	10	80
Other Sharī'ah-compliant instruments	5	10	

Source: Authors' own

banks. This new liquidity framework would classify cash and central bank statutory reserves as Level 1 assets. *Şukūk*, Exims, risk-sharing instruments, *Esham*, perpetual *şukūk*, any new partnership-based instruments and other liquid instruments backed by or based on tangible assets would be classified as Level 2 assets. Relevant potential haircuts based on the market demand should be applied to these assets according to their riskiness and transparency levels. Credit rating agencies should rate banks' transparency levels and product transparency levels. Assets that are fully transparent should not have any haircut if they have deep secondary markets. An indicative haircut list for the new LCR is presented in [Table III](#). In this structure, this paper proposes to introduce a ceiling and floor for the cash and statutory reserves kept in central banks to force banks to increase their efficiency and protect their profitability. If any bank's cash level exceeds the specified amount, this excess amount would not be treated as high-quality liquid assets. In this structure, there is no need to differentiate Level 2 assets into Level 2A and Level 2B assets because identified haircuts are applied for these products. Hence, there is no cap for Level 2A or Level 2B assets in this structure. Under this new framework, new liquid instruments introduced by public or private institutions (such as GDP-linked *şukūk* or *Esham*) can be treated as Level 2 high-quality liquid assets without changing any other specific regulations.

Transparency and symmetric information

In this paper, it is suggested that the transparency of Islamic banks liquidity management should be enhanced through compliance with capital market requirements for their investments. In this sense, all Islamic banks should be required to make available clear and direct information regarding their liquid investments to the investors who deposit cash in their accounts. Increasing the transparency of liquid instruments would be an effective buffer against cash outflows. As in this structure, investors have substantial information regarding an Islamic bank's liquid investments, they would not have a right to demand their cash in stress times. Improving transparency would provide Muslim investors with a better base for understanding banks' internal strategies and risks inherent in the model.

Asset	Haircut	Liquidity coverage ratio
<i>Level 1 Assets</i>		
Cash (If between ceiling and floor)	0	
Central bank reserves (If between ceiling and floor)	0	
<i>Level 2 Assets</i>		
Şukūk or other Sharī'ah-compliant securities issued by multilateral development banks (MDBs)	5	91
Sovereign Şukūk (<i>Ijārah Şukūk</i>) having secondary markets and based on tangible assets	5	
Perpetual Şukūk or long-term securities	5	
<i>Esham</i>	5	
Sovereign Şukūk (<i>Wakālah</i> [partnership] Şukūk) having secondary markets and based on a pool of assets	10	
Risk-sharing instruments issued for public finance but can be sold on the secondary market	10	
EXIMS	10	
Other new structured liquid instruments issued by Sovereigns	15	
Other Sharī'ah-compliant instruments issued by public sector entities (PSEs)	25	
Corporate Şukūk based on AAA – AA rating	50	
Corporate Şukūk based on A rating	60	
Corporate Şukūk based on BBB – BB rating	70	

Source: Authors' own

Table III.
New LCR haircut

Mejía *et al.* (2014) offer a disclosure regime that requires provision of sufficient information to assess the relevance of policies regarding investment and portfolio diversification, risk-weight of exposure to illiquid assets and the corporate governance system. Stiglitz (2000) gives an example of putting a race car engine into an old car and setting off without checking the tyres or the training of the driver. This interesting analogy reminds us that all components should be reformed and restructured together to increase resiliency and reduce vulnerabilities. In this sense, the principles of transparency will help the process of checking other components that are not discussed in detail as well as the training and disciplining. Correspondingly, markets with low transparency may have to increase liquidity (Mousavi and Mousavinia, 2014). Increasing transparency is an important buffer against liquidity runs. For this reason, this paper develops the following principles for increasing transparency for investors:

- A more detailed report on profit and loss sharing investment should be provided to investment account holders, capital owners and regulators every month.
- Internal models' and stress testing models' results should be provided to investment account holders annually.
- Counterparty risks and the methods for mitigating these risks should be transparent to customers.
- Good corporate governance should be developed and implemented to enhance the trust of investors and other stakeholders. In this context, financial goals of the bank, the achievement rate of objectives, and statements for future objectives should be transparent to all investors.

- Information should be available to investment account holders regarding *ṣukūk* issuances, both pre-trade (if needed) and post-trade, as well as information related to assets that back *ṣukūk* or other transactions such as *tawarruq*. This information should even be available to the unrestricted investment account holders. More importantly, it should be provided after each issuance or trade of instruments.
- A cash report should be prepared regularly in which all the reasons for staying in cash should be explained in detail.
- Information on Shari‘ah board members, meeting days, the material provided to them for their decision-making, as well as the Shari‘ah arguments underpinning the boards’ decision, should be provided to all stakeholders.

Islamic banks can disclose this information to the public, or they can choose to provide it only to their investors or their stakeholders. Each bank can construct a new platform on the internet where they provide all this information to investors, especially both restricted and unrestricted investment account holders.

