Regulation and Supervision for Sound Liquidity Risk Management for Banks

Final Report

Prepared for the Korean Institute of Finance
(On behalf of the ASEAN+3 Research Group)

By

Fiscal Policy Research Institute, Thailand

February 2010
# Table of Contents

List of Tables .................................................................................................................. iii

List of Figures ................................................................................................................... iv

**Chapter 1 Introduction**

1.1. Objectives of the Study .........................................................................................1-3

1.2. Scope of the Study .................................................................................................1-4

1.3. Organization of the Study ......................................................................................1-7

**Chapter 2 The Overall Status of Regulation and Supervision of Bank Liquidity Risk Management in Asian Countries**

2.1. Liquidity Risk Management for Banks .................................................................2-4

2.2. Reviews of Regulatory Best Practices and Major Recommendations Suggested by International Organizations .................................................................2-15

2.3. The Overall Status of Regulation and Supervision of Bank Liquidity Risk Management in ASEAN+3 Countries .........................................................2-28

**Chapter 3 Potential Merits and Concerns of the Current Regulations**

3.1. The Experience of Asian Nations in the Regulation and Supervision of Bank Liquidity Risk Management in Times of Crisis .................................................3-1

3.2. Potential Merits and Concerns of Current Regulation and Supervision in ASEAN+3 ........................................................................................................3-18
Chapter 4 Policy Recommendations for Sound Liquidity Risk Management for
Banks in ASEAN+3

4.1 Possible Alternatives for an Individual Country ........................................4-1

4.2 Possible Regional Cooperation .................................................................4-4

References ...........................................................................................................R-1
List of Tables

Table 2.1.1: The Principles for the Management and Supervision of Liquidity Risk………………………………………… ………………………………………2-12

Table 2.2.1: A Review of Regulatory Best Practices and Major Recommendations as Suggested by Certain Major International Organizations ……………………………………………………………… ……………………….. 2-22

Table 2.3.1: Local Supervisors in East Asian Countries and Their Liquidity Risk Management Manuals ………………………………………………..2-29

Table 2.3.2: A Comparison of National Liquidity Risk Management Regimes …………………………………………………………………………..2-31

Table 2.3.3: Comparison of National Liquidity Risk Management Quantitative Approach ………………………………………………………………..2-34

Table 3.1.1: Examples of the ASEAN+3 Revisions of Regulations and Supervision …………………………………………………………………………..3-10
List of Figures

Figure 1.3.1: Organization of the Study ..................................................1-7

Figure 2.1.1: Comparison of Monitoring Approaches .............................2-8
INTRODUCTION

In managing a variety of assets and liabilities, banks face various risks, such as market risk, credit risk, liquidity risk, etc., everyday. Among these, liquidity risk has not been stressed for supervisory purposes as much as market or credit risk. In practice, every institution needs levels of liquidity high enough to meet its payment obligations and low enough to take advantage of any investment opportunities. As sources of funding become ever more volatile and costly, active liquidity risk management enables institutions to keep ahead of the competition.

However, liquidity risk is especially prominent in a financial crisis since a credit crunch and illiquid financial markets make it hard for banks to find funding sources, roll-over their debts, and mitigate maturity mismatches.

Banks in many Asian countries are exposed to foreign currency liquidity risk because their local currencies are not internationally accepted as a key currency. Moreover, since international trade plays an important role in many Asian countries, foreign currency liquidity risk management is crucial for the soundness of such banks. If the worldwide financial market is unstable, those banks are likely to have difficulty accessing foreign funds and liquidating foreign assets. Their foreign currency maturity mismatches might, in turn, be severe, with negative foreign currency cash flows.
Each country has its own forms of regulation and supervision of liquidity risk management. Most countries have quantitative regulations, such as the liquidity ratio and the maturity gap ratio, and this approach is supposed to provide a tool to prevent banks from insolvency. It, however, does not take financial market conditions into account. Some countries have adopted requirements for bank liquidity risk management through stress testing, constructing contingency plans, etc. With liquidity risk becoming more important as the financial crisis intensifies, it is meaningful to review current regulation and supervision on bank liquidity risk management in Asian countries and analyze the merits and drawbacks of such regulations, especially those regarding foreign currency liquidity management. Thus, establishing an appropriate regulatory framework is essential to the effective management and control of liquidity risk.

In order to further explore the issues, the Fiscal Policy Research Institute (FPRI) proposes to conduct a study from theoretical and empirical perspectives. In what follows, this proposal, serving as a broad guideline, will address a major set of components relevant to the subject matter in a brief and concise manner.

1.1. Objective of the Study

The FPRI’s study on “New Financial Products and Their Impact on the Asian Financial Markets” has the following objectives:

1.1.1. Review and analyze the overall status and role of new financial products in the process of financial development in the ASEAN+3 countries,

1.1.2. Review the overall financial market structures and analyze the potential merits and drawbacks of introducing new financial products, and

1.1.3. Identify appropriate policy measures and regulations needed to minimize the risks involved in the introduction of new financial products, such as collateralized bond obligations (CBO), credit derivatives, etc.
1.2. **Scope of the Study**

In order to achieve the above objectives, a possible scope of the study can be outlined as follows:

1. The overall status of regulations and supervision on bank liquidity risk management in Asian countries

   Review and analyze the overall status of regulations and supervision on bank liquidity risk management in Asian countries.

   The study will review theoretical and investigate empirical analyses on regulation and supervision on bank liquidity risk management. In this regard, we will firstly review the best practices suggested by international standards, such as those set by the Basel Committee on Banking Supervision, on the following topics:

   - The importance of establishing a liquidity risk tolerance;
   - The maintenance of an adequate level of liquidity;
   - The necessity of allocating liquidity costs, benefits and risks to all significant business activities;
   - The identification and measurement of the liquidity risks,
   - The role of traditional liquidity risk management approaches;
   - The role of advanced liquidity risk management approaches
   - The management of intraday liquidity risk and collateral; and
   - Public disclosure in promoting market discipline;
and stress the following topics:

- The importance of assessing the adequacy of a bank’s liquidity risk management framework and its level of liquidity by the regulatory and supervisory authorities,

- Steps that supervisors should take if these are deemed inadequate.

Then we will examine the particular experiences of Asian countries that apply policies for the liquidity risk management in banks through their supervision manuals and/or their regulation. Comparisons will be made across Asian countries in so far as data are available.

2. The potential merits and drawbacks of current regulations

Review and analyze the potential merits and drawbacks of current regulations.

The study will further analyze the overall status of regulations and supervision on bank liquidity risk management in Asian countries focusing on their experiences in financial crises (particularly, the 1997 Financial Crisis and the current sub-prime crisis). In this connection, the potential merits and drawbacks of the existing regulations and supervision will be analyzed.

- Experiences of Asian countries in bank liquidity risk management in the time of financial crisis.
  - Regulatory responses to liquidity problems
  - Role of deposit insurance in a liquidity crisis
Remedial actions: required actions from banks to strengthen liquidity risk management

- The importance of effective cooperation between supervisors and other key stakeholders, such as the central banks, especially in times of crisis

- Merits and drawbacks of the current regulations and supervision in Asian countries.

- Potential merits:
  - Benefits for risk management in a normal situation
  - Benefits for risk management in a financial crisis.

- Potential drawbacks
  - Drawbacks for risk management in a normal situation
  - Drawbacks for risk management in a financial crisis.

The study will then show the importance of taking financial market conditions into consideration

3. Policy measures and regulations, especially in regards to foreign currency liquidity risk management that take financial market conditions into consideration.

Identify policy recommendations

In this paper, we will recommend policy measures and regulations to mitigate potential liquidity risks that take financial market conditions into consideration. We will focus on foreign currency liquidity risk management. The study will also assess the roles of the regulatory and supervisory authorities in bank liquidity risk management:

- How to reduce the potential risks when a financial crisis happens and intensifies.
1.3. Organization of the Study

This study is organized as followed.

Figure 1.3.1: Organization of the Study

- The overall status of regulations and supervision on bank liquidity risk management in Asian countries
- The potential merits and drawbacks of current regulations
- Policy measures and regulations, especially in regards to foreign currency liquidity risk

1. Review the best practice suggested by the Basel Committee on Banking Supervision
2. Examine the bank liquidity risk management experiences of Asian countries
3. Comparisons will be made across Asian countries insofar as data are available
4. Review the experiences of Asian countries in bank liquidity risk management in the times of financial crises
5. Identify potential merits and drawbacks of current regulations and supervision in Asian countries
6. 1. Recommend policy measures and regulations to mitigate potential liquidity risks that take financial market conditions into consideration.
7. 2. Particular attention will be paid to foreign currency liquidity risk management.
8. 3. The study will also assess the roles of the regulatory and supervisory authorities in bank liquidity risk management
THE OVERALL STATUS OF REGULATION AND SUPERVISION OF BANK LIQUIDITY RISK MANAGEMENT IN ASIAN COUNTRIES

In the current world economy, the global economic growth has expanded in the past 25 years, both from developed and developing economies, under the condition of low and moderate inflation. Along with such growth, liquidity level is enhanced by the transformation of physical and productive assets to financial assets that creates asset money i.e., financial market liquidity. A general definition of liquidity is referred as any form of money that can be used to buy goods and services or to invest in an asset. Liquidity frequently consists of power money created by central banks, broad money created through traditional bank lending system, securitized debts created by capital markets, and derivatives. In 2006, the value of outstanding total liquidity has been estimated to be as high as 10 times of world GDP. Recently, the idea of New Monetarism presents a set of economic factors, that accelerates the possible creation of massive liquidity, as follows;

- The global imbalance that built up the U.S. trade deficit and Asia’s surplus
- The global debt-recycle mechanism
- The U.S. borrowing and saving behavior

New financial innovation that provides unlimited liquidity

---

1 The liquidity proportion is 1%of power money+9%of broad money+10%of securitized debts+80%of derivatives.
First, the global imbalance builds up the U.S. trade deficit and Asia’s surplus for the past decade. The over consumption in U.S. switches the role on international trade between West and East. The volume of U.S. imports has increased overtime while Asia has become world’s production base and exporter. Therefore, Asia has gained surpluses as U.S. has experienced deficit. International reserves and savings in Asia have reached high level and capital flows have turned around from East to West. Next, the mechanism of global debt recycle, invented by financial planners, accelerates the process of liquidity expansion. For example, re-borrowing an increased equity and invest money in a diversified share portfolio or rental property can be one strategy for debt recycling that increases liquidity spiral. This process can cause massive capital in financial markets that may need to be regulated. Moreover, under the concept of New Monetarism, the liquidity expansion under disinflation environment drives up asset prices. This situation is related to consumers’ saving and borrowing behaviors. For instance, the U.S. consumers tend to borrow more and save less due to two reasons; an increase in asset prices and over-consumption behavior. The U.S. housing market is a good example in this case; housing prices were driven up by the U.S. local demand. Lastly, new financial innovations have provided unlimited liquidity to the global system. For example, the process of collateral debt obligations (CDOs) and credit default swaps (CDS) has created an unrealistic massive liquidity in financial markets. However, with their complexity, it is not easy to liquidate these financial instruments during a stress situation.

Moreover, massive capital flows to Asia due to her relatively high potential growth. The fact that the present monetary control measures were unable to regulate and contain liquidity expansion effectively indicates weakness of the financial system that may lead to a potential liquidity crisis. For example, financial institutions faced the problem of illiquidity or liquidity risk during the subprime crisis in 2008 because they were not able to assess enough liquidity when they were in real need. As a result, it is necessary for both central banks and banks to put an appropriate and efficient control system, which can identify, measure, monitor, and manage liquidity, in place.
As for Asia, she has managed her economy well and considered to continually progress. The domestic demand will continue to grow with promising investment opportunity in tandem with high savings rates in the region. With excessively high liquidity in the global markets and high potential growth in Asia, capital is expected to flow into Asia seeking better investment opportunities. This cause concerns to Asian policy makers that the possible massive net capital inflows in foreign currencies and its volatility may, at the end, cause disruption in Asian Financial System. Although ASEAN+3 have developed some forms of financial cooperation, CMI, surveillance system, and Asian Bond Market, unlike the European Union, the cooperation has not yet reached to the point that can be used to collectively insulate the impact of capital flows. The self-help mechanism has been focused on curing a country member if there is a shortage of short-term liquidity due to massive capital outflows. Therefore, in general, the massive liquidity inflows, if happened, will be insulated by each individual central bank via macroeconomic management such as exchange rate and interest rate policies, and various mechanisms to promote capital outflows through public and private channels. The financial system—mainly banks and capital markets—would then have to manage liquidity risk of their own.

Additionally, in capital markets, which trading stocks, bonds and financial derivatives, are the “direct financing channels”, the investors are obligated to monitor their own risks. The Security Exchange Commission mainly promotes transparency of transactions at the full level of information to all. The banking sector; on the other hand, is the “indirect finance channels” where depositors are either fully or partially guaranteed. It has the public liability and the supervisory agency i.e., central bank and financial supervision agency. They must layout the strong rules and regulations to insulate risks and to prevent the public from possible damages.
Consequently, with excessive capital flows in the ASEAN+3 that causes financial volatility, macroeconomic managements are required for such volatility control at both regional and national levels. It is also necessary for supervisors and regulators to exercise liquidity management at the micro level on banks and other financial institutions. Capital markets; stocks and bonds, including banks must be monitored to observe possible stress condition, and then, avoid potential liquidity crisis. Finally, the sound regulation and supervision must be undertaken.

