

A Study on Liquidity Risk Management in UAE Banks

دراسة حول إدارة مخاطر السيولة في مصارف دولة الإمارات العربية المتحدة

By

Abdulla Ahmad Al Aboodi

@90053

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Faculty of Finance and Banking

Dissertation Supervisor
Professor Elango Rengasamy

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Abstract

Following the global economic meltdown in late 2007, when many banks failed to meet their payments obligations and funds were drained out from depositors, many regulators started implementing liquidity risk management techniques more strictly through their central banks using the guidelines of the Bank for International Settlement (BIS), the international framework for liquidity risk measurement, standards, and monitoring. Such regulations are being enforced in all banks globally, restricting lending with the goal of a healthier financial environment.

The UAE's economic approach is aimed at moving from an emerging market economy to a developed economy; in order for that to happen, the UAE must work on strengthening confidence in its financial industry by following global banking guidelines through its central bank as well as the local and international banks operating within. This is evident by the UAE's work at fulfilling the Basel III requirements, within which liquidity risk management is further enforced. Currently the UAE Central Bank is tightening lending rules for all banks, aiming to impose more control on lending and avoid any possible failures in the future that might necessitate the central bank to bail out banks operating locally; thus the banks' risk management works to comply with the enhanced regulations. This research paper examines liquidity risk management in UAE Banks from an operational perspective in order to test whether banks are applying liquidity risk measurements and standards effectively.

The test sample covers 8 UAE local banks by interviewing the banks' risks managers through a questionnaire that focuses on the liquidity part of risk with qualitative and quantitative questions. The questionnaire is backed up by recent scholarly research in the area of liquidity risk in this part of the world. The research findings show some but not all evidence of applying the Basel III framework for liquidity risk, yet the framework requirements are not completely fulfilled.

ملخص

في أعقاب الانهيار الاقتصادي العالمي في أواخر عام 2007، عندما فشل العديد من البنوك بالوفاء بالتزاماتهم ومدفوعاتهم واستنزفت أموال المودعين ، بدأ العديد من المنظمين بتنفيذ تقنيات إدارة مخاطر السيولة بدقة أكثر وشرعت بتطبيقها على مصارفهم المركزية باستخدام المبادئ التوجيهية التي وضعت من قبل بنك التسويات الدولية (BIS)، وفق الإطار الدولي لقياس مخاطر السيولة والمعايير والرصد. ويجري إنفاذ وتطبيق هذه الأنظمة في جميع المصارف على مستوى العالم، وتقييد الإقراض بهدف الوصول إلى بيئة مالية أكثر صحة.

ويهدف النهج الاقتصادي لدولة الإمارات العربية المتحدة في الانتقال من اقتصاد الأسواق الناشئة إلى الاقتصاد النامي، ومن أجل أن يحدث ذلك يتوجب على دولة الإمارات العربية المتحدة العمل على تعزيز الثقة في الصناعة المالية باتباع المبادئ التوجيهية المصرفية العالمية وتطبيقها على مصرفها المركزي بالإضافة إلى مصارفها المحلية والمصارف الدولية العاملة في الداخل. وبدا هذا العمل جلياً وواضحاً بوفاء دولة الإمارات العربية المتحدة بمتطلبات بازل III، والتي يتم بموجبها فرض إدارة مخاطر السيولة. حيث يقوم مصرف الإمارات العربية المتحدة المركزي حالياً بتشديد قواعد الإقراض على جميع المصارف بهدف فرض المزيد من السيطرة على الإقراض وتجنب أي فشل محتمل في المستقبل قد يقتضي تدخل المصرف المركزي لإنقاذ المصارف العاملة محلياً، وبالتالي تعمل إدارة المخاطر في المصارف للامتثال مع الأنظمة المحسنة. إن ورقة البحث هذه تدور في مضمونها على إدارة مخاطر السيولة في المصارف الإماراتية من الناحية التشغيلية من أجل اختبار ما إذا كانت البنوك تقوم بتطبيق مقاييس ومعايير مخاطر السيولة على نحو فعال.

تغطي عينة الاختبار ثمانية مصارف محلية في دولة الإمارات العربية المتحدة وذلك من خلال مقابلة مديري إدارة المخاطر في المصارف بإجراء استبيان يركز على مخاطر السيولة من خلال أسئلة متميزة بالنوع والكم. و الاستبيان هذا مدعوم بالبحوث العلمية الحديثة في مجال إدارة مخاطر السيولة في هذا الجزء من العالم. وتظهر نتائج البحوث بعض وليس كافة الأدلة على تطبيق إطار بازل III في إدارة مخاطر السيولة، هذا على الرغم أنه لم تتحقق تماماً متطلبات الإطار.

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Chapter 1: Introduction

Thanks to the fast and continuous development in Dubai and Abu Dhabi due to oil wealth, the United Arab Emirates is now one of the players in the international trade and financial markets. The outward-oriented strategy and the openness of the UAE's government gave the UAE an impressive growth in the recent years. Foreign investments have increased dramatically due to the stable business environment and the strengthening of business strategies. The growth momentum was sustained and well-nurtured because of high oil and gas prices worldwide and the macroeconomic policies that were implemented in the UAE. This has resulted in positioning the UAE as the second largest economy among the Arab countries after the Kingdom of Saudi Arabia, especially in the banking sector.

In the volatile environment of banking, many banks in the UAE are currently facing a great number of risks, including liquidity risk, foreign exchange risk, credit risk, market risk, and interest rate risk. These risks are considered major threats to the survival and success of the banks. Kaplan and Garrick define risk as the possibility of loss or injury, the degree of probability of such an event, and the consequences following the event (Kaplan & Garrick, 1981). From the bank's perspective, risk is the uncertainty of financial loss, given that two major components of risk are derived from the previous definition, uncertainty and exposure. Banks face three main risk types—operational, credit, and market—in addition to the other risk types regulators expect banks to assume, mainly liquidity risk, which will be the focus of this paper.

Operational risk is the risk arising from a company's regular business functions; such risk occurs as a result of inadequate or faulty internal processes, people, and systems, or from external events. The operational risks include fraud, legal risks, physical and environment risks, clients/products/business practices, damage to physical assets, or business disruption and system failures due to bad execution and business management processes. These functions are carried out in different bank divisions; for instance, information risk is part of the IT department, personal risk is part of the HR department, and Business Continuity Management is part of the Strategic Planning Department (Vyas & Singh, 2010).

The second type of risk that banks face is credit risk. Credit risk is due to an uncertainty in the counterparty's ability to meet its obligations in accordance with the agreed upon terms. Credit

risk results from a potential default in meeting the commitments required by such services as lending, interbank transactions, trade financing, foreign exchange transactions, futures, and equities. A bank's objective in risk management is to minimize risk and maximize risk-adjusted rate of return by maintaining adequate exposure within accepted parameters. (Raghavan, 2003)

Taking into consideration that banks operate within a volatile market in which several variables can affect the performance of the bank, the third type of risk is the market risk, which is the possibility of loss due to changes in market variables. Such variables include the movement of equity and interest in the market, currency exchange rates, and commodity prices. Furthermore, the objective of a bank's market risk manager is to provide a better view of the market conditions by way of managing liquidity, interest rate, and the currency exchange the bank needs against its overall strategy (Raghavan, 2003).

Following the economic meltdown of 2007, regulators around the world representing each country's central bank began to expect banks to address other risk types, mainly the liquidity risk that will be the focus of this research. "Liquidity is the ability of a bank to fund increases in assets to meet obligations as they come due, without incurring unacceptable losses" (The Basel Committee on Banking Supervision, 2000). The liquidity risk manager's objective is to provide a bank with a framework to measure, monitor, and manage its liquidity risk due to fluctuation in interest rates, foreign exchange, equity, and changes in commodity prices against its needs, all while remaining aligned with the bank's strategy.

To manage the previous risks, a management method should be implemented. This will lead us to the broad concept of risk management. Risk management is the process of measuring or assessing the actual or potential dangers of a particular situation (Kaplan and Garrick, 1981). Risk management is a way of mitigating risk and decreasing the possible losses by implementing certain strategies.

Researchers suggest that commercial banks should follow three generic strategies to mitigate their risk: elimination or avoidance of risk through the implementation of simple business practices, the transfer of risk to other parties, and the active acceptance of risk management within the banks' operations. As mentioned in Al-Tamimi and Hussain's research, a

comprehensive risk management process could be followed to cover all parts of accepted risks. This process could be summarized in seven simple steps as follows:

1. Identification of the bank's exposure to the market
2. Gathering of the needed data regarding the risk and quantifying this data
3. Setting up the objectives for risk management
4. Setting up the product control guidelines
5. Evaluation of the risk management process
6. Development of risk management strategy
7. Implementation of performance management

In order for a bank to implement risk management regarding liquidity, the bank needs to manage the cash flows and maturities of assets/liabilities that take place over a period of time to anticipate the future behavior of the asset that those cash flows are linked to (Al-Tamimi & Hussain A., 2002). The next sections will include the rationale of this research, the research problem, the objectives of the research, and the limitations of the research.