New alternative liquidity approach

There are three options within the current ALA mechanism developed by the Basel Committee and accepted and proposed to Islamic banks by the IFSB (2015). The first option is to use contractually committed liquidity facilities from the relevant central bank for a fee. This option is not reasonable for Islamic financial institutions that have to bear the costs of high liquid assets and sacrifice profitability. Moreover, the first option may lead to reductions in the profits of Islamic banks. The second option is to use foreign-currency denominated high-quality liquid assets to cover currency liquidity needs. This option can be accepted as an alternative because Islamic banks have the option to hold the Islamic Development Bank *ṣukūk*, which are long-term *ṣukūk* or the International Islamic Liquidity Management Corporation *ṣukūk*, which are short-term *ṣukūk*. Using this option, Islamic banks have to find US\$ to buy these securities and hedge their foreign currency risk. This option also increases the cost of capital for Islamic banks. The third option is to use additional Level 2 assets with a higher haircut. This option is also not viable for Islamic financial institutions because there is a shortage of Level 2 assets in many jurisdictions.

This paper recommends the design of a new ALA facility only for Islamic banks. First, under the new ALA mechanism, there should be no limit to Level 2A or Level 2B assets. Second, a contractual commitment mechanism should be offered by central banks without any fee under several circumstances, such as if a bank has a short-term shortage of high-quality liquid assets. The banks that have enough cash should have the right to sign a *wakālah* contract (agency) with the central bank without any fee. The central bank would give high-quality liquid assets to Islamic banks by applying criteria specified in its regulations. The last option is the use of foreign currency high-quality liquid assets with the hedging opportunity of central banks.

Conclusion and policy recommendations

This paper critically investigates the factors that affect liquidity risk management of Islamic banks and then develops an alternative regulatory framework appropriate for their liquidity management in particular. The specific risk profile of an Islamic bank requires developing a new and more efficient regulatory framework. The Islamic banking system relies on risk-

sharing and needs to maintain symmetric information among parties. The regulatory framework should mitigate risks and concurrently protect the interests of investment account holders. This necessitates the design and implementation of new liquidity standards for Islamic banks.

In this context, first of all, this paper differentiates between small local banks and internationally active Islamic banks and proposes to apply liquidity requirements only for internationally active Islamic banks. Small local banks will only bear the cost of increasing transparency. After that, the LCR mechanism is calibrated according to the needs of Islamic banks. Finally, ALA is designed as a complement to the new liquidity framework.

Protecting Islamic banks against the shocks coming from market liquidity and funding liquidity requires ensuring sound infrastructure, a well-developed surveillance system, prudential supervision, new products and deep financial and capital markets. Moreover, the trust of investors is an important component of the growth of this sector. The only way to increase trust and confidence is to reform current regulatory frameworks, level the playing field, strengthen transparency, develop good corporate governance and have a better business model. The Basel standards and the IFSB standards are not providing the appropriate level playing field required for Islamic banks. Although establishing the IFSB was a much-needed attempt, the standards introduced by this institution are far below the expectations of Muslim investors. Nevertheless, this paper recommends the application of these IFSB standards to countries that wish to start licensing of Islamic banking operations, as the IFSB has incorporated several new standards that allow expansion of the level playing field for Islamic banks, especially the capital standards. Therefore, at present, these standards can be accepted as the second best option. However, it needs to be noted that liquidity risk management of Islamic banks has become highly crucial after the introduction of the LCR standards. The new liquidity framework entails the necessity to have enough eligible liquid assets, Sharī'ah-compliant secondary markets for these instruments, and functional interbank short-term markets that have Sharī'ah-compliant instruments.

It is argued that this new regulatory framework will increase the resilience of Islamic banks' liquidity management against market conditions and macroeconomic factors, strengthen Islamic banks' top management to be more rule-compliant and will also enhance the level of trust of investment account holders. It is challenging to regulate financial systems where risks are persistently shifted rather than shared and where regulation is constrained by moral hazards and negative externalities. A new paradigm for financial regulation requires a restructuring of these relations, controlling unnecessary leverage and avoiding debt refinancing. Other key elements are the matching of assets and liabilities, the elimination of the credit multiplier effect and the promotion of wealth formation rather than money creation. Future regulation should thus be guided by the following principles (Mirakhor, 2014):

- Materiality-matching structure implies that the nominal value of each financial transaction is matched with the value of real assets such that the expected payoffs to stakeholders in financial intermediaries are reflective of the rates of return to the real sector of the economy.
- Risk-matching structure is required to ensure that no asset is associated with a riskier corresponding element on the liabilities side.
- Maturity-matching structure imposes a strict correspondence of assets to liabilities with similar maturities.

- The value-matching structure requires that price fluctuations leading to asset revaluation are systematically offset by appropriate changes on the liabilities side.
- Full transparency is required for each item on both sides of the balance-sheets of Islamic banks.
- Governance structure requires that all stakeholders in financial intermediaries are empowered with appropriate rights of participation in the decision-making process.
- An important objective underlying the regulatory framework for Islamic banking should be to avoid undermining the stability of the financial system.

Key elements to achieve this objective include:

- understanding the nature of Islamic banking activities;
- making appropriate changes to the existing regulatory framework for Islamic banking; and
- levelling the playing field between Islamic and conventional banking. Current trends indicate that specific elements relating to Islamic banking are being increasingly incorporated into the regulatory framework.

These conditions provide an inner adjustment process through which any mismatch regarding maturity, risk, value or linkage with the real economy is systematically corrected. The corrective dynamics of balance-sheet structures can take place without undermining the crucial functions of financial intermediaries in the economy. As a result of the inherent stability of financial systems based on risk-sharing, the costs of financial regulation and supervision are also clearly diminished.

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