This Chapter divides into 3 sections. The first section describes fundamental concepts of liquidity risk management for banks, as an introduction to the Chapter, along with their implications to the ASEAN+3 countries. The second section reviews the regulatory best practices and major recommendations given by international organization. Lastly, the third section presents the current overall status and compares the regulation and supervision of liquidity risk management for banks in the ASEAN+3 countries.

2.1 Liquidity Risk Management for Banks

In the context of liquidity risk management, a bank’s liquidity is defined as the ability to fund increases in assets and meet obligations as they come due\(^2\). Therefore, with the parallel meaning, liquidity risk refers to risks resulted from a financial institution’s failure to pay its debts and obligations when due because of its inability to convert assets into cash. Moreover, liquidity risk can also refers to the inability to procure enough fund due to exceptionally high costs of liquidity transformation that may affect the financial institution’s incomes and capital fund, either now or in the future. This failure or inability can prompt the financial institution to suffer from liquidity crunch, especially, when demand for the capital is far higher than its existing liquidity level. This can thus force the financial institution to go under stress condition. Several unique characteristics of liquidity risk must be noted here before getting to the essence of management. First, it

is difficult to measure liquidity risk due to uncertain cash-flow obligations, which
depends on external events and on other agents’ behavior. Second, liquidity risk is likely
unpredictable because a secondary event often occurs following another type of risk
event. Third, the severity of liquidity risk issue can grow rapidly and system-wide
connected. Lastly, there is a tipping point beyond which recovery is impossible once a
system faces a liquidity crisis. In sum, liquidity stresses are low frequency, but extremely
severe, events that are now well understood.

The main objective of liquidity risk management is then to ensure sufficient
reliable liquidity at all times and in all circumstances. It is necessary to guarantee banks’
ability to meet its cash flow obligations. Since maturity transformation of short-term
deposits into long-term loans is one of banks’ fundamental roles, banks are then
inherently vulnerable to liquidity risk, both of an institutional-specific nature and a
system-wide effect. Liquidity risk management is of paramount importance because a
liquidity shortfall at a single institution can have system-wide repercussions. Moreover,
financial market developments in the recent age have increased the complexity of
liquidity risk and its management.

One crucial element of liquidity risk management is to monitor liquidity and
funding. Financial institutions need to have the capability and knowledge for regular
liquidity risk management for running a report that can measure a potential impact of
moderate risk and crisis situations. However, some difficulties are illustrated as areas of
concern in liquidity risk management. First, data is scare and lacking in quality. Also,
historical events are not a particularly accurate predictive agent. Then data gathered
from normal business activities may not be a good proxy for stress testing. It is obviously
required good database system to gain sound liquidity risk management. Additionally,
the liquidity risk management must include a projection of sources and uses of a bank’s
funds. By all means, the sound liquidity risk management, both in short run and long run,
is an integral component of a bank’s contingency funding plan that can help the bank to
prepare itself for any significant funding crisis that could arise. Fundamentally, the liquidity measurement process consists of four necessary systems as follows;

- **Use of ratio analysis**: The use of ratio analysis is one of the powerful tools in liquidity management. The application of ratios is developed to measure the relationship between various components in a bank’s balance sheet. Examples of ratio analysis utilized for liquidity measurement are minimum liquid asset (MLA) requirement i.e., capital adequacy ratio (CAR) and reserve requirement i.e., minimum cash balance (MCB). At the same time, the application of ratio analysis can be conducted for planning and preparing an institution’s activities and strategies. It can also be used as a comparison among the various liquidity measures. In addition, a bank’s liquidity position needs to be monitored with the application of these ratios, both on-balance-sheet and off-balance-sheet items.

- **Cash flow measures**: The underlying measurement tool for liquidity is projection of cash flows based on both supply and demand for liquidity under normal market conditions. Also, evaluation of the implications of stress events on the projected cash flows is important. Institutions could conduct liquidity analysis with liability-based or off-balance-sheet funding strategies. The use of so-called pro forma cash flow statements may be benefit. The pro forma cash flow analysis usually shows institutions’ projected sources and uses of fund under various liquidity scenarios. It can also identify potential funding shortfalls and liquidity gaps. The analysis should incorporate multiple scenarios that deliberate both general and unique risks faced institutions. Such analysis must be corresponding to the complexity of the institution’s liquidity profile. At the end, it must measure a wide range of institutions’ liquidity sources as another tool of liquidity management.

- **Various risk-based measures or framework used by financial institutions**: Such measures or frameworks are important to capture possible risks in
a system since risks are related to each other. Risk appetite must be defined based upon well-defined criteria. For instance, target surplus must include proportion of total reliable liquidity, maximum financing requirement any period, target holding of liquid assets, and limits on maturity mismatches. Moreover, reliability measures should consist of limits on reliance on a particular funding source and concentrate risk parameters. Therefore, the risk appetite should be reflected in a series of operational criteria and limits used to manage liquidity risk.

- **Monitoring approaches:** The basic approaches for monitoring the level of liquidity risk exposure maybe categorized into three types: the liquid assets approach, the cash flow approach, and a mixture of the two as explained as follows;

In *liquid asset approach*, banks will maintain liquid assets on its balance sheet that can be drawn up on when needed. Most unsecured receivables will be treated as illiquid assets. As a variation, the banks may maintain a pool of unencumbered assets such as government securities to obtain secured funding through repurchase agreements and other secured facilities. This approach is commonly used in securities sector under both normal and stress periods. It is used to a lesser extent in the banking and insurance sectors as they emphasize more on the cash flow matching approach.

Under the *cash flow matching approach*, the bank attempts to match cash outflows against contractual cash inflows of a various near-term maturity buckets. The mixed approach combines the elements of the two. Firms attempt to match cash outflows in each time bucket against a combination of contractual cash inflows, plus other inflows that can be generated through the sale of assets, repurchase agreement or other secured borrowing. Assets relatively more liquid will be matched to the earlier time buckets and vice versa. When gaps in the maturity buckets become unfavorable, firms will turn to the mixed approach to ensure all obligations are met. Figure 2.1.1 compares the two monitoring approaches.
To measure liquidity risk, a set of indicators has been set with two different aspects: quantitative liquidity risk indicators and qualitative liquidity risk indicators. First, the following risk indicators should be considered when assessing the quantity of liquidity risk. In other word, they measure a level of liquidity risk exposure to an institution.

- Availability of funding sources
- Diversification of funding sources
- Alternative funding sources
- Capacity to augment liquidity through asset sales and/or securitization
- Volume of wholesale liabilities with embedded options
- Vulnerability of a bank to funding difficulties
- Support provided by the parent company

Source: FPRI, 2009
Management in a bank’s earnings and capital exposure from the liquidity risk profile

Nevertheless, it is not necessary to exhibit every characteristic, or a majority of the characteristics, to be accorded a rating. The rating of liquidity risk management is divided into 3 levels: low, moderate level, and high level of liquidity risk, depending on associated risky behaviors. For example, if a bank has conditions of abundant and diversified funding sources, excessive market alternatives, capacity to augment liquidity, low volume of embedded liabilities, invulnerability to funding difficulties, financial support from the parent company, and low risk exposure, this bank is in a good position with low level of liquidity risk.

Besides the quantitative liquidity risk indicators, the qualitative indicators are introduced to capture quality of liquidity risk management. The rating is classified as strong, satisfactory, and weak quality of management. The following indicators must be evaluated for the rating:

- Effectiveness of a board’s policy approvals in responding to the designated guidelines and responsibilities for liquidity risk management.
- Effectiveness of liquidity risk management process in identifying, measuring, monitoring, and controlling liquidity risk
- Interaction of management to changing market conditions
- Development of contingency funding plans
- Information system management
- Comprehensive and effective internal audit coverage

If a board approves policies effectively corresponding to guidelines for liquidity risk management, which leads to the effective management in identifying, monitoring, measuring, and controlling liquidity risk, and the management anticipates and responds
well to a change of market condition, we can say that this firm has a strong liquidity risk management.

National Regimes:

The national regime of liquidity risk management is usually developed by each individual country along with her national lines to support the preservation of the safety and soundness of her financial system. Supervisors have national responsibilities to ensure that banks hold appropriate levels of liquidity insurance. In addition, the supervisory regimes must recognize that the interests of individual banks are closely aligned with the interests of their shareholders. Therefore, they are linked and possibly take full account of the impact of their failure to the system-wide basis. Fundamentally, the national regime combines six important elements:

1. **Liquidity policies**: Frequently, liquidity policies are expected to set out for an internal strategy for managing liquidity risk. Firms’ liquidity risk policies are set out to measure, monitor, and control liquidity risk as for internal management process.

2. **Stress tests and scenario analyses**: Stress tests and scenario analyses are important for liquidity supervision. They aim to identify weakness or vulnerabilities in a firm’s liquidity position. All supervisors require firms to undertake stress testing or scenario analyses for supervisory and monitoring purposes. A variety of stress testing and scenarios will help firms or banks to estimate the behavior of future cash flow and to be prepared for potential liquidity crisis.

3. **Contingency funding plans (CFPs)**: CFPs are developed to prepare banks’ strategies for dealing with stress scenarios. They should identify potential sources of liquidity to cover shortfalls that may rise in stressed conditions. Basically, explicit guidance should be given on the relationship between

---

stress tests and CFPs, the need for early warning indicators, the communication strategy (both internal and external), and the need to ensure operational readiness to execute plans.

4. Setting of limits: The internal limits or targets need to be set in order to constrain the amount of liquidity risk that a bank may take. At the same time, these limits can help to ensure that banks are well prepared for stressed conditions, or at least, for setting early warning indicators of stress. The limits may include target holding of liquid asset, minimum liquid asset (MLA), limits on maturing mismatches, and limits on the reliance on a particular funding source.

5. Reporting requirements: All banks are required to produce their report on a liquidity positions. Information in the report is collected for various reasons. It allows supervisors to identify the liquidity risks, and also, sources of liquidity. Furthermore, the information metrics can help comparing liquidity report across industries.

6. Public disclosure: Public information disclosure is in need to keep market participants informed and make appropriate judgement about the soundness of liquidity risk management framework and liquidity position.

Together with the above mentioned elements, the Basel Committee on Banking Supervision (BCBS) categorizes the principles for the management and supervision of liquidity risk in the *Principles for Sound Liquidity Risk Management and Supervision* (2008) as shown in Table 2.1.1
<table>
<thead>
<tr>
<th>Management Issues</th>
<th>Principles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fundamental principle for the management and supervision of liquidity risk</td>
<td>Principle 1: A bank is responsible for the sound management of liquidity risk. At the same time, supervisors should assess the adequacy of both a bank’s liquidity risk management framework and its liquidity position.</td>
</tr>
<tr>
<td>Governance of liquidity risk management</td>
<td>Principle 2: A bank should clearly articulate a liquidity risk tolerance.</td>
</tr>
<tr>
<td></td>
<td>Principle 3: Senior management should develop strategies, policies, and practices to manage liquidity risk in accordance with the risk tolerance.</td>
</tr>
<tr>
<td></td>
<td>Principle 4: A bank should incorporate liquidity costs, benefits, and risks in the product pricing.</td>
</tr>
<tr>
<td>Measurement and management of liquidity risk</td>
<td>Principle 5: A sound process for identifying, measuring, monitoring, and controlling liquidity risk is needed as well as a comprehensive projecting of cash flows. In-balance-sheet and off-balance-sheet items must be included, in the liquidity risk management framework.</td>
</tr>
<tr>
<td></td>
<td>Principle 6: A bank should actively manage liquidity risk exposures and funding needs, within and across legal entities, business lines, and currencies.</td>
</tr>
<tr>
<td></td>
<td>Principle 7: A funding strategy with diversification in sources and tenor of funding is necessary.</td>
</tr>
<tr>
<td>Management Issues</td>
<td>Principles</td>
</tr>
<tr>
<td>-------------------</td>
<td>------------</td>
</tr>
<tr>
<td></td>
<td><strong>Principle 8</strong>: Intraday liquidity position must be provided along with risk management on banks’ payment and settlement obligations.</td>
</tr>
<tr>
<td></td>
<td><strong>Principle 9</strong>: Management on collateral positions must be established.</td>
</tr>
<tr>
<td></td>
<td><strong>Principle 10</strong>: A bank should conduct stress tests on a regular basis for a variety of institution-specific and market-wide stress scenarios.</td>
</tr>
<tr>
<td></td>
<td><strong>Principle 11</strong>: A formal CFP should be set out.</td>
</tr>
<tr>
<td></td>
<td><strong>Principle 12</strong>: A bank should maintain a cushion of unencumbered, high quality liquid assets to be held as insurance.</td>
</tr>
<tr>
<td><strong>Public disclosure</strong></td>
<td><strong>Principle 13</strong>: A public information disclosure should be organized.</td>
</tr>
<tr>
<td><strong>Role of supervisors</strong></td>
<td><strong>Principle 14</strong>: Supervisors should perform comprehensive assessment of a bank’s overall liquidity risk management framework and liquidity position.</td>
</tr>
<tr>
<td></td>
<td><strong>Principle 15</strong>: Supplements of internal reports, prudential reports, and market information should be provided by supervisors.</td>
</tr>
<tr>
<td></td>
<td><strong>Principle 16</strong>: Intervention for effective and timely remedial action by a bank is necessary for addressing...</td>
</tr>
<tr>
<td>Management Issues</td>
<td>Principles</td>
</tr>
<tr>
<td>-------------------</td>
<td>------------</td>
</tr>
</tbody>
</table>
| deficiencies in its liquidity risk management processes.  
**Principle 17**: Supervisors should communicate to other supervisors to facilitate effective cooperation regarding the supervision and oversight of liquidity risk management. |

*Source: BCBS, June 2008*
2.2 Reviews of Regulatory Best Practices and Major Recommendations Suggested by International Organizations

In the light of global financial regulation and supervision, several principles have led to the monitoring of liquidity and to the controlling of the related risks. This section mainly reviews the previous and current practices of regulation and supervision of liquidity risk as recommended by such well-known international organizations as the Institute of International Finance (IIF), Bank for International Settlements (BIS), Committee of European Banking Supervisors (CEBS), Financial Services Authority (FSA), International Monetary Fund (IMF), and Group of Thirty (G30). Major recommendations typically compose of five elements: governance, management and controlling, stress testing, contingency planning, and public disclosure.