1.1 Rationale of the Research

Liquidity Risk Management is of interest to central banks and the supervisory authorities in which a bank should hold adequate liquidity levels in order to avoid the risk of failure in meeting expected and unexpected current and future cash flows and collateral needs without imposing a negative effect on its financial performance. The liquidity risk of banks is due to their lending activity while at the same time making deposits, when deposits typically mature faster than loans, which creates a maturity mismatch (Ivanov, 2010).

Moreover, liquidity risk can occur due to the fact that one party may be interested in trading an asset when no one in the market is interested in buying it. This was clearly evident during the economic meltdown when banks refused to lend to each other due to their problems funding the liquidity related to exposure to their products. This risk becomes important for banks since they hold a certain amount of assets that cannot be converted into cash, hindering their ability to borrow. (Kleopatra, 2009). Having fewer liquid assets can allow a bank to compound its liquidity

and market risk since such assets will cause the bank to have limited potential to liquidate on short notice or in a short period of time.

This research is important to this region, as liquidity risk management has recently become the interest of the Central Bank as well as supervisory authorities; thus, the UAE Central Bank is putting high expectations on banks operating locally to address this risk and the Basel report on liquidity risk management. This is in an effort to avoid the scenario of 2008 during the economic meltdown when the Central Bank had to inject AED.120 billion into the financial industry so that its banks did not fail in meeting their obligations; moreover, the Central Bank announced that it would guarantee all deposits, which has affected the confidence level in UAE banks (Brown & Sharif, 2008).

Additionally, this research is important as the UAE aims to grow from an emerging market economy to a developed market economy, which can only happen with a healthier and stronger financial industry; thus, liquidity risk is an area of focus, given the fact that banks do not favor disclosure of such facts since disclosure has its drawbacks. This paper shall examine how effective UAE banks are in implementing liquidity risk management techniques in order to increase their degree of solvency, as well as their readiness to encounter any unfortunate events that can affect the country's financial health.

1.2 Research Problem

In most cases where a bank fails, it is because the bank has insufficient funding to ensure its ability to meet its obligations on their due dates. It would seem evident, therefore, that liquidity risk should have the highest level of disclosure, but this is not the case; moreover, regulators and supervisory authorities give the least attention to liquidity risk compared to credit, market, and operational risks. Banks prefer not to disclose insights about their liquid positions because such insights can cause loss of confidence in the market (Vander & Cuthbert, 2008).

UAE banks awakened after the financial crisis in 2008 to find themselves on the decline, and the UAE Central Bank tightened rules and limited lending, aiming to impose more control on the lending and borrowing markets, which further affected banks' profitability profiles. In fact, the

publications and circulars of the UAE Central Bank, along with those of the BIS have been qualitative; therefore, the focus now should be on the quantitative to support the banks' claims that they have effective liquidity risk management.

As stated, the UAE financial industry is emerging and in its growth phase, working on placing itself among developed economies; however, several issues arise as an obstacle for this objective. The fact that UAE banks are still in recovery phase from the economic crisis and working on refining their liquidity positions by following the guidelines of the Central Bank and international regulatory authorities which by themselves prove vague and qualitative instead of quantitative and calculable.

1.3 Objective of the Research

The main objectives of the research are as follows:

- To examine if UAE banks are effectively managing their liquidity risk through qualitative and quantitative techniques.
- To test the transparency of UAE banks in accordance with Basel III guidelines on disclosure of information in regard to liquid position.
- To contribute to the literature by providing additional information in the field of liquidity risk management efficiency with results backed with evidence collected locally in the UAE.
- To highlight the importance of liquidity risk management for UAE banks.
- To put in suggestions and recommendations in regard to findings and gaps in the research.

Accordingly this research paper intends to answer the following questions:

- Do UAE banks apply appropriate liquidity risk management techniques to deal with liquidity problems that might arise?

- What is the level of dependency UAE banks have on the Central Bank as a source of liquidity?
- Does the level of transparency in UAE banks permit their investors to make appropriate investing decisions, and do these investors have enough confidence in the banks' levels of solvency?

1.4 Limitations of the Research

There are two limitations that have been faced while structuring the research, the first being data availability. Some data, such as that pertaining to credit, market, and operational risks can be collected daily or on a regular basis, as events associated with the data are frequent in occurrence; liquidity risk events, however, are rare and unique in character, thus this research is dependent on speculations based on the internal data of banks.

The second limitation is the high level of confidentiality and overall lack of transparency in UAE banks in providing data, and in some cases the data provided is in a gray area and does little to help define liquidity risk as this risk is binary. Thus, the approach of the questions addressed to banks' risk managers went from asking what models are used to asking whether given ratios and models are used or not.

The last limitation is that liquidity risk depends greatly on the local economy and less on global markets; therefore, comparative studies of other countries are not applicable to the UAE and lack accuracy. To further elaborate, every country has a different political approach which effects the economy, thus it is unlikely to find two countries with identical conditions. Furthermore, given the fact that every country's economy is unique, yet studying these different economies can help in building assumptions of best practices.

1.5 Research Paper Organization

The rest of the research paper is organized as follows: Chapter two includes the explanation of the terms and concepts and the review of the literature, followed by a summary of the reviews, comments, and criticism; Chapter three explains the research methodology, including the questionnaire objectives and the analysis; Chapter four introduces the qualitative analytical results, including the cash flow forecasting and financial ratio analysis; Chapter five explains the quantitative part of the analytical results; Chapter six summarizes the findings and recommendations; and finally, Chapter Seven includes the conclusion and future research, followed by the references.

Chapter 2: Literature Review

This chapter is divided into two sections: an explanation of terms and concepts found in the literature and the research, and the study of the literature reviews.

2.1 Explanation of Terms and Concepts

- Risk: the potential that both expected and unexpected events may have an adverse impact on a bank or a corporation's capital and earnings.
- Liquidity: the ability of a bank to fund all of its contractual obligations including lending, investment commitments, withdrawal of deposits, and other commitments as they come due.
- Liquidity Risk: the risk of loss to a bank resulting from the inability to meet its cash needs due to inadequate liquidity levels, which necessitates the bank to obtain funding for excessive costs.
- Liquidity Risk Management: an ongoing process whereby the bank must ensure that all cash needs can be met at reasonable costs to be able to maintain an adequate liquidity level in order to meet expected and unexpected obligations.
- Concentration Risk: In this context, this type of risk occurs when, in a given bank, a small number of depositors with high value represent most of the bank's overall deposits.
- Cash Flow: a stream of movement of cash accounts through revenue or expenses in a given period.
- Cash Flow Forecasting: an aspect of cash flow management in which planning future cash movements takes place.
- Leverage: the degree to which a business uses debt to finance assets.

2.2 Review of Literature

Risk management has always been of interest to regulators and supervisory authorities who wish to impose control over banks operating within a specific region, even prior to the financial crisis in 2008. During the economic boom between 2002 and 2008, regulators and banks were less sensitive to risks that arose from the inefficient Basel II framework introduced in 2002 as well as to high returns in the market. Furthermore, in their literature, many researchers and scholars suggested the importance of implementing Basel II risk measurements and monitoring techniques as well as additional models to examine current and future market trends. After the economic crisis in 2008, regulators and banks realized the importance of such measurements and monitoring techniques; thus, Basel introduced the Basel III international framework for liquidity risk as well as tools for liquidity ratios. Moreover, researchers around the world went further and provided detailed explanations and criticism of the framework, depending on the market circumstances and political environment, suggesting several models and useful techniques and studies to efficiently apply liquidity risk management.

This section explores the different studies done by researches in the fields of risk management and liquidity risk management and helps to answer the research questions and find gaps in the literature that will be addressed in the research.

Research method studies were important to carry on this research; an article by Liebscher (1998) titled “Quantity vs. Quality” explains both types of research methods and how they are used, depending on the research question.

Challoux and Hakura (2009), in their research based on the recent Institute of Finance and Basel Committee Publications report, studied the UAE liquidity management framework in light of the global economic meltdown in 2008. The authors suggested the need for better implementation of liquidity risk management using better comprehensive approaches and taking into consideration the country’s systematic liquidity framework. Challoux and Hakura (2009) highlight a limitation to the liquidity risk framework, which is the reliance on the central bank’s certificates of deposits. The research also suggested the need to strengthen monitoring and use more tools and

indicators of liquidity risk measurement since UAE banks lack sensitivity in lending due to the fact that the only liquid asset available is the central bank's certificates of deposits. These certificates are driven by foreign exchange rather than basic risk and return of assets.