The recent global financial crisis, which began in 2008, has underscored the importance of banks liquidity along with five key features relating to financial regulation and supervision in having potentially led to the financial crisis in the United States: systematic risk, pro-cyclicality, regulatory arbitrage, good governance and senior management, and transparency. Recently, the regulation and supervision of banks have been reviewed and will likely be subject to revision in order to deal with the problems of inadequate liquidity and capital, to mitigate liquidity risk, and to prevent future crises from erupting.

Under the first issue, governance, the CEBS suggests some recommendations in the Technical Advice to the European Commission on Liquidity Risk Management (2008). The CEBS’s advice clearly stated that the internal-level liquidity risk management requires robust internal governance, which includes the following aspects. There must be a set of tools to identify, measure, and monitor liquidity risk as well as funding sources on a continuous basis. There must also be suitable strategies and procedures that are tailored to the institution’s organizational structure. Senior management should
have a clear view of all liquidity risk, including the vulnerabilities implicit in the institution’s information on maturity transformation and its reliance on any funding source. Additionally, the Turner Review - A Regulatory Response to the Global Banking Crisis (2009) by the Financial Services Authority (FSA) emphasizes the need for a systemic approach to cope with the problem of systemic risk. The review suggests that the five key features that significantly increase systemic risks, contributing to the credit boom in the upswing and the subsequent downswing were: (1) the rapid growth of the financial market, (2) the increasing leverage in many forms, (3) the changing forms of maturity transformation, (4) a misplaced reliance on sophisticated mathematics and, (5) pro-cyclicality. The future approach to banking regulation and supervision, thus, needs to be embedded in the fact that the risk involved in the functions of these institutions are different due to the role of the banks as providers of maturity transformation and that the impact of a banking failure is extremely serious for the real economy. One implication here is that both the CEBS (2008) and the FSA (2009) suggest financial institutions to be aware of their role in maturity transformation associated with the pro-cyclicality that may lead to a future financial crisis.

Unlike the CEBS’s report that mainly discusses liquidity risk management and control, the Group of Thirty (G30) introduces the Financial Reform - A Framework for Financial Stability (2009) with the purpose of giving guidance on how the financial system might be organized once the recent crisis has passed, to better assure a reasonable degree of stability. The proposed reform focuses on financial stability considerations and do not cover the changes needed in business practice or administrative structure. The G30 makes 18 recommendations, which can be grouped into four core recommendations: (i) eliminating gaps and weaknesses in the coverage of prudential regulation and supervision; (ii) improving quality and effectiveness of prudential regulation and supervision; (iii) strengthening institutional policies and standards with particular emphasis on standards for governance, risk management, capital, and liquidity; and (iv) making the financial markets and products more transparent, with better-aligned risk and prudential incentives. In reducing the gaps and weaknesses of prudential regulation and supervision, the G30’s Financial Reform
suggests a similar solution to the CEBS’s report, all systemically significant institutions must be subject to an appropriate degree of prudential oversight and to continuous monitoring of potential vulnerability to risk. Moreover, the G30 adds the requirement of having better-resourced prudential regulators and central banks for operating within structures that afford much higher levels of national and international policy coordination. Regulatory policies and accounting standards must guard against pro-cyclical effects. Basically, the recommendations on governance issue emphasizes the methodologies that prevent pro-cyclicality and encourage prudential regulation and supervision against liquidity risk.

The next issue is about management. Most international organizations emphasize the management and control of liquidity risk. The fundamental principle is to provide capital adequacy or liquidity buffers. The latter are defined as cash and other unencumbered highly liquid assets which are not being used for on-going business but which can be used by the institution to meet payments over a chosen period of time (CEBS, 2008). Without sufficient liquidity buffers, there is a danger or risk of creating a self-reinforcing feedback loop between weak lending capacity, economic recession, and credit losses. As a result, the CEBS’s recommendations in their internal liquidity risk management and supervision for the events of 2007–2008 highlighted the requirement for credit institutions and investment firms to have adequate liquidity systems for both normal and stressed times. Additionally, they must maintain their liquidity buffers due to a number of market developments and financial innovations in recent years. It is emphasized that the ability to take effective and timely action is of utmost in the time of crisis. Accordingly, the FSA agrees with the CEBS on capital adequacy. In the Turner Review - A Regulatory Response to the Global Banking Crisis (2009) by the Financial Services Authority (FSA), the focus is on the fundamental and long-term questions of banking and banking-like institutions rather than the short-term challenge of macroeconomic management. Changes in the regulatory and supervisory approach are needed to create a more robust banking system for the future. Then, the recommendations refer to capital adequacy, accounting and liquidity policies. At the same time, the IMF suggests in the Lessons of the Financial Crisis for Future Regulation
of Financial Institutions and Markets and for Liquidity Management (2009) that, in order to mitigate liquidity risk, financial institutions and central banks must improve funding risk management, build up a quantitative financial buffer that can be drawn in time of a financial crisis, and adopt an incentive-based, risk-adjusted system for executive salaries.

Generally, on establishing an effective structure for managing liquidity risk, the BIS recommends in the Principles for Sound Liquidity Risk Management and Supervision (2008) that a bank’s senior management should develop policies and a culture in accordance with the bank’s articulated liquidity risk tolerance, and the IIF agrees on this principle as illustrated in the Principles of Liquidity Risk Management (2007). Also, the role of supervisors is crucial. The board of directors should at least annually review a report on the bank’s liquidity risk position, approve effective policies on liquidity risk management, and ensure the effectiveness of the senior management. In addition, banks should take into account the liquidity risk arising from all activities of the banks (both on- and off-balance sheet), thereby aligning the incentives of the banks’ individual business lines with their actual risk exposures for the banks as a whole.

Beyond the recommendations of the BIS on liquidity risk management, the IIF adds other recommendations as follows: (1) Banks should develop information systems for monitoring, measuring, and managing their liquidity risk positions. (2) Banks should ensure that their liquidity risk management is incorporated within a “firm-wide, integrated risk management framework that also includes market, credit, operational, and other appropriate risks” (IIF, 2007, P. 60). (3) Banks should develop processes which control the flow of funds among the banks’ operational units. (4) Considering the banks’ business models (e.g., mixes of foreign branches versus foreign operating subsidiaries) and legal restrictions, senior management should develop agreed-upon policies for day-to-day management of liquidity risk. (5) Roles and responsibilities of the executives and officials responsible for monitoring liquidity risk of the banks must appropriately reflect the segregation of duties and must be clearly documented.
Under the monitoring process, according to the BIS’s and the IIF’s recommendations, an effective framework should be developed to comprehensively project cash flows arising from all assets, liabilities, and off-balance sheet items. It is once again that international organizations emphasize a framework that includes off-balance sheet items in the monitoring process. Banks should manage their liquidity risk exposures, maintain a cushion of unencumbered, liquid assets, develop policies that provide diversification in the sources of funding, and identify factors which influence the banks’ ability to raise funds from such sources. Moreover, the importance of maintaining strong relationships with fund providers is emphasized by both the BIS and the IIF. According to the market development and financial innovation, the BIS indicates that banks should actively manage their collateral positions, distinguish between their encumbered and unencumbered assets, and monitor where their collaterals are held so that when needed, they can be mobilized in time. The IIF recommends that banks choose specific time periods to monitor their cash flows, suggesting a timeframe of a few days to a few months for the short-term period and more than one year for the long-term period. Undrawn commitments must be taken into account when liquidity risk is measured, and a distinction must be made between different types of customers and different types of commitments whether it is revocable or irrevocable, and conditional or unconditional.

In keeping to the principle of cash-flow availability, the FSA makes recommendations focusing on improving three main areas: (1) more and higher quality capital than required in the past; (2) more capital specifically against trading book risk-taking; and (3) some type of counter-cyclical capital regime with capital buffers being built up in periods of strong economic growth so that they can be drawn on in downturns. The FSA’s review (2009) also notes that, in doing so, there is a crucial trade-off between a small net-cost to the economy during “normal” and the benefits of a reduced probability of “extreme adverse” events. Furthermore, the G30 suggests that the objectives corresponding to the reform of the financial system must encourage
The Overall Status of Regulation and Supervision of Bank Liquidity Risk Management in Asian Countries

Chapter 2

diverse, competitive, predominantly privately owned and managed institutions and markets, able to effectively satisfy the needs of the public.

Finally, under the principle of managing and controlling risk, the roles of the supervisor are necessary. The BIS emphasizes the appropriate role of supervisors in monitoring banks’ liquidity risk positions as stated earlier. Regular comprehensive assessments of the bank’s liquidity position and management framework, interventions and timely remedial actions, and effective communication among supervisors, public authorities, and central banks across national borders are highly recommended. Additionally, the CEBS strongly agrees that the effectiveness of the supervisors’ role in ensuring policies and procedures for crisis management plus ability for assessing the robustness of methodologies are very necessary. At the same time, supervisors should, at their disposal, have precise and timely quantitative and qualitative information to take effective and timely remedial actions when necessary.

The third principle of regulation and supervision lies in stress-testing that is associated with banks’ contingency fund planning (CFP). Both the BIS (2008) and the IIF (2007) recommend that, based on banks’ businesses, activities, and vulnerabilities, stress tests should be conducted on a regular basis for a variety of institution-specific and market-wide stress scenarios. The tests should incorporate the behaviors of market participants and the banks’ counterparties to determine how their behaviors would affect the banks’ liquidity risk positions. The results should establish the basis for limiting the banks’ liquidity risk, building liquidity buffers, and adjusting the banks’ liquidity risk exposure to match their liquidity tolerance. The banks’ management should be actively involved in the testing procedures and adopt the results for policy implementation, including contingency planning. In addition, the BIS indicates that the management should demand rigorous and challenging scenarios of the stress tests. However, the IIF suggests distinctive recommendations on stress testing as follows: (1) Stress testing should cover a range of crisis durations and severity levels. (2) Behaviors of all sources of cash flows are included in the test to prevent cash shortfalls. (3) Banks should have a clear understanding of the worst-case scenarios which may require contingency plans.
(4) The central bank’s emergency lending facilities should be included in the banks’ stress testing in scenarios of extreme events. In sum, the principle on stress-testing incorporates the rules of management, regulation, and supervision together in the forms of scenarios, with the purpose of being prepared for a financial stress or a potential liquidity crisis.

Finally, the issue of public disclosure must be discussed here. Considering legal and compliance constraints, banks are recommended by the BIS (2008) and the IIF (2007) to disclose their information on liquidity risk measurements, management, and monitoring techniques, such as, a range of liquidity ratios, stress tests of various short- and long-term scenarios, cash flow projections, analysis of liquid assets, liquidity mismatches, and contingency funding plan. To improve transparency, along with to reduce uncertainty in the markets and to strengthen market discipline, banks should ensure that appropriate information, both quantitative and qualitative, on their liquidity positions and liquidity risk management are disclosed to the public. In addition, the BIS recommends the disclosure of the following information: the liquidity risk tolerance set by the board of directions, aspects of liquidity risk to which the banks are exposed, and assumptions associated with the metrics and stress tests. Moreover, the IMF suggests the improvement of transparency to all banks. Both financial institutions and central banks should establish a system that fills information among cross-border financial institutions, central banks, and public authorities. At the same time, they must disclose some information of relevance to the financial markets, such as, OTC derivatives, CDS transactions, and methodologies of credit ratings for higher levels of transparency.

Comparing the various approaches, Table 2.1.1 summarizes all the recommendations for regulation and supervision from the different organizations. The Table lists a number of specific recommendations as delineated in the above review. An “X” in the Table indicates which organization makes which recommendation. Absence of an “X” does not necessarily imply opposition to the recommendation — each study having its own scope and focus. In some cases, studies identify issues as
The Overall Status of Regulation and Supervision of Bank Liquidity Risk Management in Asian Countries

needing further study; in others, an issue may be identified as a problem contributing to the financial crisis without a specific recommendation for reform being made. (In neither of these cases would an “X” appear in the Table.)

Table 2.2.1: A Review of Regulatory Best Practices and Major Recommendations as Suggested by Certain Major International Organizations

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>FSA</th>
<th>G30</th>
<th>CEBS</th>
<th>BCBS</th>
<th>IIF</th>
<th>IMF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Governance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All systemically important financial institutions should be subject to a prudential regulation and supervision.</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>A limit should be imposed in undertaking proprietary activities that present particularly high risks and serious conflicts of interests by systemically important banks.</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A single banking regulator with prudential supervision is needed to be introduced.</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial regulators should be involved in a greater role in macroeconomic policy-making.</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A bank’s risk management framework and liquidity position should be assessed by supervisors, and prompt actions should be taken if deficiency is found.</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>There should be an authority with the power to take control of a failing, systemically important, non-bank institution, and place it in conservatorship, outside the bankruptcy system.</td>
<td>x</td>
<td></td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A greater provision against liquidity risk should be made during regulators’ and firms’ capital-related decision-making process.</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The Overall Status of Regulation and Supervision of Bank Liquidity Risk Management in Asian Countries

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>FSA</th>
<th>G30</th>
<th>CEBS</th>
<th>BCBS</th>
<th>IIF</th>
<th>IMF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting standards, such as, fair value and mark-to-market, should be modified to reduce their pro-cyclical impact.</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>International monitoring for systemic risk should be enhanced. An information system to measure and manage liquidity risk positions and a more formal mechanism for such a purpose should be created.</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>A system that exchanges/transfers information among banks and public authorities, enhances transparency, and discloses information in the financial market should be established</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Domestically and Internationally, communication and cooperation should occur on a regular basis among supervisors and public authorities, such as, central banks.</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Minimum international standards, including those on tax havens and offshore banking centers, acting as a regulatory floors, should be applied to all countries -</td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>There should be a requirement for hedge funds to register with a national securities regulator. Those that are systemically important should be under prudential regulations.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Hedge funds’ information about their strategies and positions should be supplied to the regulators on a confidential basis.</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recommendation</td>
<td>FSA</td>
<td>G30</td>
<td>CEBS</td>
<td>BCBS</td>
<td>IIF</td>
<td>IMF</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------------</td>
<td>-----</td>
<td>-----</td>
<td>------</td>
<td>------</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>A regulated centralized counterparty or clearing house should have the role</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>of processing through credit default swaps.</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Money market funds' vulnerability to bank runs should be decreased by having a</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>national regulator imposing limits on their risk-taking.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The transparency of the rating process for complex financial instruments,</td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>such as, structured securitized products, should be increased. There should</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>be some additional mandatory risk disclosures on these instruments.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Registration with and regulation by the appropriate government agency should</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>be compulsory for credit rating agencies.</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After-the-fact audits or independent evaluation should be conducted for credit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>rating agencies. They should be held more accountable for their ratings'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>accuracy. Their revenue (especially when securities issuers pay for the ratings)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>should be subject to supervision or limits.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central government should catered and regulated the insurance companies.</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Management and Controlling</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Firm’s internal risk controls should be made more robust and should take</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>systemic risk into account. Corporate boards need to take more responsibility</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>for their firms’ risk management practices.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Chapter 2

#### The Overall Status of Regulation and Supervision of Bank Liquidity Risk Management in Asian Countries

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>FSA</th>
<th>G30</th>
<th>CEBS</th>
<th>BCBS</th>
<th>IIF</th>
<th>IMF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquidity risk should be regulated within and across entities, operational units, and currencies. Banks should develop a system which monitors the flow of funds among their operational units.</td>
<td></td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Banks should distinguish between their encumbered and unencumbered assets, regulate their collateral position, and locate where their collaterals are held so as to be able to mobilize them in a timely manner.</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Banks should hold high quality liquid assets as insurance and be able to raise funds by these assets without any legal, regulatory, or operational obstruction.</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Banks should monitor the main factors which affect the banks' ability to raise funds, and daily regulate their intraday liquidity positions.</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Increase the quantity and quality of the overall bank capital.</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sources and tenor of funding should be diversified. Banks should maintain strong relationships with their funding providers.</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Bank executives' salaries should be based on incentives and a risk-adjusted system to minimize the tendency of over-risk taking.</td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Create counter-cyclical capital buffers, Capital levels to increase in booms and decrease in recessions.</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>

**Stress Testing**
**Recommendation**

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>FSA</th>
<th>G30</th>
<th>CEBS</th>
<th>BCBS</th>
<th>IIF</th>
<th>IMF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stress testing should be conducted on a regular basis, with different durations and severity levels. The central bank’s emergency lending facilities should be included in the crisis scenarios in stress testing.</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>

**Contingency Planning**

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>FSA</th>
<th>G30</th>
<th>CEBS</th>
<th>BCBS</th>
<th>IIF</th>
<th>IMF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contingency plans to clearly outline the exact policies to follow during a financial crisis should be put in place.</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>

**Public Disclosure**

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>FSA</th>
<th>G30</th>
<th>CEBS</th>
<th>BCBS</th>
<th>IIF</th>
<th>IMF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banks' liquidity position information should be regularly disclosed to the public. This includes the Information on banks' liquidity risk tolerance, their types of liquidity risk, and the liquidity measurements and stress testing assumptions.</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>

*Source: FPRI, 2009*

In conclusion, the recommendations on bank liquidity risk management generally emphasize on the following principles:

**Principle 1:** Sufficient capital buffer and liquidity adequacy must be provided in both regular and stress events.

**Principle 2:** The monitoring process should put off-balance-sheet items under observation.

**Principle 3:** The information system is necessary for the senior management to monitor and measure liquidity risk.

**Principle 4:** The diversification of funding sources and of liabilities is required for sound liquidity management.
Principle 5: Stress-testing must be conducted with a variety of “what if” scenarios, with the aim of developing efficient contingency funding plans (CFPs).

Principle 6: Each bank should provide adequate level of disclosure of information for public perception and risk-management purposes.

Principle 7: The role and involvement of supervisors in liquidity risk management is crucial. The supervisors should conduct an independent evaluation of a bank’s strategies, policies, procedures, and practices related to the management of liquidity (BIS, 2000).
2.3 The Overall Status of Regulation and Supervision of Bank Liquidity Risk Management in ASEAN+3 Countries

Comparison of Local Liquidity Risk Management Regulation in East Asia

In this Section, the liquidity risk management regulation of East Asian countries will be examined and compared. Although, generally, most countries have set their regulatory systems based on the *Principles for Sound Liquidity Risk Management and Supervision* of the Bank for International Settlements (BIS), the national supervisors have also set different minimum requirements that they deem commensurate to adequate liquidity risk management in both regular and irregular circumstances. A better understanding of liquidity risk management methodologies and frameworks in different countries will help shedding some light on best practices in liquidity risk management for the region.

National supervisors underscore the importance of banks themselves to manage their liquidity risks. However, to support the role to oversee the systemic risk, national supervisors have to provide guidelines for efficient liquidity risk management practices. The present study examines the liquidity risk management frameworks and regulations in 8 East Asian countries: China, Indonesia, Japan, South Korea, Malaysia, the Philippines, Singapore, and Thailand. Our analysis is based on the English version of liquidity risk management manuals of these countries. Table 2.3.1 below illustrates the list of local supervisors and the liquidity risk management manuals used in the present study. It is useful to notice that, in some countries, there are no specific risk management manuals. In such cases, we compile the relevant documents issued by the national supervisors. Nevertheless, in this study, we exclude two countries in the
The Overall Status of Regulation and Supervision of Bank Liquidity Risk Management in Asian Countries

ASEAN+3 region because data is not available from the Central Bank of Myanmar and the Brunei Darussalam’s Ministry of Finance.  

Table 2.3.1: Local Supervisors in East Asian Countries and Their Liquidity Risk Management Manuals

<table>
<thead>
<tr>
<th>Local Supervisors</th>
<th>Liquidity Risk Management Manuals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan Financial Service Agency</td>
<td>Inspection Manual for Deposit-Taking Institutions</td>
</tr>
<tr>
<td>Financial Supervisory Service, South Korea</td>
<td>Regulation on Supervision of Banking Business (2007)</td>
</tr>
<tr>
<td>Monetary Authority of Singapore</td>
<td>Liquidity Risk Supervision (2006)</td>
</tr>
</tbody>
</table>

¹ Also, Islamic banks in Brunei Darussalam have different liquidity risk management issues. See Ebrahim and Kai Joo (2001), for example, for Islamic banking in Brunei Darussalam.
<table>
<thead>
<tr>
<th>Local Supervisors</th>
<th>Liquidity Risk Management Manuals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Decision of the Governor of the State Bank of Vietnam: on the forecasting period and periodical provision of information for the management of liquidity (2000)</td>
</tr>
</tbody>
</table>

Source: Fiscal Policy Research Institute

Note: 1/ Bank Indonesia, National Bank of Cambodia, Bank of the Lao PRD, and State Bank of Vietnam has no particular liquidity risk management manual. We, therefore, compile the relevant regulations from the Bank’s Circular and general Risk Management regulations.

We follow the classification of liquidity risk management methodology in Algorithmics (2007) that studies the liquidity risk management in major industrial countries. In their study, the methodologies can be largely divided into two types: qualitative and quantitative measures. Qualitative measures focus on internal processes and systems for risk measurement and management of the banks. Supervisors then have the significant roles in the evaluation of the effectiveness of liquidity risk management in each bank individually. This includes measuring risk management processes and systems, techniques, amounts of internal limits, internal controls, and other relevant issues. Quantitative measures refer to viable liquidity risk indicators imposed as minimum safety indicators as well as the measurement of liquidity risk. In accordance with Section 2.1, the quantitative methods are of two main categories: Cash flow matching (Cash flow or mismatch-based) approach, and Liquidity asset (Stock-based) approach, although there are also mixed approaches as well.

Some supervisors rely solely on qualitative measures since they view that liquidity risk management in each bank depends on its customer, the nature of its assets and liabilities, the economic and competitive environment. Thus, the standardization of measures, such as quantitative restrictions, will not be served as the best safeguard in every context. Also, they might pose unnecessarily requirements that are not appropriate to the bank, which in turn increases the cost of management. For example,
in its Commercial Bank Examination Manual the US’ Federal Reserve mentions that no single theory can be applied universally to all banks. Also, the FSA of the United Kingdom has imposed a numbers of quantitative measurement requirements, pointing out that the quantification of these constraints is made on an individual basis after a comprehensive assessment of each bank’s risk management framework. Finally, the CEBS (Committee of European Banking Supervisors), in mid 2008, also raises a more (minimum common denominator) qualitative approach, avoiding a vision to find the right single quantitative approach to liquidity risk regulation, and more uniformity across Europe.

On the other hand, some supervisors believe that quantitative measures will help improving the effectiveness of liquidity risk management in banks as these, to some extent, will create protection against adverse liquidity events. Unlike other regions no national supervisors in East Asia rely exclusively on quantitative measures. Some national supervisors combine quantitative measures to qualitative framework. One example of the quantitative measures is the requirement of minimum amount of cash or liquid assets, compared to liquidity risk measures, such as total liabilities. Another example is the requirements of maximum amount mismatch between expected cash outflows and inflows within specified time horizon. Some banks; however, have used the mixed indicators between minimum liquidity asset requirements and maximum mismatch requirement. In addition, another quantitative techniques used in liquidity risk management is the applications of probability and stochastic analysis. These advanced approaches can increase the effectiveness of risk measurement and stress testing. Moreover, the systemic risk can be more effectively estimated with these tools. However, none of these advanced techniques is established as standard measures of risk measurement, although some financial institutions have already used them to manage their risks.