Furthermore, Challoux and Hakura (2009) discuss how UAE local banks are limited in terms of diversifying their liquidity sources because the liquidity management operations of UAE's Central Bank is under tight constraints due to the fixed exchange rate between the UAE Dirham and the US dollar. Large US dollar balances held by local banks, easy access to the US dollar market, and the credibility of the Dirham's peg to the US dollar have always allowed UAE banks to easily manage their liquidity since the US dollar is readily available globally without the need to raise funds in local currency. On the other hand, foreign banks operating in the UAE have more diversified ways to generate funds due to their approach and the support from their parent banks.

Additionally Préfontaine, Desrochers, and Godbout (2010) have discussed in their paper the 17 principals for sound liquidity risk management and supervision, introduced by the Basel Committee on Banking Supervision (BCBS). In their research, they found that public disclosure helps improve businesses since financial institute managers estimate the potential losses or gains from their business activities, on the other hand regulators and those of interest would get involved in setting risk management constraints and financial disclosure standards. Furthermore, the researchers analyzed the comments of the BIS document "Principles for Sound Liquidity Risk Management and Supervision." Préfontaine, Desrochers, and Godbout, in their article "The Analysis of Comments Received by the BIS on Principles for Sound Liquidity Risk Management and Supervision," point out that those decisions will determine how liquid the bank is in any given period of time, and those decisions will also help set the liquidity strategy for the bank.

Equally important to the previous review, Slovik and Cournède (2011) discussed in their paper "Macroeconomic Impact of Basel III" the medium-term impact on economic output of the announced Basel III capital requirements. They mentioned that the recent Basel III agreement requires that the increases of both the minimum capital requirements for common equity capital from 2% to 4.5% of risk-weighted assets and the Tier 1 ratio from 4% to 6% be effective by 2015 and fully applied and worked by in 2019; banks will be required to add a conservation

buffer of 2.5 percentage points on the top of common equity and Tier 1 capital ratios. In their research, Slovik and Cournède have concluded that the impact of the Basel III requirements effective in 2015 and 2019 will affect the lending spread by increasing it by 15 and 50 basis points respectively as banks pass on to their customers the increases in funding costs due to the higher capital requirement imposed.

On the contrary, “Thinking Beyond Basel III: Necessary solutions for capital and liquidity,” a paper by Blundell-Wignall and Atkinson (2010), discussed that Basel III liquidity proposals are somewhat confusing. If banks are solvent, then the liquidity and funding should be left to the banks themselves to decide because this is central to the functionality of any bank system. Also, transforming the maturity is one of the core functions in which banks should not be treated as ignorant in running their business. The starting point for a liquidity framework is the role of the central bank in ensuring the stability and functioning of the payments system. What Blundell-Wignall and Atkinson suggested is that banks implement the capital standards approach set by the central bank by defining an asset/liability class, assigning arbitrary weights, and introducing ratios calculations and constructs.

To further elaborate, Blundell-Wignall and Atkinson (2010) state that the problems will arise from the fact that the liquidity framework, which will be imposed by the central bank, will have a bias towards government’s bonds. This will have a negative effect on lending to the private sector regardless if the budget deficit is large, but it will help manage interest rate risk. Moreover, the authors suggested that under some authorities, sovereign bonds have high risks and are subject to default risks not caught by rating agencies. Furthermore, the liquidity framework that is imposed by the central bank requires holding more liquid assets that by their very nature provide low returns. This will push banks to take more risks in other areas. The authors suggest that managing liquidity is best left to the market where supervisors can better focus on solvency issues, bring in rules to deal with insolvency when it arises, and implement capital adequacy to reflect confidence that losses can be absorbed.

Abdel Baki (2012) states that if the banking industry accepts the new Basel III and regulatory requirements, it will see a decrease in earnings and an increase in the cost of funding. This will

be the case in many economies including the USA, Germany, and Japan, in which growth will be by not more than 1.1% and banks' earnings will fall by 6%. Given the fact of such a decrease for the next 5 to 8 years, Abdel Baki (2012) implies that it will be a correct move for the global economy, taking into account events such as the Euro zone debt crisis, unrest in the Middle East that is causing problems and financial instability, and slowing down of international trade.

Furthermore, Abdel Baki (2012) in her paper, states that Basel III represents a substantial improvement of the global financial regulatory framework, as it introduces new capital requirements, defines a new way of how banks work in meeting these requirements, and sets standards for banks' leverage and liquidity management. It has also been implied that Basel III is important for emerging market economies, like that of the UAE's economy, in order to raise the sovereign credit rating and to reduce the costs of the loans. The main gap addressed in the research is whether the new requirements are necessary for the already over-taxed, shallow, not fully formed banking industries of emerging economies and what the requirements mean for them; thus, the highlight of this research is the impact of the new requirements on these emerging economies.

An article by Ismal (2010), "Assessment of Liquidity Management in Islamic Banking Industry," focuses on Islamic banking, yet the findings can be applicable to conventional banking systems. The research suggests that the sound liquidity risk management (LRM) can be observed at least from analyzing the performance of the balance sheet (asset and liability sides) and the liquidity risk management policies. On the assets side, the evaluation of LRM takes into account the bank's efforts to monitor the financing, arrange proper financing allocation, deal with financing default and unpleasant economic condition, and handle liquidity shortages. On the liabilities side, the evaluation focuses on the bank's efforts to construct an appropriate funds level, to build a good communication with depositors, and to predict any potential of liquidity drain. The evaluation on LRM policies looks into the corporate policies to build healthy liquidity management practices, including securities management, interbank money market, central bank, and supervisory authority requirements.

Furthermore, Vyas and Singh (2010), in their paper “Risk Management in Banking Sector,” give a fundamental understanding of risk management by defining risk as the volatility of a corporate market value; moreover, they explain the need of risk management to avoid potential losses and maintain solvency in the banking sector. In the article, several types of risks were presented, including transactional risk, which is the focus of the paper, under which market and credit risks are categorized. Additionally, the paper explains other types of risks, including interest rate risk, operational risk, and equity risk. Vyas and Singh (2010) suggested an approach of four steps to manage the entirety of the risks banks encounter, and they are: setting standards and making financial reports; limiting positions or minimizing standards for a particular participant; setting investment guidelines concentrating on hedging; and exposing assets and liabilities.

In “Risk Management in Banks” (2003), R.S. Raghavan explained the fundamentals behind the concept of risk management and the types of risks. His research came after the introduction of Basel II, and he states that the logic behind the importance of risk is that businesses need to grow, and with higher growth comes higher risks; thus, a tradeoff must occur. The need for risk management arises in order to identify, measure, and monitor the profile of the bank. Three main types of risks were presented, including credit risk, market risk, and operational risk, and there are tools with which to manage each risk. Furthermore, Raghavan introduced other risk types such as regulatory risk and environment risk.

Formerly, Kaplan and Garrick (1981), in their article “On the Quantitative Definition of Risk,” gave the basis of the concept ‘risk’ and defined it into its qualitative and quantitative aspects. Giving a brief overview of the qualitative side, Kaplan and Garrick (1981) stated the distinctions between risk and uncertainty, risk and hazard, and the relativity of risk in the eye of the observer. The focus of this research was on the quantitative aspect through basic statistical approaches by introducing the concept of “Set of Triplets Idea,” which consists of the scenario, likelihood, and the consequences, followed by the explanation of the concepts probability, frequency, and statistics. Based on the authors’ conclusion, the importance of quantitative approaches is to provide input into a decision problem that involves risks.

Further, “Liquidity risk is a 'binary' risk: you either have enough, or you do not.” This was the main argument of Vander and Cuthbert (2008) in their article “Liquidity Risk – Facing Up to

the Need for Honesty.” The authors explain how the guidelines of the regulators, including the Bank of International Settlement and the Institute of International Settlement were qualitative toward liquidity risk, and thus it has been implied that regulators give the least importance and attention to this risk, as opposed to credit, market, and operational risk. Moreover, their argument is that if liquidity is the main reason why banks fail, then it should have the highest level of attention and disclosure. Banks also prefer not to talk about their liquidity position since it kills confidence in the market, and history has always proven that honesty is not rewarded. Vander and Cuthbert (2008) state the need to move toward quantitative analysis so that banks can analyze where they are at most risk to then build models and tests.

Equally important, Al-Tamimi and Hussain (2002), in their article “Risk Management Practices: An Empirical Analysis of the UAE Commercial Banks,” discuss how far UAE banks use risk management techniques to deal with different types of risks. As defined by the authors, risk management is the set of actions taken by individuals or corporations in an effort to work on the risks arising from their business activities; in addition, banks are in the business of risk and some risks are at the macro level such as a recession and political interference, while some are at the micro level such as credit risk, foreign exchange risk, and liquidity risk.