The Table 2.3.2 below illustrates a comparison of national liquidity risk management and regulations across ASEAN+3 countries, and then Table 2.3.3. shows a comparison of national liquidity risk management using quantitative approach.
### Table 2.3.2: A Comparison of National Liquidity Risk Management Regimes

<table>
<thead>
<tr>
<th>Bank/Service (Country)</th>
<th>Liquid Asset Holding Obligations</th>
<th>Maturity Mismatch Analysis</th>
<th>Asset Liability Management (Both balance sheet and daily cash management)</th>
<th>Contingency Funding Plans</th>
<th>Stress Test Scenario Analysis</th>
<th>Liquidity Policy and Management Oversight</th>
<th>Intra-Group Liquidity Risk Analysis</th>
<th>Foreign Currency Liquidity Risk</th>
<th>Periodicity of reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>People’s Bank of China</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>Quarterly</td>
</tr>
<tr>
<td>National Bank of Cambodia</td>
<td>√/xi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Every 14 working days</td>
</tr>
<tr>
<td>Bank Indonesia</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Monthly</td>
</tr>
<tr>
<td>Japan Financial Service Agency</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>Daily monitoring, and submit report in a regular basis or as necessary according to the level of urgency</td>
</tr>
<tr>
<td>Financial Supervisory Service (South Korea)</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>Bank of the Lao PRD</td>
<td>√/xi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Monthly</td>
</tr>
<tr>
<td>Bank Negara Malaysia</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>Bangko Sentral ng Pilipinas (Philippines)</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>Yearly (ICAPP).</td>
</tr>
<tr>
<td>Monetary Authority of Singapore</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>Monthly</td>
</tr>
<tr>
<td>Bank of Thailand</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>Monthly</td>
</tr>
</tbody>
</table>
## The Overall Status of Regulation and Supervision of Bank Liquidity Risk Management in Asian Nations

### Chapter 2

<table>
<thead>
<tr>
<th>State Bank of Vietnam</th>
<th>Liquid Asset Holding Obligations</th>
<th>Maturity Mismatch Analysis</th>
<th>Asset Liability Management (Both balance sheet and daily cash management)</th>
<th>Contingency Funding Plans</th>
<th>Stress Test Scenario Analysis</th>
<th>Liquidity Policy and Management Oversight</th>
<th>Intra-Group Liquidity Risk Analysis</th>
<th>Foreign Currency Liquidity Risk</th>
<th>Periodicity of reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>√</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>The liquidity forecasting period shall be 3 times per month.</td>
</tr>
</tbody>
</table>

**Source:** FPRI

**Note:**

1/ Only reserve requirement.

2/ In this table, some blocks are left blank because they are not directly mentioned in the national supervisors’ manuals/ relevant documents. Such requirements might be available elsewhere.
### Table 2.3.3: Comparison of National Liquidity Risk Management Quantitative Approach

<table>
<thead>
<tr>
<th>Type of Requirements</th>
<th>Liquidity Measurement and Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>People's Bank of China</td>
<td>- Liquid asset to liquid liability ratio not lower than 25%</td>
</tr>
<tr>
<td>Financial Supervisory Service (South Korea)</td>
<td>- Ratio of equity capital to risk-weighted assets: 8/100 or more</td>
</tr>
<tr>
<td></td>
<td>- Ratio of current assets in won currency to current liabilities in won currency: 100/100 or more</td>
</tr>
<tr>
<td>Bank Negara Malaysia</td>
<td>- Banking institutions are required to maintain a specified minimum surplus in the cumulative net maturity mismatch of the “1 week” (”3 days” for investment banks) and “1 month” liquidity bucket as measured under the second level liquidity measurement</td>
</tr>
<tr>
<td>Bangko Sentral ng Pilipinas (Philippines)</td>
<td>- 10% risk-weighted capital adequacy ratio (CAR)</td>
</tr>
<tr>
<td>Monetary Authority of Singapore</td>
<td>- one-size-fits-all at 18% MLA with Cap between 12% and 18% MLA</td>
</tr>
<tr>
<td></td>
<td>- Prior notice to MAS for MLA drawdown 2-15% LB or minimum 16% of QL in liquid assets for General Bank Framework while Cap of 10-15% of QL for Bank-Specific Framework (BS bank)</td>
</tr>
<tr>
<td></td>
<td>- At least 18% of the average of the daily QL for the Basic-Bank framework</td>
</tr>
</tbody>
</table>

*Source: FPRI*
First of all, national supervisors typically specify a minimum reserve requirement, calculated as a percentage of the deposit base. Although minimum reserve requirements are mainly designed as a monetary policy instrument, some national supervisors use them as a tool in liquidity risk management to represent an amount of cash that can work as a cushion in case of emergency. National Bank of Cambodia, Bank of the Lao PRD, and State Bank of Vietnam have mainly used these reserve requirements as the tools for liquidity risk management together with few other liquidity ratios. Other countries; however, go beyond that.

In the ASEAN+3 region, a qualitative approach has been widely adopted by national supervisors in line with the recommendations of the Basel Committee mentioned above. Japan Financial Service Agency is an example that has only a qualitative approach, although its guidelines are very specific, and comprehensive. Other countries, Malaysia and Thailand for example, view a quantitative approach only as supplement to a qualitative one. The Bank Negara Malaysia has changed from the liquid asset ratio regime emphasizing rigid compliance with particular ratio to a flexible liquidity risk management framework that appropriate to each individual bank. Also, the Bank of Thailand has supported the use of a number of ratios to help assessing the level of liquidity and determining appropriate risk limits. However, these ratios will be used simultaneously with better interpreted in conjunction with other qualitative factors, financial institution may not be able to get a real picture of the liquidity trend.

We found that most national supervisors have both the requirements on liquidity asset obligations and maturity mismatch analysis approach to measure the liquidity risk. People Bank of China and Monetary Authority of Singapore have set the liquidity asset obligation indictors as quantitative requirements. Bank Negara Malaysia; however, only focuses on the requirement to maintain a specified minimum surplus in the cumulative net maturity mismatch on the specified time horizon. Other national supervisors have posed the requirements on capital ratio.
Every national supervisor has set the requirements for bank to have the asset liability management in the form of both balance sheet and daily cash management. A special form of asset liability management in case of liquidity distress, contingency funding plans, are also required in liquidity risk management practices. Every national supervisor suggests banks to do stress-scenarios analysis, stress testing, to see if they have sufficient liquid assets or not in the time of distress.

As the most important part in the qualitative approach, the liquidity policy and management oversight by senior manager are highly emphasized by every national supervisors. This will show that banks have been closely scrutinized their liquidity risks or not in all short, medium, and long terms. The role of national supervisors then is to check the liquidity management policy and to plan if it is suitable with the bank’s business profile or not. In the financial conglomerate, the intra-group liquidity analysis is also suggested as a part of liquidity risk management practices.

Since East Asian countries have the special characteristics that they have high value of international trades, so the foreign currency liquidity risk has also become important. For example, the People Bank of China has offers two principles for sound practice to deal with the foreign currency liquidity risk follow the guideline of the Basel committee.

A. Each bank should have a measurement, monitoring and controlling system for its liquidity position in the major currencies in which it is active. In addition to assessing its aggregate foreign liquidity needs and the acceptable mismatch in combination with its domestic currency commitments, a bank should also undertake separate analysis of its strategy for each currency.

B. Subject to the analysis undertaken according to principle A, a bank should, where appropriate, set and regularly review limits on the size of its cash flow mismatches over particular horizons for foreign currencies in aggregate and for each significant currency in which the bank operates.
Two other comments offered by the Committee in its discussion of foreign currency risk should be mentioned. First, in discussing issues involved in addressing various risks that arise with foreign currency activities, the advice is offered that... ‘a simple but effective way to deal with these issues is for an institution to hold foreign currency assets in an amount equal to foreign currency liabilities.” Second, in discussion of principle B. above regarding cash flow mismatches, the comment is offered: “A bank would typically have lower mismatches for foreign currency than those tolerated for the domestic currency.” Other national supervisors, such as Bank Indonesia, Japan Financial Service Agency, and the Bank of Thailand also mention in their liquidity risk management guidelines, that the liquidity risk management should be also done by single currency.

Finally, the period of liquidity risk management report is different among countries. While, Bank Indonesia and Monetary Authority of Singapore require monthly report, the People Bank of China and Bangko Sentral ng Pilipinas require quarterly and yearly report respectively. Note that Japan Financial Service Agency does not set the period of reporting and leave it to be decided by each individual bank according to its business profile.
POTENTIAL MERITS AND CONCERNS OF THE CURRENT REGULATIONS

3.1 The Experience of Asian Nations in the Regulation and Supervision of Bank Liquidity Risk Management in Times of Crisis

The so-called subprime crisis that began in mid-2007 reemphasized the importance of liquidity to the financial markets and banking sector. Looking at the nature of the crisis, reserves of liquidity were necessary as a guarantee for banks and other financial institutions to survive the contingent effects. In order to clarify the effects of the financial turmoil in connection with liquidity risk, the causes and development of the turmoil must be mentioned at least briefly.

The recent global financial crisis started from the collapse of the U.S. housing market only to be followed by the subprime crisis in 2007. During the housing market boom and at the height of financial innovation, financial companies and banks managed the risk in their portfolios using such financial derivatives as the collateralized debt obligations (CDOs) and credit default swaps (CDSs). The purpose of these derivatives subsequently became twisted from risk management to profit seeking. In the era of housing boom in 2006, the linkage between the financial market and the housing market were enhanced through CDOs and CDSs. Everything seemed to go smoothly, real estate prices went up, housing business was in the boom, and financial investors bought a lot of CDOs. However, the problem occurred when many
financial institutions operated their transaction without the cautions for the causes of financial crisis: asymmetric information, credit risk, and transparency of credit rating agencies. The leniency in financial regulation, along with the mentioned negligence, and the bubble in housing market led people to overbuild, over-borrow, and buy a lot of CDOs and CDSs. The unfortunate event happened as the housing bubble burst and the default rate on subprime mortgages skyrocketed. Banks then lost their revenue and ability to pay off their collateral claims, which hurt the CDO and CDS transactions. As a result, the losses on mortgage-backed securities (MBSs) spread and affected every financial market participants. The domino then proceeded to take effect on the other financial markets globally.

Finally, the crisis wave hit the financial markets as the financial institutions or guarantors experienced a liquidity crunch in their businesses. Major banks and financial institutions that had invested in the MBSs reported losses of approximately USD 435 billions in July 2008 (Bloomberg.com). Additionally, it was reported that owners of stocks in U.S. corporations suffered about USD 8 trillions in losses, as their holdings declined in value from USD 20 trillions to USD 12 trillions, plus the average losses in other countries that were reported at 40% (Wall Street Journal; October 2008). At the end, a series of American financial difficulties in big financial institutions was launched: started from the Bear Stearns’s takeover, followed by the bankruptcy of Lehman Brothers, the conservatorship of Fannie Mae and Freddie Mac with the Federal Housing Finance Agency (FHFA), the joint-venture of Merrill Lynch and Bank of American worth USD 50 billions, and the concern over AIG’s ability to stay capitalized.

The effects of subprime crisis have influenced financial markets worldwide. The one type of risk that people invariably try to avoid is liquidity risk, the risk that a business entity would be unable to obtain financing. Normally, the liquidity risk is associated with the credit default risk. The failure to properly manage the former effectively led to the global financial turmoil. With the severe credit crunch that came about, the major financial institutions were faced with a serious liquidity crunch and the lack of an ability to pay off the collateral claims to their counterparties. As the crisis wave spread in 2008,
the world economy was unavoidably faced with a liquidity crisis. With the
downgrading of their securities, many financial institutions found it difficult to raise funds.
Under this situation, the European Central Bank (ECB) promptly announced that it was
prepared to supply massive amounts of liquidity to the short-term money market. As a
result, the European governments called for fund-pooling in order to alleviate the effect
of the U.S. subprime crisis and to solve the worldwide liquidity crunch. A series of
liquidity injection packages was launched to help the financial institutions that were in
trouble. In the ASEAN+3 case, the effects of the crisis came through 3 channels:
exposure to the toxic assets, impact on the domestic asset market, and impact on
capital flows and exchange rates. However, not so many countries in Asia were affected
directly from the crisis. The financial damage in Asia has been relatively small, at around
15% of the total damages around the world. Nevertheless, the countries that are the
financial hubs of Asia such as Singapore and the Republic of Korea experienced
liquidity problems. At the end, the question arises as to the nature of regulation and
supervision that we should exercise for sound liquidity risk management to prevent a
危机 as caused by an unexpected credit crunch.

Another crucial point that must be raised here concerns the linkage between the
Basel Accord and the financial crisis. The term of procyclicality, as the interplay
between the financial sector and the real sector that causes severe effects on the
economic cycle, has become popular recently. The mechanism can be described as,
when the economy improves, bank lending increases and the economy accelerates due
to a lower level of capital requirements corresponding to reductions in downside risk. On
the other way around, when the economy deteriorates, bank lending decreases and the
economy decelerates because capital requirements become larger as downside risk
increases. Procyclicality shows that capital adequacy requirements have the effect of
amplifying business cycle. The procyclicality of capital adequacy requirements has
been criticized for exacerbating the economic downturn in the recent financial crisis.  

Monetary Economics' Spring Annual Meeting,” Bank of Japan.
Potential Merits and Concerns of the Current Regulations

Chapter 3

The causes of procyclicality are two-fold: (1) financial regulations and supervisions, such as, Basel II, reserve requirement, and fair-value accounting and (2) the behavior of market participants. First, while Basel II may bring on high financial outputs, it may at the same time lead to high fluctuation with the limitation in risk monitoring through the cycle. Furthermore, the low reserve requirement, IAS39, during an economic boom may cause procyclical problems if the reserves do not match demand for liquidity while economic losses incur. Additionally, the fair-value accounting process may lead to severe procyclicality and downward price spiral during an economic downturn if the reference value does not reflect the real economic situation. Second, the behavior of market participants can amplify the impacts of procyclicality since people usually have less proficient judgment when it comes to high profits. Their negligence could create a crisis.