Moreover, a report published by the European Central Bank under the title of “Liquidity (Risk) Concepts, Definitions, and Interactions,” by Nikolaou (2009), gives a descriptive definition of liquidity as “The ability of an economic agent to exchange his or her existing wealth for goods and services or for other asset.” Three types of liquidity have been presented and they are interconnected: central bank liquidity risk, funding liquidity risk, and market liquidity risk. Nikolaou (2009) argued that their interconnection and roles in normal times can shift in turbulent times, having an effect on economic stability. The main recommendation of the paper is the need for greater transparency in liquidity management practices and the need to develop pricing models on which to base the policy strategies within the financial system for liquidity risk.

Samad, Abdus (2004) in his paper examined the performance of banks operating in the Kingdom of Bahrain during the period of 1994 to 2001; the scope of his research was in respect to credit, liquidity, and profitability. Samad discovered that banks in Bahrain during that period were under-performing in terms of their profitability and liquidity and were highly exposed to high

liquidity risk compared to the rest of the banking industry. In regard to the liquidity, Samad expressed it as the life and blood for a commercial bank; therefore, he looked into it using four ratios that deal with liquid assets, deposits, short- and long-term borrowing, and the interbank lending activity.

In the same way, “A Financial Ratio Analysis of Commercial Bank Performance in South Africa,” an article by Kumbirai and Webb (2010), studied the performance of South Africa’s commercial banks during the period of 2005 and 2009, specifically to examine their performance prior, during, and after the FIFA World Cup 2008 event, in addition to the global financial crisis in 2007. In their study, where their performance measures were ratios for profitability, liquidity, and credit, they used the same ratios (Samad, 2004) used for liquidity. The result of their study shows low profitability, low liquidity, and failing credit quality.

Finally, a paper by Desquilbet (2003) aims to explain how the liquidity of commercial bank assets is affected by exchange rates in the country within which they operate by looking at commercial banks between 1995 and 2001. The author used ratios from the Bankscope database for banks to draw his model on his sample study. Furthermore, the author defined each of the five ratios used and further used the results in his study in regard to exchange rates in the country within which these banks operate.

2.3 Summary of the Literature, Comments, and Criticism

From the previous literatures have differed in their studies; moreover, the scholars have presented different opinions depending on their literature and empirical studies. Several studies varying in time frame and location have been published during and after the economic crisis by the time the Bank of International Settlement issued the Liquidity Risk Framework guidelines. After the economic crisis, there have been studies to be able to draw a better general idea of the liquidity risk management situation.

Vyas and Singh (2010), in their research, looked closely into liquidity risk in banks in addition to defining and explaining other types of risks, including transactional risk, under which also falls credit and market risk. The writers suggested a four step approach to manage the entirety of the risks that banks encounter, which is: setting standards and making financial reports; limiting positions or minimizing standards for a particular participant; setting investment guidelines while concentrating on hedging; and exposing assets and liabilities.

The research of Slovik and Cournède (2011) summarized that Basel III imposes a raise on the minimum capital requirements for common equity capital from 2% to 4.5% of risk-weighted assets, and it also raises the Tier 1 ratio from 4% to 6% effective as of 2015. This will put more pressures on banks to meet the Basel III requirement in 2015 by increasing their lending spreads on average by approximately 15 basis points. Also, even more pressures will be imposed on banks to meet the Basel III requirements effective as of 2019 by increasing their lending spreads on average by approximately 50 basis points; banks will work on passing the increase of cost to customers by higher cost of funding, not to mention the effect of adding the liquidity buffer. Furthermore, an article by Chailloux and Hakura (2009) explained the fact that the UAE dirham is pegged to the US dollar, and the fixed exchange rate has provided UAE banks with large reserves of US dollars, which in turn gave them easy access to international markets for the liquidity supply of US dollars. On the other hand, it made the banks in the UAE less sensitive about raising funds in UAE dirhams, which in turn hindered the market's ability to develop attractiveness in local currency. In addition, the article by Chailloux and Hakura (2009) explained how foreign banks operating in the UAE differ from local banks by way of diversified methods of generating funds because they expanded in foreign assets and they had the support of their parent banks. These two articles gave an indication of the weakness UAE local banks have in the area of liquidity risk, which is the concentration of liquidity sources.

Abdel-Baki (2012) in her paper gave a contrary view of the impact of Basel III and new regulatory requirements to Slovik and Cournède (2011); she did argue that regardless of the negative effects of Basel III (a decrease in banks' earnings and an increase in funding costs on the micro level and a decrease in economic growth on the macro level for the next 5 to 8 years), such changes are necessary for a better and more stable financial industry. Furthermore, Abdel-Baki (2012) stated that the Basel III requirements represent a substantial improvement in the

financial framework and redefine of how banks should work to meet the new capital requirements and set standards of leverage and liquidity management.

As Abdel-Baki states that Basel III and the new regulatory requirements are essential for a better and stable financial industry, Blundell-Wignall and Atkinson's (2010) article stated that the Basel III liquidity proposals are somewhat confusing based on the fact that when banks are solvent, no one should interfere with their methods of securing liquidities, as this is one of the core operations of a bank. Furthermore, their research explained how the liquidity framework constructed by the central bank will be biased toward government bonds, sovereign bonds, and budget deficit, requiring the banks to hold extra liquid assets, which in return leads banks to look for more risky liquidity sources for higher returns. Such impositions will lead banks to take higher risks in areas other than sovereign bonds since these provide low returns. The main argument of Blundell-Wignall and Atkinson (2010) is that managing liquidity is best left to the market, where supervisors can better focus on solvency issues, bring in rules to deal with insolvency when it arises, and implement capital adequacy to reflect confidence that losses can be absorbed, which is to some extent the same thing suggested by Vander & Cuthbert (2008) who recommended a better liquidity risk management at the bank level than imposed by regulators.

To further elaborate on the literature, Blundell-Wignall and Atkinson (2010) criticized that the new liquidity framework imposed by the regulatory bodies represented by the central bank will be biased toward government bonds, where under some authorities such bonds can carry higher risks of defaults that are not caught by rating agencies.

Vander & Cuthbert (2008) explain the importance of liquidity and that it is the main reason why banks fail and, therefore, must receive the highest attention from the central bank and regulators; in addition, the guidelines given to banks are qualitative rather than quantitative which implies that such risk is getting the least attention among other risk types. The authors highlighted the issues of disclosure and honesty since banks do not practice them with the public, as it kills confidence in the market. Préfontaine, Desrochers, and Godbout (2010) highlighted in their research the importance of public disclosure as a practice for liquidity risk management.

Kaplan and Garrick (1981) defined the foundation of risk in its qualitative and quantitative aspects. An early statistical model was introduced, the “Set of Triplets Idea,” which consists of the scenario, likelihood, and the consequences, followed by the explanation of the concepts, probability, frequency, and statistics. Kaplan and Garrick (1981) was a basis for many scholarly studies including Al Tamimi and Hussain’s (2002) in their article about risk management practices where they applied an empirical analysis to UAE commercial banks by examining the different types of risks using statistical methods and were able to conclude that UAE banks were mainly faced by credit risk where other types of risks do not severely affect banks. The main recommendation in the research is that banks need to adapt sophisticated risk management techniques instead of conventional credit risk.

Al Tamimi and Hussain’s (2002) article was the latest research done on UAE banks in regards to risk, not taking into account the effects of Basel II; however, an article done by Raghavan R.S. (2003), which came after Basel II, introduced other risks types including market and operational risks. This paper defined the types of risks introduced by Basel II. The common point between Raghavan R.S. (2003) and Al Tamimi and Hussain (2002) is that both suggested the use of more sophisticated risk management techniques for measuring and monitoring, yet Raghavan R.S. (2003) stated that Basel II can be used as a starting point for better risk management practices.

Ismal’s (2010) paper’s focus is on Islamic banking, yet the study can be applied to conventional banking, and its main discussion point was that for a sound liquidity risk management practice, the least that can be done is analyzing the balance sheet of an institute by looking at the assets and liabilities. Ismal (2010) implied the importance of using a balance sheet to measure liquidity risk, not taking into account the Basel Committee on Banking Supervision (BCBS) guidelines for sound liquidity risk management; on the other hand, Préfontaine, Desrochers, and Godbout (2010) looked solely into the 17 principles of sound liquidity risk management introduced by BCBS by analyzing them and concluded that these points should be followed when making decisions, by which banks will be able to determine how liquid the bank is in any given period of time and help set the liquidity strategy for the bank. Ismal (2010) and Préfontaine, Desrochers, and Godbout (2010) explain that neither method ends liquidity risk, but both can be used at the same time for better monitoring and measuring.

Five main liquidity ratios were used to measure liquidity for a sample of banks at specific times, the same ratios used in Bankscope database. The first study was by Desquilbet (2003), focusing on how liquidity of commercial bank assets is affected by the exchange rate in the country within which a bank operates in the period between 1995 and 2001. Using the same methodology, Samad, Abdus (2004) examined in their article the performance of banks in Bahrain during the period from 1994 to 2001 by using the same five liquidity ratios, and they were able to conclude that Bahrain banks are under-performing and are highly exposed to liquidity risk.

Kumbirai and Webb (2010) used the same research methodology and techniques as Samad, Abdus (2004) and applied them to South African commercial banks to examine the liquidity management performance during the period from 2005 to 2009, taking into consideration events such as the FIFA World Cup of 2008 and the global economic crisis. The result of their study shows low profitability, low liquidity, and failing credit quality.

Chapter 3: The Research Methodology

This research aims to answer the following questions:

- Do local banks in the UAE have a clear plan to manage liquidity risk?
- Do local banks in the UAE have a proper framework to analyze liquidity risk?
- Do local banks and foreign banks in the UAE have differing methods of generating funds since funds impact the liquidity risks?

To answer these questions, a questionnaire was developed and addressed to eight local banks in the UAE. A confidentiality agreement with the surveyed banks was signed, given the fact that not all of the banks would incorporate without signing an agreement. Banks will be referred to as Bank A, Bank B, Bank C, etc...

To conduct the research, qualitative and quantitative approaches were followed. Qualitative research is a way of exploring what bank managers think and feel and what the rationale behind their methods is. Qualitative methods use objects which include interviews, discussions, observations, and questionnaires (Liebscher, 1998). Usually the results are more subjective, time consuming, and difficult to process, and, thus, require more work during analysis. The qualitative method will give us an insight into banks' frameworks and what barriers exist to change those frameworks in managing the liquidity risk. Qualitative methods will provide a way of exploring issues, but they will not provide statistical data. Moreover, this approach has more room for discussion, suggestion, and exploration of responses, which can lead to reveal the underlying views behind the practices done by banks.

In regard to the quantitative method, this method relies on the precise identifications and definitions of variables and the ability to make use of them and work with these variables in the forms of numbers (Liebscher, 1998). The use of mathematics and statistical techniques are the core of this approach by finding the relationship between variables and working to interpret them.

As part of the qualitative research approach, a questionnaire has been constructed and structured by dividing it into two main parts. The first part measures the bank's understanding of risk, in particular liquidity risk. This part also covers whether there is a policy in place to manage

liquidity risk and how often does the bank revise this policy. The first part of the questionnaire asks whether there are specialized departments in the bank that monitor liquidity and manage funds or not, and whether the bank uses stress tests to test its liquidity. Overall, this part of the questionnaire addresses whether there are certain standards that banks implement for liquidity such as BASEL III. To further elaborate, managers were asked in the questionnaire if they have warning indicators in regard to liquidity and the limits.

In the second part of the questionnaire, bank managers were asked about the quantitative aspects of liquidity risk management. These questions cover the ratio of liquid assets against total deposits; the ratio of liquid assets against total assets; the ratio of liquid assets against short-term liabilities; the liquidity ratio by maturity time bands; the ratios of maturity transformation of short-term sources in long-term placements; indicators of deposit concentration (individually and as groups of related parties); volatility and sensitivity; maturity mismatches (related to the size of the maturity gaps; cash inflows/cash outflows, including off-balance sheet items); short-term liquidity gap and total negative mismatches between assets and liabilities in respect to maturities.

The questionnaires were given to the risk managers of banks. They were sent electronically via email, through a reference person, to the risk managers, followed then by short in-person interviews to verify the answers and ensure completeness. A period of two weeks was given for each bank to complete the questionnaire, within which several reminders were sent in equal intervals emphasizing the importance of their input to the study. The initial target was 18 banks operating locally; however, it has been reduced to 8 banks since some bankers did not cooperate and others filled up the questionnaire with generic data that do not add value to the analysis.

Furthermore, the results from the questionnaire were analyzed by looking at results from each bank in comparison with other banks, looking at each bank's methodology and in-depth analysis of liquidity risk and the resources used to be able to conduct sound liquidity risk management practices. The results focused on the efficiency of the risk management, the emphasis given by each bank into liquidity risk, the transparency level, and what contingency plans each bank has. Moreover, I conducted a short in-person interview to sense the seriousness and honesty when it came to answering the questionnaire questions and to gain insight into the strategy of the risk

management team at a bank. Following are some quotes from risk managers at the short interviews:

- “Most local banks in the UAE face high concentration risk in the sense that banks have a few deposits of high value, and a risk arises where unpredictable withdrawal of these deposits will shock the liquidity of the bank”. (Bank 5)
- “Most of a bank’s liabilities are short-term, having a maximum maturity of 6 to 12 months, and these liabilities fund the long-term loans, which creates a mismatch”(Bank 2)
- “In this part of the world, sovereign bonds and other liquid corporate investments are poorly developed and the investment market is shallow and poor in turnover, which affects the liquidity and value of investment” (Bank 4)
- “The defense period is the time taken to off load an investment, and the defense period is long since the market is very shallow and poor when it comes to absorption of liquidity” (Bank 1)
- “A very high leverage ratio results in low liquidity and discourages keeping more money in cash and liquid assets; in other words, the higher the retail base, the lower the liquidity risk where liquidity is distributed among more participants” (Bank 7)
- “The new UAE Central Bank regulations require banks to hold more liquid assets, which comes with an opportunity cost where holding very safe liquid assets causes opportunity loss” (Bank 3)

The quantitative research method was used through the analysis of liquidity ratios using the balance sheets of all eight banks interviewed. Banks’ financial data were extracted using the Bankscope banking database for UAE banks. The benefit of using the Bankscope database system is that all banks’ financial data and balance sheets are presented in a unified international format; thus, the same calculations were applied, resulting in more accurate ratios. To further elaborate, each of the eight banks’ financial statements and liquidity ratios were extracted and compared with the other banks reviewed in the sample. The following liquidity ratios were used in the analysis: the interbank liquidity ratio; net loans to total assets; net loans to deposits and short-term funding; net loans to total deposits and borrowing; liquid assets to deposits and short-term funding; and liquid assets to deposit – borrowing ratio.

It is a given that all banks interviewed use the same ratios for liquidity risk, yet these ratios do not make sense without a clear defined industry benchmark. UAE's Central Bank does not provide an industry benchmark for liquidity risk, nor can the same benchmarks used in other countries be used since each banking industry is homogeneous. To be able to define an industry benchmark, all banks interviewed were asked to define what they considered to be the best practice for each ratio.

Chapter 4: Discussion of Study Analysis (Qualitative Data Analysis)

Liquidity is a dynamic factor that changes due to internal business practices and general market conditions, both of which are vulnerable to expected or unexpected events; thus, it is important to have adequate liquidity management to be able to face and overcome all events. Liquidity can be given little importance when market conditions are good and business returns are high, yet this is not always the case; markets go through downturns, which are challenging times when businesses either survive or go under. In the event of an unfortunate cash flow crisis, the consequences can be severe. A business may not be able to meet payment terms or capital expansion plans, causing a breach in banks' agreements, which lead to increases in interest fees and other legal obligations, all of which can eventually lead to bankruptcy. In such events, banks can face a high rate of withdrawal of the deposits held, which affects the bank's ability to meet all these withdrawals since the maturities of any advances given out are still due in future; therefore, banks can become insolvent and face bankruptcy.

When a bank has adequate liquidity management plans, it has less risk of failure and being unable to meet its financial obligations compared to banks with less liquidity. Adequate liquidity management helps the bank to improve profitability, increase interest income, have financial flexibility to negotiate better terms with its customers in times of cash flow crisis, and have better financial stability within to be able to explore new business opportunities and diversify.

Cash flow management is an essential part of daily operations for any running business; it is the basis of any business's growth or failure. The management of available cash or liquid, the lack of available liquidity sources, or the lack of access to appropriate financing facilities all may lead to inadequate cash flow. (CPA Australia Ltd, 2010)

4.1: Cash Flow Forecasting

Taking into consideration the numerous sources of liquidity risk, several ways of measuring liquidity risk are presented. Cash flow forecasting can provides measurements that can be applied to most businesses, and regardless if the business is facing a tight liquidity or not, cash

flow forecasting helps; in the event of a cash flow crisis due to insufficient business management or unfortunate market conditions, short-term liquidity monitoring should be considered.

Where the business has large volumes of daily cash flow transactions (this would depend on the industry, although a normal basis is ten or more daily cash flow transactions), short-term liquidity needs to be managed, monitored, and measured on a daily basis. In case of less daily cash flow volumes, weekly cash flow forecasting can be adapted. The reason behind such a practice is to ensure that the management of short term liquidity does not affect or put pressure on the business resources. Short term liquidity management will help in highlighting and indicating any emerging liquidity problems as early as possible.