Liquidity Risk Management and Supervision Challenges during the Crisis

The financial market turmoil that began in mid 2007 highlights the importance of market liquidity to the banking sector. The linkage between the financial sector and liquidity risk manifested itself during the crisis as financial intermediaries and institutions had difficulty in liquidating their assets in order to alleviate the impacts from the U.S. subprime crisis. Fundamentally, banks have a fundamental role to facilitate the maturity transformation of short-term deposits into long-term loans. This makes banks inherently vulnerable to liquidity risk, which refers to repayment exceeding the capacity to raise new liabilities or liquefy assets. Therefore, liquidity risk management is necessary to effectively prevent illiquidity and to develop the estimating framework for future cash flows under both normal and stressed conditions.

The initial challenge lays with the ability to draw information from banks’ various operations for the purpose of monitoring and with the further ability to assess the management over the liquidity funding with the utilization of this operative information. The interplay of risk and the financial sector must be taken into account for sound management. Considering that the world financial sector has progressively developed,
the innovation of financial instruments is clearly one of the factors that affect the nature of liquidity risk in present days. As the complexity of financial instruments increases and the product range of the securitization market broadens, the global financial market, including its participants, becomes more closely associated with all kinds of risk that can lead to financial difficulties. Sound liquidity risk management and supervision then requires an ability to overcome the following challenges and to provide the needed liquidity to the system.

Five challenges to sound risk management are proposed according to the interrelationship of the capital market and liquidity risk. First, in the past decade, banks have set their sights on the capital markets as another source of funds rather than the traditional deposits. The volume of money-market instruments increased consistently as banks’ alternative funding source; however, the volatility from these instruments can cause difficulty in liquidity management since money-market instruments tend to be more volatile than traditional retail deposits. Moreover, maturity must be considered to manage banks’ ability in refinancing their funds. One of the fundamental roles of banks is the maturity transformation of short-term deposits into longer-term loans. With the short-term nature of money-market instruments, banks potentially face a problem of refinancing since it requires banks to roll over liabilities at considerably shorter maturities. As a result, the banks’ maturity transformation could make them vulnerable to liquidity risk, both individually and systemically. Second, along with money-market instruments, securitization is another way for banks to raise funds and free up their balance sheet capacity. Banks can also create revenue through buying and distributing third party assets which have not been originated by the banks; however, the risk associated with those assets can not be ignored. At the same time, securitization forces banks to become more dependent on the functioning and stability of the financial markets, which could make them vulnerable to contingent liquidity risk, followed by an unexpected crisis. Third, it is inevitable to discuss about the complexity of financial instruments in the present days in the same manner as money-market instruments and securitization have been mentioned above. The terms CDOs and CDSs had become widely known even before the global financial crisis hit the world economy. Before the
U.S. subprime crisis, the volume of collateral debt obligations (CDOs) had been increasing gradually during the past decade, while the volume of credit default swaps (CDS) skyrocketed in during 2005-2006. The financial transformation resulting from these complex instruments generated new challenges to banks’ liquidity risk management. In other words, banks have to be aware of the fact that the inclusion of credit rating downgrades and call features can complicate the assessment of an instrument’s liquidity profile. Also, these instruments are not always actively traded against other financial assets due to their complexity. This may create difficulty for banks when they need to liquidate their assets to pay back their loans, leading to liquidity risk and potential liquidity crisis.

Moreover, the number of collateral agreements has increased rapidly in the past 6 years as estimated 110,000 collateral agreements in 2006 compared to 12,000 in 2000. Risk mitigation can be achieved via the channel of collateral usage; however, the use of collateral affects funding liquidity risk as counterparties have to provide additional collateral at short notice if conditions change. With respect to the issue of collateral placements, improvements in the design of payment and settlement systems can pose a challenge to liquidity risk management. As the new design adopted the large-value payment system with intraday finality, interbank credit risk has declined. Nevertheless, the design also increased collateral needs in some circumstances and increased the time-criticality of certain payments. The failure of a bank to meet time critical payments could transmit a major liquidity shock to other relevant firms, domestically and internationally. It is the so-called systemic risk. Therefore, financial institutions may need to provide liquidity availability to meet their obligations on a timely basis throughout a business day. Finally, the last challenge is the result of globalization that leads to a borderless condition across the global economy. This also means a gradual increase in cross-border transactions, thereby integrating the global financial markets. However, strong cross-border flows also imply fast transmission of liquidity disruption across countries and regions, but with different markets, currencies, and settlement systems. With all these differences, liquidity may not be fully transferable across borders, particularly in times of market stress, since each national regulator would require...
sufficient liquidity to be reserved for local operations and for protecting national interests.

The Revisions in Regulation and Supervision of Bank Liquidity Risk Management

National liquidity regimes are diverse due to the principle of host country responsibility. One common feature emerges however in that intensive supervision tends to be enforced over the larger firms, reflecting their systemic importance to the markets. Other than that, the regimes differ in the context to which requirements are prescribed and standardized in each nation. Several points must be discussed here in order to find an appropriate approach to revision for each combination of regulation and supervision regime.

A fundamental principle in each combination of regulation and supervision is to make sure that banks/financial institutions will have enough liquidity to supply banks’ payments during stressed conditions. All elements in a regulation and supervision regime must be linked functionally. The use of stress tests and scenarios has resorted to liquidity supervision to explore potential weaknesses and vulnerabilities in a bank’s liquidity position, including assessing the impacts of financial shocks and market-wide responses. Guided by the results of the stress tests, banks setup their contingency funding plans (CFPs) in accordance with the implication of the test scenarios. Explicit guidance for CFPs usually includes the approach to identify potential sources of liquidity, early warning indicators, communication strategies, both internal and external, and the need to ensure operational readiness to execute plans. In order to constrain the level of risk that banks may be prepared to take, some limits or targets are set in proposing policies; for example, the target on the holdings of liquidity assets, limits on maturity mismatches, and limits on the reliance on a particular funding source. These limits will help to ensure adequate liquidity in financial institutions under stressed conditions. Another principle is about transparency via the reporting requirement and public disclosure. Supervisors and authorizers require banks to report information about their liquidity positions. This is to monitory liquidity risk along with the potential sources
of liquidity and funding. However, public disclosure has not been fully exercised in many countries. Also, the information revealed to the public is usually information on on-balance-sheet transactions rather than on exposures associated with off-balance-sheet items. On the whole, liquidity policies are usually aimed at the internal process of measuring, monitoring, and controlling liquidity risk.

One lesson from the recent global financial crisis that banks have learned is to be prepared for potential contingent liquidity risks. With financial innovation and growth of complex financial instruments, the markets have become more inevitably exposed to risks. Investors have lost their confidence in structured securities markets and felt uncertain about credit rating of these structured securities. The lack of confidence has led to risks, which transmitted through a fall in asset market liquidity, flowing on to banks’ balance sheet. At the end of the day, the ability to raise funds or to liquidate assets declines and growing liquidity risk emerges. To avoid the risk, several basic principles are recommended to steer sound liquidity risk management in order to prevent a crisis from taking place.

- **Stress testing** should include both specific events, such as a bank’s ability to access markets, market-wide events, and events affecting multiple markets since many firms or banks have cross-border transactions.

- **Contingency funding plans** should be more integrated to the stress scenarios in order to create efficient monitoring systems and to ensure liquidity under stress conditions. Moreover, banks must be aware of asset market liquidity in their contingency funding plans. It is important to diversify funding sources and elements within a contingency plan.

- **Off-balance sheet activity and contingent commitments** must be taken into account when banks design their stress tests. Otherwise, the tests would underestimate the risk of extending liquidity support.

- **Balance sheet management and internal transfer pricing** must be identified in order to keep banks realizing the contingent liquidity risk of business lines associated to a whole market.
Supervisory and market information is still needed at the full level to fulfill the participants’ need and security. Frequently, some information is missing from the reporting content, such as off-balance-sheet items and funding pressure points. Public information disclosure helps monitoring and controlling the liquidity risk. In addition, cross-border issues and exchanges of information should be of concern. Some cross-border information sharing and coordination among supervisors help banks to design their contingency plans better since they often experience differences across jurisdictions.

Central bank facilities sometimes generate a sign of funding difficulties that intensifies the funding pressure in the market.

Additionally, two main principles must be emphasized here for sound liquidity risk management. First, the monitoring process is very crucial, the more often the liquidity reporting from banks, the further improvement there will be in risk management. Second, the banks’ ability to liquidate their funds under stress conditions helps to avoid a potential liquidity crisis. As a result, the central banks in ASEAN+3 have begun to be conscious of the matter and to revise their regimes of regulation and supervision on banks’ liquidity risk management.

The Asian Responses

In response to the recent global financial crisis, most the authorities in of the Asian countries e.g., Japan, China, South Korea, Thailand, etc., have launched fiscal stimulus packages and liquidity injections, including cutting interest rates, to restore the economies. At the same time, banking regulation and supervision of liquidity risk management have been reviewed and revised to ensure the availability of liquidity in the systems and to avoid another potential financial crisis. Table 3.1.1 presents the revisions of the regulation and supervision on banks’ liquidity management that the central banks in some ASEAN+3 countries have done in reacting the lessons that they have learned from the recent global financial crisis.
Table 3.1.1: Examples of the ASEAN+3 Revisions of Regulations and Supervision

<table>
<thead>
<tr>
<th>Country</th>
<th>Revisions in Regulation and Supervision</th>
</tr>
</thead>
</table>
| Japan   | - Re-authorizing expired regulation on bank recapitalization process  
         | - The Bank of Japan’s approach on liquidity risk management in financial institutions emphasizes on 3 elements;  
         |   - Consideration of the extent of diversity of financial institutions and of the changes in market conditions  
         |   - Perspectives in the foreseeing the future availability of funds  
         |   - Comprehensive judgments on the state of liquidity risk  
         | - Detection of changes through daily monitoring of liquidity conditions  
         | - Provision of advices and guidance for financial institutions if necessary |
| China   | - Increasing the required Capital Adequacy Ratio (CAR) to 8.11%  
         | - Increasing the required liquidity ratio from 25% to 41.7%  
         | - Setting of maximum loan-deposit ratio at 75%  
         | - Building stronger liquidity risk management with the improvement in overall risk management  
         | - Conducting regular stress-tests in working out contingency plans for unexpected events  
         | - Encouraging credit structure optimization |
| Korea   | - Provision of Won liquidity support  
         |   - Increase of aggregate credit loan ceiling by 3.5 trillion won in total  
         |   - Expansion of securities and institutions eligible for open market operations and supply of liquidity  
         |   - Decision on support for Bond Market Stabilization Fund |
Country | Revisions in Regulation and Supervision
---|---
 | • Improvement of collateral system for lending facilities and Liquidity Adjustment Loans and Deposits
 | • Decision on supply to bank recapitalization fund and implementation of loans
 | • Provision of foreign currency liquidity support
 | • Supply of foreign currency funds through competitive swap auctions
 | • Extension of foreign currency loans secured by export bills
 | • Establishment of new currency swap arrangements with other central banks, and expansion of the amount of an existing arrangement
 | • Easing restrictions on the use of foreign currency loans, and abolition of restrictions on foreign currency loan rollovers
 | • Adjustment of dynamic capital requirements
 | • Dynamic minimum capital must be estimated based on a through-the-cycle (TTC) method
 | • In good times, a capital buffer in Pillar 2 can be set aside, plus it is easy to manage and supervise. A built-in stabilizer can be adopted, instead of the capital buffer, in the good times to restrict the expansion of balance sheets.
 | • Adoption of dynamic loan loss provisioning, regardless of the economic cycle, in order to mitigate the procyclicality
 | • Restrictions on fair value accounting and regulation of leverage
 | • Regulators require financial institutions to withhold the reflection of excessive market price volatility from their balance sheets, by not recognizing such market prices
as being fair value. In order to strengthen market discipline among investors, the regulators could rule in the implication of fair-value accounting in financial institutions’ regulatory capital calculation.

- Leverage ratio should move inversely to asset values
- A weighted value of liquidity risk for each on/off-balance sheet asset and liability should be included in calculating a weighted liquidity ratio.