The purpose of long-term cash flow forecasting is to support the strategic objective of a business and help in the finance-making decision for projects. In this case, the long-term cash flow forecast is less about solvency and more focused on the longevity of the business. To meet these requirements, a monthly cash flow forecast shall take place for the appropriate period that needs to be studied. In most cases, long-term cash flow forecasting will be developed for the current financial year to monitor the cash flow for operational activities.

In order to practice cash flow forecasting, all business units must contribute to ensure all sources of liquidity risk are identified and taken into account. In the event where a proposed project requires development of a cash flow forecast, it is important that the cash flow forecast match the projects terms, which in return will support the business strategy direction. Long-term liquidity can be further measured by applying sensitivity analysis on the forecast to evaluate the impact of different strategies, scenarios, and business activity in relation to future funding plans. When preparing cash flow forecasts, it is critical that realistic assumptions are built into the model.

Questionnaire Results:

From the answers provided by the studied banks, it has been found that each of the banks have a strategy for liquidity risk management approved by the bank management. This strategy is revised periodically; some of these banks revise their strategies on a quarterly basis and some of them revise on a biannual basis. For example, Bank A monitors certain liquidity ratios, including liquidity ratios, liquidity gap ratios, and liquidity asset ratios. The strategy covers the normal course of business and crisis situations. On the normal course of business, the banks run daily and weekly tests on liquidity; furthermore, the banks have a regular liquidity monitoring and management process to ensure that they maintain liquidity complying with the constraints set by UAE Central Bank. The liquidity monitoring and management processes are carried out by the financial control department.

Banks have established liquidity risk management and fund management divisions with separate roles to take over the roles related to risk management policies and procedures. Such divisions act independently from the financial control department and are allocated with specialized employees with knowledge and experience in risk management to take over such responsibilities. Not all of the banks surveyed provided the exact number of people each division employed to carry out the liquidity monitoring and management processes. To further elaborate, the activities of checking and balancing in regard to liquidity done by the liquidity risk management division combine the actions of the treasury, financial control department, and financial institutes.

As for the stress tests on liquidity, banks usually carry out this activity on a quarterly basis. They develop the scenarios of each quarter based on historical, interest rate, and credit rating adversity. As part of their testing, banks work on not having accounts that are NPA (Non Performing Accounts), higher lending into market, lower inflow of deposit, or sudden withdrawal of valued deposit. All of the banks have stated that concentration risk is high among UAE banks since a few large valuable deposits form the biggest portion of total deposits.

UAE Banks follow the Basel III second pillar, which states that every bank should do an ICAAP (Internal Capital Adequacy Assessment Process); this process ensures that banks have adequate

capital to meet capital requirements. Banks have different scenarios for types of deposits, currency, and type of depositors; moreover, banks continuously monitor bid – ask spreads for financial instruments, specifically the liquidity indicator on securities. Banks in the UAE set warning signals that integrate with their processes and prompt the banks to take serious actions. Furthermore, the central bank of the UAE monitors banks based on returns, mostly using maturity gap reports, which examine the interest rate risk exposures in terms of reprising and maturity gaps; in other words, it helps banks in deciding on the proportions of amounts of requested deposits against amounts of advances to give.

As for the Basel III requirements, none of the UAE banks have implemented liquidity ratios yet, as this integration has been delayed. On the other hand, only three banks implement the liquidity ratios internally. As part of the banks' internal processes, each bank has a committee that monitors liquidity risk; the committees are selected by the board of directors and called asset liability committees. These committees work on generating reports stating the situation of assets and liabilities of a bank on a monthly basis; however, some banks set the time period for the reports to be out on a fortnight basis.

In the case of financial crises, many banks have implemented strategies to reduce the liquidity risk. In order to implement the internal strategies, these banks depend on some warnings signals that are applicable to the UAE market; the following warning signals are commonly used by UAE banks, based on the feedback given in the questionnaire:

- Negative publicity.
- Average maturities of deposit come down.
- Increase in currency mismatch.

4.2 Financial ratio analysis

According to a report by CPA Australia Ltd, (2010), financial ratios can be used to identify key areas of liquidity risk. To measure both short-term and long-term liquidity risk, there are three main categories.

4.2.1 Indicators of Operating Cash Flows

- Earnings Before Interest and Tax (EBIT) ratio, as a multiple of interest expense, is an indicator of the short-term ability to service a debt. This ratio will not be a good indicator without comparing it to the industry, and it should be closely monitored since it may indicate a weakness of a bank that can result in unexpected downturn in income, which leads to insolvency or default on meeting requirements. In case an institute has large amounts of non-cash expenses (amortization, depreciation, deferral items, etc.), it is more appropriate to look at earnings before interest, tax, depreciation, and amortization.
- The ratio of Debt to Gross Cash Flow (operating profit plus depreciation and deferrals) indicates the financial strength of an institute in terms of how many years of cash flow would be required to repay all debt, assuming no new debt or equity arises.
- The amount of Retained Cash, which represents cash flows after payment of dividends and owners' withdrawals; in other words, it is the amount of available funds uncommitted to any obligation and ready for reinvestment, which is calculated by adjusting retained cash balances for working capital needs and capital expenditures.

4.2.2 Ratios of Liquidity

According to the CPA Australia report on liquidity risk in 2010, financial ratio analysis gives an indication of a current liquidity situation based on past performance and is not an indication for future outcomes. Several ratios that can be used to assist liquidity are as follows:

- The acid or Quick Ratio, which indicates the extent to which current liabilities can be paid immediately out of liquid assets (cash or cash equivalent)
- The Current ratio, which compares the book value of current assets with current liabilities; in other words, it helps as an indication of an institute to meet short term obligations and it is calculated as Current Assets divided by Current Liabilities thus a ratio of over 1:1 is normally considered to be satisfactory, where a ratio below 1:1 needs attention, as it may indicate a shortage of funds.
- The availability of undrawn banking facilities as a percentage of current liabilities. In other words, banks still have room for more advances for the market, yet such amounts are lying idle in bank's books; thus, it can indicate the existence of a buffer in case of unexpected cash requirements.

Adjusting the inputs used in the ratios is important for an accurate and clear outcome; for instance, if the business has a large amount of uncollectable debtor's funds, then the ratios may need to use adjusted figures to reflect this (CPA Australia Ltd, 2010). Moreover, each bank in the sample study publishes its balance sheet slightly different than the others and ways of calculation differ depending on the accounting treatment; therefore, the Bankscope Database for banking is used further in this research and will be addressed in the quantitative part in the next chapter.

4.2.3 Financial Strength (Leverage)

Leverage is not necessarily a bad thing for any business so long as it is embedded in its strategy; however, in general, the more highly geared (i.e. the greater the ratio of debt to total funds) the business is, the greater its vulnerability to any downturn in cash flows. This can be explained because if a bank is obligated for payment, then any distress in the market can affect the sovereign of the bank. According to the report by CPA Australia (2010), highly geared businesses have less capacity to absorb losses or obtain rollover funds.

Depending on the type of business and the industry, percentages do not reflect a true picture if not compared to the industry standard; however, for the UAE there is no standard predefined by

the central bank, yet the best practice and industry standards are known between bankers and defined in the next chapter.

Chapter 5: Discussion of Study Analysis (Quantitative Data Analysis)

Liquidity Performance using Financial Statements ratios:

As discussed earlier, liquidity is the bank's ability to fund its contractual obligations including lending, investment commitments, withdrawal of deposits, and other commitments as they come due; the main problem of liquidity in banks is the inability to rollover short-term financing; thus, in order to raise necessary funds, banks can incur excessive costs. In the case of an economic crisis, the money supply goes down and bank deposits get drained out, and this applies to all banks, which leads to higher interest rates. Using the accounting approach to analyze the liquidity ratios calculating from the balance sheet, a more clear view of a bank's liquidity position can be concluded.

In this section, six liquidity ratios will be calculated for the same eight banks surveyed to measure the liquidity performance of the banks; the data are taken from banks' annual financial reports published for the year 2012, as the data are publicly available. However, names of the banks shall not be disclosed as part of the confidentiality agreement I had with the bankers to not indicate which banks were surveyed.

According to Samad (2004), Kumbirai and Webb (2010), and Bunda and Desquilbet (2003), the following ratios are usually used to measure a bank's liquidity by financial analysts:

1. The Interbank Lending ratio: this measures the level of short-term lending between banks and is calculated as money lent to other banks over money borrowed from other banks. If the percentage of a bank is greater than 100%, the bank is a lender and is more liquid. The higher the ratio, the better the liquidity position is.
2. Net Loans to Total Assets: this ratio measures the percentage of assets that are tied up in loans. The higher the ratio, the less liquid the bank is. This ratio is calculated as net loans / total assets.

3. Net Loans to Deposits and Short-Term Funding: this ratio is used to measure the percentage of deposits and short-term funding that is locked into banks assets.
The higher the percentage, the less liquid the bank is.
This ratio is calculated as $\text{Net loans} / \text{Deposits including short-term liabilities}$.
4. Net Loans to Total Deposits and Borrowing: similarly; this ratio indicates the percentage of total deposits including short-term and long-term borrowings locked into liquid assets.
The higher the percentage, the less liquid the bank is and the more it relies on borrowed funds.
This ratio is calculated as $\text{Net loans} / \text{Deposits including short- and long-term liabilities}$.
5. Liquid Assets to Deposits and Short-term funding: this ratio measures the percentage of deposits and short-term obligations of customers that can be met with the bank's own money in the case of sudden withdrawal since bank cannot depend on the market in case of crisis.
The higher the percentage, the more liquid the bank is.
This ratio is calculated as $\text{liquid assets} / \text{short-term deposits}$
6. Liquid Assets to Deposit – borrowing ratio: similarly, it's the percentage of deposits including short-term and long-term obligations of customers that can be met with the bank's own liquid assets in case of sudden withdrawals. The difference between this ratio and the previous one is that this ratio indicates the amount available for borrowers and depositors.
The higher the percentage, the better the liquidity position of the bank.
This ratio is calculated as $\text{liquid assets} / \text{deposits including short term and long term}$.

Analysis of Liquidity Performance:

The lack of information is the main limitation to this research, as such ratio results do not make sense on their own unless compared to a benchmark set by the Central Bank; no such benchmark exists. To get over this limitation, liquidity limits set by two neighboring countries, Oman and Qatar are to be used, and for a benchmark we will use the best bank practices for liquidity management as determined by UAE bankers.

The Central Bank of Oman and Qatar Financial Center Regulatory Authority published several circulars in which they put limits for the above mentioned ratios and distributed them to banks operating in their countries. Although these markets are different than the UAE, they are the closest and most similar to the UAE; therefore, their data were taken into consideration. Moreover, ratios used by banks do not make sense if they are not compared, thus during the questionnaire with UAE bankers, the best practice for banks' liquidity management ratios was proposed, and these limits are treated as benchmarks, (See Table 1).

Table: 1

Ratio	Interbank Ratio	Net Loans / Total Assets	Net Loans / Dep & ST Funding	Net Loans / Total Dep & Bor	Liquid Assets / Dep & ST Funding	Liquid Assets / Tot Dep & Bor
Market Best Practice	-	75%	Below 100%	Below 90%	15%	12%

The following Table presents the six ratio results of the eight local banks studied against the market benchmark or general best bank practices. (Ratios have been extracted using the Bankscope database for banks as per their annual reports published as of 31st of December 2012)

Table 2

Ratio	Market Best Practice	Bank 1	Bank 2	Bank 3	Bank 4	Bank 5	Bank 6	Bank 7	Bank 8
Interbank Ratio	-	210.87	420.21	28.93	76.33	412.34	107.02	832.25	51.46
Net Loans / Total Assets	75%	68.14	68.43	68.62	70.76	65.5	54.76	74.43	58.26
Net Loans / Dep & ST Funding	Below 100%	97.31	94.81	88.54	90.43	92.05	70.5	96.8	74.38
Net Loans / Total Dep & Bor	Below 90%	83.25	92.48	88.52	86.34	83.57	64.21	96.8	71.54
Liquid Assets / Dep & ST Funding	15%	20.93	19.43	14.53	14.74	22.65	35.37	13.15	22.23
Liquid Assets / Tot Dep & Bor	12%	17.91	18.96	14.52	14.08	20.56	32.21	13.15	21.38

- The interbank ratio indicates whether the bank is in a money lending or borrowing position with respect to other banks; more than 100% of a bank means it's more liquid and it is in a lending position. In the table above, Bank 2 and Bank 7 are highly liquid with scores of 210.87% and 832.25% respectively, which makes them ideal lenders, where Bank 3 and Bank 8 are relatively low, which puts them in a borrowing position.
- Prior to and during the economic crisis, many banks were maintaining Loans to Assets ratios at 100% or slightly above, but in their attempt to adapt to Basel III, banks are maintaining more liquid assets against loans. In the above chart, all banks studied are maintaining this ratio below the market best practice (75%); however, only Bank 7 is scoring slightly below the market best practice (See Chart 1).
- The Net Loans to Total Deposits and Short-Term findings indicate the percentage of deposits and loans locked into a bank's assets, and as a market benchmark, all banks in the sample are maintaining this ratio as below 100%, which shows a satisfactory liquidity position; a few banks are maintaining at below 90% which is an even stronger liquidity position (See Chart 1)..
- The Net Loans to Total Deposits and Borrowing is similar to the above, yet it takes into account the long-term borrowings; thus, the portfolio is bigger and the percentage of each bank should be lower than the results of the previous ratio. As 90% is a best practice,

Bank 2 and Bank 7 are above 90%, which means all their deposits and borrowings including short-term and long-term are locked into assets and these assets are not liquid, which indicates lower liquidity position (See Chart 1).

- The Liquid Assets to Deposits and Short-Term findings shows the percentage of customer deposits and short-term funding that can be met in case of sudden withdrawal; the benchmark is at 15%, but from the sample, three banks are below, and they are Banks 3, 4, and 7, which indicates that they are less liquid and have to allocate more liquid assets for such scenarios (Chart 2).
- Similar to the previous ratio, Liquid Assets to Deposits and Borrowings looks into the percentage of customers' deposits and borrowings, including short-term and long-term that can be met in case of sudden withdrawal. The benchmark is at 12%, which is less than the previous ratio of 15% due to a bigger portfolio. Every bank in the sample study is above the benchmark, showing an acceptable liquidity position (See Chart 2).

Chart 1

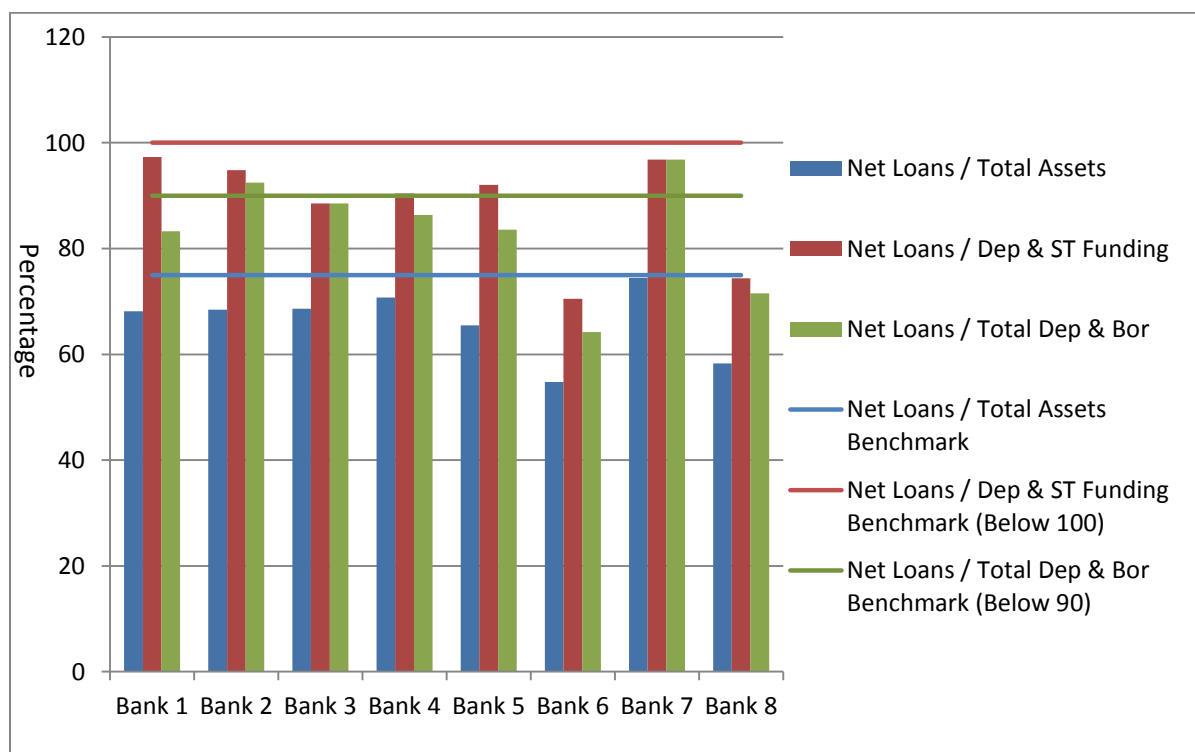
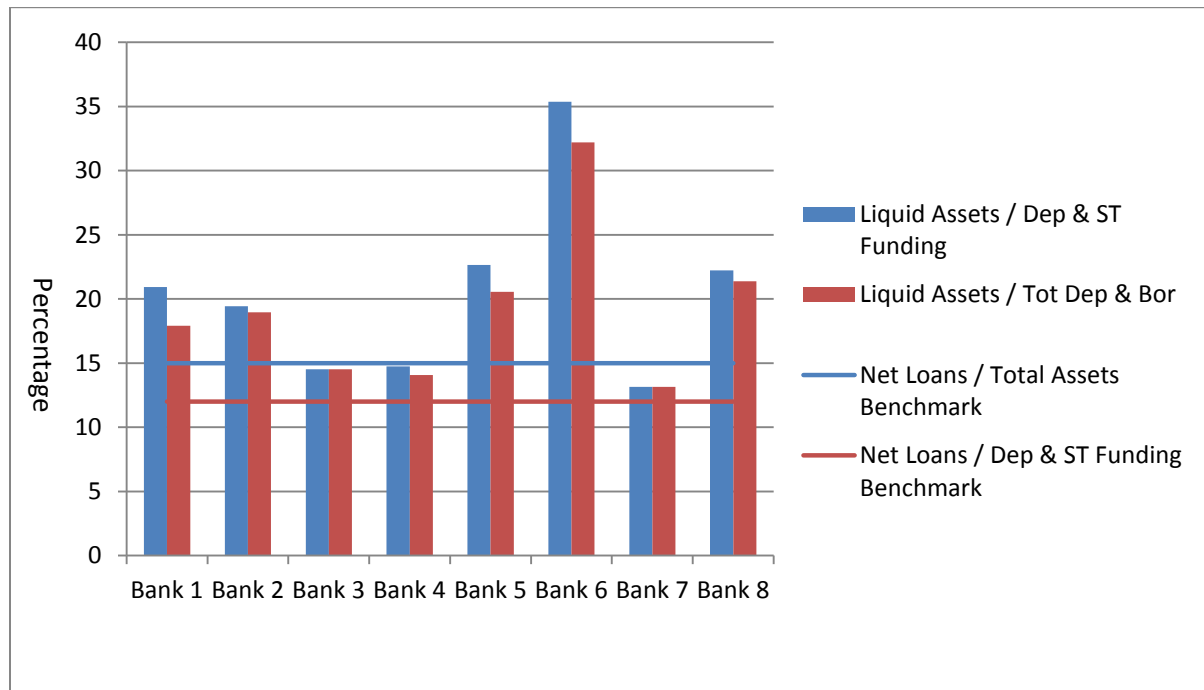