<table>
<thead>
<tr>
<th>Country</th>
<th>Revisions in Regulation and Supervision</th>
</tr>
</thead>
</table>
| Malaysia | - Requirement for the granular monitoring of risk positions at the entity-level, in addition to the group-level liquidity risk positions  
- Inclusion of operational, regulatory, legal, and Shariah constraints that may potentially support intra-group liquidity facilities for the Bank Negara Malaysia’s supervisory assessments  
- With the growing demand for foreign currency financing to support the growth of cross-border investment and trades in goods and services, the multi-currency management is introduced as well as the assumption of full convertibility between currencies. However, the expansion of banking institutions’ foreign-currency activities will potentially increase their exposure to liquidity mismatches associated with sudden changes in the liquidity of foreign exchange market. As a result, the adjustments to the liquidity framework are proposed for better anticipation and mitigation of the risk of an overestimating liquidity buffers.  
- Review of the banking liquidity framework is proposed to improve liquidity risk management practices;  
  - Multi-currency operations are required for a higher degree of banks’ cross-border transactions. |
<table>
<thead>
<tr>
<th>Country</th>
<th>Revisions in Regulation and Supervision</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Provision of more detailed qualitative and quantitative standards must be observed for cash-flow projection</td>
</tr>
<tr>
<td></td>
<td>• Internal measurement approaches are needed for higher levels of resilience than the minimum regulatory requirement.</td>
</tr>
<tr>
<td></td>
<td>• The enhancement of the liquidity framework is supplemented by the issuance of qualitative liquidity risk management standard in 2009.</td>
</tr>
</tbody>
</table>
| Singapore    | - Adoption of more risk-sensitive capital framework in Basel II  
- Revision of the minimum liquidity assets framework  
- Revision in the MAS\(^1\) Standing Facility at the micro-level                                                                                                      |
|              |  • Higher ratio of fund borrowing from the MAS against Singapore Government Securities collateral  
  • Higher accessibility to the Standing Facility through 11 Primary Dealer banks  
- Expansive participation of the MAS in the Standing Facility in the banking system                                                                                 |
| Thailand     | - Basel II should include the through-the-cycle risk variable  
- The principles of reserve requirements under the IAS39 should take the expected loss model and dynamic provisioning into account.                                                                 |
|              |  • Fair value accounting should be readjusted to its context as follows,                                                                                                                                           |
|              |   • Re-classification during the downturns to avoid the mark-to-market valuation of some assets  
   • Reserve on valuation to avoid the uncertainty of market fair-value accounting                                                                                                                                |
| Cambodia     | - Maintaining sufficient capital as the solvency ratio increases to 28%\(^2\).                                                                                                                                             |
Several issues were raised in the Basel Committee on Banking Supervision’s (BCBS) consultation draft containing 17 principles. Mostly, the emphasis lays on the role of banks in sound liquidity risk management, the role of government, better measurements, importance of public disclosure, and an increase in the supervisors’ involvement. The information contained in table 3.1.1 implies that the members of ASEAN+3 have followed the guidelines of this consultation.

In addition to the information in the above table, Japan operates a robust system in liquidity risk management i.e., asset/liability structures and off-balance-sheet items, including a high share of deposits, a sizable amount of securities holdings, and limited size of contingent liabilities. The Bank of Japan’s monitoring system requires banks to report their liquidity conditions on a daily basis, exchanges opinions regularly, or offers guidance and advice if necessary. The monitoring process consists both off-site monitoring and on-site examination along with the verification of important aspects of liquidity risk management – liquidity risk profile, balance sheet management, daily cash management, and action plan for emergency. Recently, the suggestion on regulations emphasizes on “3 Cs”: comprehensive, contingent, and cost-effective. It is obvious to say that good regulations should be comprehensive and best understood without loopholes. At the same time, contingent regulations should mitigate overconfidence to prevent the accumulation of systemic risks that are related to liquidity risk. Moreover, it is necessary to impose few restrictions in order to avoid reinforcing economic deterioration. Lastly, the least expensive approach should be chosen along with its

<table>
<thead>
<tr>
<th>Country</th>
<th>Revisions in Regulation and Supervision</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Adoption of new capital requirement scheme with triple amount of registered capital from KHR 50 billions to KHR 150 billions for commercial banks, and from KHR 10 billions to KHR 30 billions for specialized banks.</td>
</tr>
</tbody>
</table>

Source: Fiscal Policy Research Institute

1 Monetary Authority of Singapore (Singapore’s Central Bank)
2 Prudential limit equals 15%
effectiveness. In addition, the liquidity metrics and sharing information are offered for international monitoring purpose since there are significant differences from country to country in the effectiveness of liquidity monitoring. The cooperation of institutions is very important since one-size-fit-all-type arguments are not very realistic. The mechanisms must be sufficiently flexible and adaptable to the circumstances of individual countries.

For China, the Chinese Banking Regulatory Commission (CBRC) has recently issued the *Guidance on Liquidity Risk Management of Commercial Banks* as a guideline for banks’ liquidity risk management. The focus is on the daily basis on maintenance of liquidity adequacy of commercial banks by supervision. The formulation of the guidance derives much from international experiences and also takes into account the empirical evidence from the Chinese banking industry. As a result, it will help in the further improvement of the Chinese risk management system and also provide for a new sustainable path for Chinese commercial banks’ development.

In response to the recent global financial crisis, the Bank of Korea adopted 3 main financial revisions. First, the base rate was adjusted from 5.25% to 2% per annum. Next, the Won liquidity support is provided with the combination of higher aggregate credit loan ceiling by 3.5 trillion won in total, adjustment of list of targets eligible for support, expansion of securities and institutions eligible for open market operations and supply of liquidity, decision on support for bond market stabilization fund, improvement of collateral system for lending facilities and liquidity adjustment loans and deposits, and decision on supply to bank recapitalization fund and implement of loans. Lastly, the provision of foreign currency liquidity support is offered. In cooperate with this provision, four elements must be coordinated: (1) supply of foreign currency funds through competitive swap auctions, (2) Extension of foreign currency loans secured by export bills, (3) Establishment of new currency swap arrangements with other central banks along with expansion of the amount of existing arrangement, and (4) Easing restrictions on the use of foreign currency loans, and abolition of restrictions on foreign currency load rollovers. In addition, the Korean authorities have also adjusted some of their
regulations in order to mitigate the effects of procyclicality. Three main regulations were proposed as shown in the above table. First, the dynamic minimum capital principle calls for a setting aside of more minimum capital in Pillar 1 and a capital buffer in Pillar 2 during good times. However, in bad times, things have been done differently as shown in the Table. The adoption of dynamic loan loss provisioning would help to stabilize total loan loss at a certain level, regardless of the economic cycle. At the same time, the restriction on fair value accounting would alleviate the price volatility in banks’ balance sheets, while the leverage ratio should be set with regards to the economic cycle. For example, the leverage ratio should be set at a low level during the upturns and higher during the downturns. Furthermore, the regulations should be concerned more with off-balance sheet transactions and the availability of assets plus the rollover risk of liabilities.

Malaysia, too, has adopted revisions to her regulations and supervision in response to the recent crisis. The reset of the liquidity framework has been done in a way that could improve liquidity management both locally and internationally. All assessments are to ensure liquidity in the banking system and to monitor the potential risks. In Thailand’s case, the recommendations mostly focus on reviews and adjustments of Basel II and the reserve requirements under the IAS39. The improvements to be made to the risk management model should include a through-the-cycle variable to measure the real effect of the cycle and for a better reserve requirement ratio. Finally, the Monetary Authority of Singapore also focuses on fund facilitation and risk monitoring via a better risk-sensitive model.

Basically, most of the revisions in ASEAN+3 emphasize two major principles (1) liquidity availability during bad times and (2) the assessment of risk monitoring. The participation of central banks has expanded, involving both on-site examination and off-site monitoring. Furthermore, the more risk-sensitive capital framework must be included for the improvement of liquidity risk management.
Nevertheless, it was noted that Basel II neglected three key factors\(^6\): the impact of liquidity running-out, the high level of market interplay, and the occurrence of black swan events. Moreover, other issues; such as the capture of off-balance sheet exposures, securitization activities, and other contingent liquidity risk, must be taken into account following the content of the Basel II. Basel II can help to prevent future financial turmoil or alleviate its impacts, but it is only in the initial stage for the recent crisis. Many improvements must be done with the cooperation of countries in the global financial system.

---

\(^6\) Financial Times, 25 July 2008
3.2 Potential Merits and Concerns of Current Regulation and Supervision in ASEAN+3

Experiencing the Asian financial crisis in the mid 1990s, the ASEAN+3 nations have learned a lesson of not being prepared for an unforeseen event. Transparency in the financial market had been questionable even before the crisis began. Many nations did not have portfolio restrictions such as a deposit rate ceiling and liquid asset ratios in place. With proper preparations and better liquidity risk management, the severity of the Asian financial crisis could at least have been lessened, if not avoidable. Nevertheless, ten years later, the recent global financial crisis in 2008 has proven how far the ASEAN+3 nations have come in modifying their financial regulations, adopting international standards of risk management, improving transparency, and strengthening their financial markets to prevent and prepare for other possible economic downturns. Nowadays, all ASEAN+3 nations have adopted the standard guidelines for sound liquidity risk management issued by the Bank for International Settlements (BIS) and also by other international organizations. To improve transparency, most banks in the ASEAN+3 nations are now required to submit a financial report to their national authority and follow the guidelines for managing liquidity risk. Besides existing qualitative measures, quantitative measures such as financial ratios, stress testing, and maturity mismatch analysis have been implemented by all major financial institutions in the ASEAN+3 nations. In addition, contingency funding plans are now in place to cope with other potential black swan events.

Potential Merits

Fundamentally, potential merits of revisions of the current regulation and supervision in the ASEAN+3 are following the merits stated in the BIS’s standard guideline. First, according to the learnt lessons from the ASEAN financial crisis in 1997 – 1998, the ASEAN+3 knows that it is necessary to prepare banks for unexpected stress conditions that link to everybody in the financial system. Therefore, stress-testing scenarios and contingency funding plans (CFPs) must be conducted as such preparation. Moreover, in order to prepare banks for unexpected stress conditions, the
regulation requires banks to hold adequate liquidity to ensure their ability to meet their obligations as they come due, thus, to avoid potential liquidity crisis. The merits of getting better liquidity risk management are quite obvious. The sound liquidity risk management would provide sound banking system, reduce moral hazard problem, and generate the higher valuation of the financial system in each individual country and Asian banks in general. Moreover, it will be the key instrument to prevent the next crisis in Asia which prone to happen during the up-cycle of massive capital flows.

Potential Concerns

With today’s increasingly borderless financial markets and the development of new financial derivative techniques, along with widen opportunities for gold rushes in the financial market, these circumstances have encouraged risk-taking behaviors. Financial institutions encounter new challenges of maintaining their appropriate level of liquidity and, at the same time, of remaining competitive in the markets. This fact adds several concerns to the revised practices and policies for managing liquidity risk in the ASEAN+3 nations. These concerns involve certain aspects of standard guidelines for managing liquidity risk, especially those of the BCBS widely followed by the ASEAN+3 nations, practices of individual banks among the ASEAN+3 nations, and factors which may initiate a potential systemic risk in the region.

The Basel II, which was first issued in June 2004, has been reevaluated and updated for 7 times, with the earliest version released in July 2009. While such update reveals the committee’s attempts to safeguard the financial markets against comprehensive risks, the risk management guidelines provided by the July 2009 release still places too much emphasis on a qualitative approach, rather than a quantitative approach. This current guideline remains broad in its approach to quantitative methodologies with no attention to find an appropriate quantitative approach to the management of liquidity risk. Without a consensus regarding the adequate level of implementation of quantitative techniques, few ASEAN+3 supervisors have mandated the application of quantitative methodologies as a requirement to their local banks. Consequently, with an exception of Capital Adequacy Ratio (CAR) and stress testing,
few banks in the region regulate their liquidity by quantitative techniques while the qualitative approach has become practically dominant in the region.

Excessive reliance on CAR has made the region vulnerable to the systemic liquidity risk and, together with the mark-to-market accounting system, encourages a procyclicality. After all, a certain level of capital requirement alone is not adequate to prevent risks due to illiquidity. In today’s financial market, banking business has evolved into complexity. At the same time, banks’ fundamental role, maturity transformation of short-term deposits into long-term loans, are now affected by many factors, not only interest rate and amount of deposits, but also foreign exchange rates and sophisticated derivative techniques. Most banks’ practices in the ASEAN+3 region, which mostly rely on the CAR to safeguard against liquidity crunch, have omitted other significant variables from the liquidity model, distorted the actual liquidity status, and place the banks in jeopardy. Incorporating other requirements such as the ratio of foreign currency assets to foreign currency liabilities would reveal a more complete picture of the actual liquidity status of banks. The CAR also encourages a procyclicality through its intended purpose to safeguard banks against liquidity crunch. Practically, banks raise their CAR during a recession to safeguard themselves against a bank run and lower their CAR during a boom to generate more loans to seek more profits in return. However, what benefits an individual may work against the whole group. Together with the mark-to-market accounting system, which values assets on the basis of the current fair market price leading to underestimated values of assets during a recession and the overestimated values during a boom, CAR would only limit investments and the amount of money in circulation during a recession or encourage excessive risk-taking behaviors during a boom, thereby leading to procyclicality and a worst economic crisis.

Banks also face a dilemma between maintaining sound liquidity management and remaining competitiveness in the borderless financial markets. In 1988, Basel I came into effect along with a capital requirement of 8 percent for credit risk, with an assumption that this level of requirement could act as a buffer for all other risks. The
usefulness of a capital requirement became apparent, and, afterwards, Basel II accord of June 2004 acknowledges that the capital requirement for credit risk had led to more accurate calculation of risks. Then, specific capital requirements for market and operational risks were imposed. The absence from this new development was a specific requirement for liquidity risk. While, under Basel II, Pillar II, banks must now hold capital in excess of regulatory requirements to support all the risks to which they are exposed, a specific requirement for liquidity risk has not yet become in effect. An Internal Capital Adequacy Assessment Process (ICAAP), which is also introduced by Pillar II to measure the adequate amount of internal capital to support exposure to comprehensive risks, came with no clear recommendations regarding quantitative methods to be used to measure adequate amount of capital supporting liquidity risk. This has led to a dilemma between sound liquidity management and competitiveness. A local bank in which a specific liquidity risk requirement, such as a capital requirement for liquidity risk, is imposed would see a reduction in their degree of competitiveness compared to that of foreign banks with no such requirement. Practically, recognizing the implication, most local supervisors opt to impose this specific liquidity risk requirement on their local banks.

Besides the concerns regarding the Basel guideline, internal concerns exist within the region. One such internal concern is cooperation among ASEAN+3 authorities. Nowadays, there has been too little cooperation and communication among national authorities and supervisors in the liquidity risk-related issues and, no attempt among the member nations to find a consensus regarding various types of liquidity risk management which may be suitable to the ASEAN+3’s unique financial market. Having experienced many financial crises together, the ASEAN+3 nations, with closely tied economic conditions, would benefit from their financial supervisors’ meeting regarding the well-beings of banks in the region and knowledge sharing on appropriate regulations, well-developed facilities, and effective measurement techniques. With the region’s unique characteristics of the market, following the recommendations of the Basel Committee on Banking Supervision does not provide adequate protection against liquidity risk. Identifying unique characteristics of the region and carving policies which
incorporate those unique characteristics into consideration is vital for the ASEAN+3 economies to get stronger and more efficient. An example of such characteristic is the vulnerability of the region to the foreign exchange liquidity risk of which the management is not specifically documented in the Basel II’s recommendations.

Consisting mostly of small opened economies, the ASEAN+3 region is particularly vulnerable to risks involved foreign exchange transactions. However, within the region, Korea is the only nation whose national authority issues clear quantitative measurements and guidelines for managing foreign exchange liquidity risk. The application of statistical analysis to the management of liquidity risks is relatively new to the region. Examples of measurement methods used by Korean banks to regulate the foreign exchange liquidity risk include the ratio of foreign currency assets to foreign currency liabilities, the maturity mismatch of foreign assets and liabilities, and maturity gap ratio. Korean Banks are also required to categorize foreign exchange risks by types, e.g. country risk, large credit exposure risk, derivatives transactions risk, and market risk. Furthermore, the use of probability-based methodologies to quantify liquidity risks remains exclusive to the Monetary Authority of Singapore. Value at Risk (VAR), which employs statistical techniques and the probability principles to measures the risk of loss on a particular portfolio of financial assets in the worst case scenario, is required for Singaporean banks. Relatively inexperienced in probability-based methodologies and the management of the foreign exchange-related risk, other ASEAN+3 nations could learn from Singapore’s and Korea’s experiences and uses the two nations’ approaches as models to develop their own system of the foreign exchange-related risk and probability-based, liquidity risk-evaluating methodologies.

The insufficient public disclosure of financial information among ASEAN+3 banks undermines the community’s endeavor to create a well integrated, transparent, and efficient economy. Insufficient public monitoring permits reckless risk-taking behaviors of financial institutions and the violation of well-established policies for sound risk management both issued by the institution’s board of directors and a national authority.
The insufficiency may also lure a flow of financial resources from uninformed investors or companies in other sectors to appear-to-be-transparent institutions with financial difficulty, thereby expanding illiquidity from a single institution to other sectors of the economy. With rapid changing conditions of the market, a monthly or quarterly submission of the maturity report to a national authority is no longer effective in an attempt to hamper any unwanted developments. Today, the market’s condition could turn around in a matter of a week. A more frequent submission would enhance transparency, strengthen the confident of investors, and promptly identify individual banks with a weak financial status. For example, the German authority allows banks to develop their own methodologies for measure risks. If such methodologies are better than ones required by the Central Banks, the banks are encouraged to follow their own path.

The lack of diversification of sources of fund is another concern that must be taken into account. Diversity of funding sources enhances banks ability to raise funds in time of financial difficulty. The revisions of liquidity risk management in the ASEAN+3 have only small essence on diversification of funding sources. The main object of diversification is to find alternatives as banks face stress condition or financial difficulty.

Of all concerns, a systemic risk is the most worrisome. A systemic failure of the Asian financial market would be a global catastrophe that no nation would want to witness. The subprime crisis that began in mid-2007 has demonstrated its devastating effects on lives of people, especially those in America. From August 2007 until August 2008 over 65,400 employees of financial institutions in America lost their jobs. Thousands of families lost their dwellings due the inability to refinance their subprime mortgages. Because of their multinational interconnected economies and a number of people in the region, the collapse of the ASEAN+3’s financial market could trigger a global recession with far more devastating effects than those seen from the previous subprime crisis. Previously mentioned, concerns present particular weaknesses of the

---

liquidity risk management of which careful attentions and appropriate remedies will set the ASEAN+3 on the right path of becoming a unified market with a well-managed system of liquidity risks. To complete the picture, two issues which are primary concerns to an issue of the systemic risk need to be mentioned; one is the business undertakings of investment banks and the other is the behaviors of executives of financial institutions.

Because behaviors of major financial institutions could dictate behaviors of other market participants, these two factors are of utmost importance in regarding to the issue of liquidity management. The recent subprime crisis was believed to be initiated by investment banks’ excessive and reckless risk-taking behaviors and the defunct of 158-year-old Lehman Brothers very well convey a to-be-learned lesson for all risk-involved operations. The nature of investment banks involves risk taking and profit generating. To achieve their goal, investment banks’ corporate culture encourages risky behaviors among their employees. Since these employees’ remunerations are based on the banks’ performance evaluated on the basis of profits, not on the level of risks involved, most of these employees follow the corporate culture to align themselves with the banks’ and their individual's incentives. Currently, investment banks in the ASEAN+3 are loosely controlled and their long term and day-to-day strategies are poorly overseen by the national supervisors. To prevent another possible systemic risk, investment banks should report their strategies and plans, which deem risky and inappropriate, to the national authorities on a confidential basis. This raises the important of transparency among the national supervisors themselves. Executives of other financial institutions, especially those of major institutions, should also be held accountable for their course of actions. This is to create incentives for the executives to develop an effective and well-managed liquidity risk management system within their own institutions. In order to create such incentives, one of which is remuneration, executives’ compensations must be aligned with the institutions’ risk exposure. This risk-adjusted compensation system has not been adopted by financial institutions in the ASEAN+3 nations, and the executives are implementing their strategies on the personal risk-free basis. Regardless of any well guidelines for managing liquidity risks and a number of policy
implementations, persistent, excessively reckless risk-taking behaviors and poor risk management of financial intuitions would guarantee another catastrophic financial collapse in a near future.
Chapter 4

POLICY RECOMMENDATIONS FOR SOUND LIQUIDITY RISK MANAGEMENT FOR BANKS IN ASEAN+3

Policy Recommendations

Although any set of policy recommendations could never be complete or comprehensive enough, there are certain policy directions we would like to suggest for revising regulation and supervision for sound liquidity risk management for banks in the region as follows;

4.1. Possible Alternatives for an Individual Country

For regulators and supervisors, the improvement can be made in, at least, 3 areas. Since regulation and supervision have been different from country to country, both in priorities and standards of practice, the following suggested improvement represents a set of minimum requirements that each country should have in dealing with potential liquidity risk.
4.1.1 Establishing a timely information system

Since liquidity can move at high speed and cause sizable damages within a matter of days, it is recommended that reviews of liquidity risk in the banking system (with quick summary reports of individual banks) should be done on a weekly basis (or monthly, as the latest).

Generally, executives of every central bank have already been monitoring currency and interest rate movements daily to ensure proper functioning of the monetary system. The cash positions (deficit or surplus) of each individual bank as well as of the whole banking system are readily revealed in the interbank and/or repurchase markets. Timely assessments of the current liquidity risk (of each bank and of the whole banking system), plus the short-term (weekly or monthly) forecasts thereof, if possible, would provide a crucial set of information, along with others, for the authorities in engineering the optimum intervention in the exchange rate and money markets.

4.1.2 Extending quantitative indicators

It is highly recommended to improve the quantitative measurements in the supervisory routine, especially in countries that might be lagging behind. The improvements should be made in line with the BIS’s Principles for Sound Liquidity Risk Management and Supervision. The details (and formulas) of the indicators might vary from country to country, depending on the type of bank (local, regional, or global) and the degree of exposure to the liquidity risk, especially in foreign currency.

The larger banks, which are highly exposed to international transaction (trade as well as finance), must have more stringent rules on quantitative measurements, while local banks or special financial institutions (e.g., a government savings bank and rural development bank) would be subject to lesser degrees of regulation due to the lower exposure to exchange rate losses.
4.1.3 Preparation of central bank facilities

Although many financial crises may have come and gone, the most controversial issue in banking supervision remains -- whether a bank should be rescued in preventing a systematic run or bankruptcy should be allow to take its course. The experiences Asia faced during the Asian financial crisis (1997) and is facing in the current global financial crisis suggest that governments and central banks should always be prepared for the worst. A crisis-prevention mechanism must be put in place, but identification of liquidity risk, owing to massive cross-border capital inflows and outflows, must be clearly made with facilities prepared beforehand.

For the benefit of shareholders, a bank's board and management should quickly improve their internal risk management system.

1. More comprehensive stress-testing system and Contingency Funding Plans (CFPs)

- Stress testing on maturity and currency mismatches should be incorporated into the routine work. A specific stress test might be extended to analyze market-wide events as well.

- It is highly recommended for all banks to establish and keep improving their CFPs.

- For all practical purposes, a CFP is an integral part of the stress test. It represents a solution for the banks regarding different stress scenarios.

- A more comprehensive version of CFPs would include diversification of funding sources, which in turn forces the bank’s management to ponder over possible solutions for rainy days. Here, reducing the downside risk is the prime directive.
2. Better accounting system

The key to minimize risks in the modern financial system is that the bank must closely monitor consolidated accounts which would clearly contain off-balance-sheet items, contingent commitments, and transfer pricing among units and across companies.

4.1.4 Early warning system (EWS)

Threatened by the risks of a severe foreign exchange rate change and a liquidity crunch during a crisis period, it is suggested that authorities set up mechanisms that can provide for some degree of foresight for the domestic market participants. A nationwide early warning system for crisis management can be useful for banks and other market participants to prepare themselves for any unwanted situation. This early warning system is another type of monitoring process that must be usefully supplemented with additional inputs from market research and situation analysis.

To set up an EWS, both standardized quantitative and qualitative approaches are needed. All information at individual and system-wide levels is required to be collected, monitored, and analyzed. It is then not an easy job for national authorities to achieve; nevertheless, it is attainable. For example, Korea has set up its EWS since 2004 for the foreign exchange market. The qualitative approaches have been applied with the quantitative model called the Fundamental-based Crisis Index Model (FCI). The level of economic severity is rated for an assessment of corresponding policy actions.

4.2. Possible Regional Cooperation

Up to this point, it is clear that the foreign currency liquidity risk is at least a regional phenomenon. Cooperation at the regional level would be a more effective and less costly way to implement measures to prevent unnecessary losses from occurring. Recommendations for regional financial cooperation have obviously been made.
elsewhere; here we focus on improving the policy effectiveness in reducing foreign-currency liquidity risk.

4.2.1 Providing the necessary information on global risk parameters

Formation of experts, or institutional network in ASEAN+3, to provide deep analyses on liquidity risk in the global financial market will be very useful for the banks in a small economy with limited capability. The quantification of risk parameters can then be used across countries for purposes of comparison, which in turn will improve the peer review mechanism that has already been put in place.

4.2.2 Providing a basic set of regulations regarding banks’ liquidity risk management

Comparable to the role of the BIS to Europe, Asia might need an institution to provide recommendations on basic practical and acceptable solutions to Asian banks. Identification and implementation of applicable international best practices and a common, basic set of regulations regarding banks’ handling of liquidity risk would lay a good foundation for further cooperation. There are existing institutions and fora we can utilize. Research institutions like the SEACEN, which specializes in banking regulation, can be a prime candidate. The EMEAP forum of central bankers might be another vehicle that can be relied on to oversee and monitor the progress of such cooperation.

4.2.3 Strengthening the regional liquidity pool

It is quite obvious that we all face the potential risk of foreign exchange liquidity. The Chiang Mai Initiative Multilateralization (CMIM) Agreement is the latest progress of the ASEAN+3’s cooperation in foreign exchange liquidity pooling. The CMIM’s objective to serve as a region’s self-help mechanism establishes a network of currency swap arrangements totaling USD 120 billion in size. The agreement provides insurance for the members of ASEAN+3, especially in stress conditions. Therefore, further cooperation in foreign exchange liquidity pooling should be continually supported. Moreover, it is
essential to enhance short-term liquidity cooperation in the region by creating a CMI Fund, as the second line of defense. The proposal of a CMI Fund is introduced as a new funding arrangement under ASEAN+3 with practical and simple procedures for accessing this short-term liquidity pool when needed. The size of liquidity under the CMI Fund should preferably be more than 80 billion USD equivalent.
REFERENCES


REFERENCES


Bundesbank. “Regulation on the liquidity of institutions - Liquidity Regulation. from www.bundesbank.de
REFERENCES


REFERENCES


Monetary Authority of Singapore (MAS). “MAS 613”, from www.mas.gov.sg


REFERENCES