Chart 2



There has always been a tradeoff between profitability and liquidity, and therefore, higher liquidity of a bank means lower opportunity to lend since more assets are put aside and not locked into loans; thus bankers always work on the best equation. In the case of UAE banks, the sample banks show good liquidity positions, yet some banks need to work on strengthening their liquidity positions to be able to meet with the Basel III requirements as well as be more sovereign; for instance, net loans to total deposits and borrowings ratio, and liquid assets to deposits and short-term funding for some banks is below the benchmark, meaning those banks are at higher risk of incurring higher interest expense in the case of economic distress.

Chapter 6: Findings and Recommendations

The main findings of the research were as follows:

- Liquidity risk is a static risk, either to have enough or not; UAE banks practice basic liquidity management and need to use more advanced techniques.
- Liquidity risk is considered to be the most important risk, yet it has been given the least importance from the regulators; in addition, guidelines given are qualitative where there is an obvious lack of quantitative data. Moreover, banks do not disclose details regarding this risk, making it difficult to draw the true picture of the situation.
- Concentration risk is a given risk to all UAE banks, and bankers admit that it is the current situation and shall not be changed since it is the nature of the financial industry in this part of the world.

Regulatory bodies and private industries represented by consultants have been observing banks' performances and have intervened to make suggestions on changes for best practices. Moreover, with the introduction of regulatory and supervisory bodies' guidelines and circulars, these entities started evaluating how banks are implementing the changes as well as impacts to their operations and earnings.

Internal risk management improvement and changes within banks are key aspects of improving bank liquidity management in the coming years. The role of the Chief Risk Officer (CRO) is an important area targeted by many banks. Traditionally, the monitoring of liquidity risk was part of the treasury department of banks. Banks plan on integrating the CRO and their team with the treasury department to monitor liquidity risk in the future (Senior Supervisors Group, 2009). Such a change in banks' organization charts will improve oversight and coordination, which are elements that were missing prior to the crisis. Banks before the crisis did not have clear-cut limits of acceptable levels of liquidity risk, but this shall change as banks need to clearly articulate to the entire organization what their strategy is regarding liquidity risk.

The main issue arising when measuring liquidity risk is the lack of quantitative guidelines from the supervisory authorities to measure liquidity risk, unlike in the cases of credit and market risks

(Vander & Cuthbert, 2008). The solution for this issue is at the central bank and international supervisory authority level, where they should set clear-cut liquidity risk limits which banks should operate within and give banks the formula on which such limits are drawn. Furthermore, Blundell-Wignall and Atkinson (2010) suggested that the Basel III liquidity proposal is confusing and unnecessary, as banks know better how to manage their own liquidity since it is their core function. Both papers suggest the far ends of the liquidity management spectrum and do not suggest a compromise such that liquidity risk management can be practiced within the bank, taking into consideration the supervisory authority's guidelines and limitations.

Generating more accurate data will help in modeling better liquidity risk management and drawing better scenarios. These models will need to be able to better assess the difficulties the bank will face. This will mean more dramatic and gloomy assumptions about the bank's conditions, the entire economy's condition, and the length of time of the downturn (The Economist, 2009). As presented, a key aspect of a bank's liquidity risk and creation is its deposits; therefore, banks will need to test these deposits. This will be in order to determine which deposits are likely to remain at the bank and which ones will go elsewhere when economic conditions change (Senior Supervisors Group, 2009).

Concentration risk occurs because of a situation where the biggest portions of a bank's deposits are contributed from a few valuable depositors; this type of risk is common in almost every bank in the UAE, and regulators and banks in this part of the world close their eyes when it comes to this type of risk. It has been concluded from the interviews with the bankers that banks in the UAE cannot do anything about it, as it is just the situation in which they find themselves. To get around this obstacle banks, should start diversifying the source of funding with more than just federal funds. Based on Blundell-Wignall and Atkinson (2010), since the liquidity framework is imposed by the central bank, there will be a bias toward government bonds, which in many cases is not the safest and most sovereign. Furthermore, holding government bonds brings in lower returns, which will lead to banks taking riskier positions for higher returns. Basel increased capital requirements, and banks will be facing decreases in earnings and increases in funding costs in the upcoming years; thus, banks will increase their lending activity.

As evidenced in the literature, banks could not even rely on financing that traditionally was near fail-safe such as the Federal Funds market. Banks have rediscovered the strategic implications and beneficial impacts of larger liquidity cushions, and most banks will need to increase these buffers.

The following recommendations were concluded from the literature:

6.1 Avoiding Exchange Rate Crises and Imposing Capital Controls

Exchange rate crises arise when investors, both residents and nonresident, are unwilling to hold financial assets denominated in domestic currency at the given interest rates. In this case, depositors withdraw deposits in local currencies and invest them into assets in foreign currencies. In the case of the economic crisis in 2008, UAE local banks started to suffer due to investors withdrawing their deposits in local currencies and investing abroad, which led the UAE central bank to inject funds that translated into pressure on the exchange rate.

According to Chailloux and Hakura (2009), UAE banks lack diversification opportunities to get sources of funds because the UAE central bank for liquidity management is constrained due to the fixed rate between the UAE dirham and the US dollar; thus, it is a given that exchange rate risk is not looked after since UAE banks take advantage of the ease of access to US dollar currency markets. In this case, UAE banks are being faced with exchange rate risk because of the volatility of US currency.

6.2 Different Approaches to Liquidity Crises

During any unfortunate event in a market, banks begin suffering to meet their payment obligations, and the maturity gap widens as deposits are withdrawn and liabilities come due. Banks typically resort to the central bank to intervene by injecting funds to meet their failing obligations instead of negotiating new terms of rescheduling with their creditors.

It is recommended that banks in this part of the world look to the Central Bank as the last resort for liquidity and work on better and sounder liquidity risk management by providing adequate buffers in anticipation of a sudden short fall in the economy.

6.3 Quantifying Liquidity Risk

Based on the research of Vander and Cuthbert (2008), liquidity risk is considered to be the most important risk since liquidity is the main reason why banks fail; moreover, guidelines for liquidity risk from regulators including BIS and the Institute of International Settlement are vague and focus only on the qualitative aspects of liquidity and provide minimal quantitative guidelines and limits to banks. The Basel III framework for capital proposes an increase in capital requirements in banks as a way of cushioning them in the case of a downturn in the financial industry; however, more capital held in banks sitting idle impels lower returns on these funds, leading banks to act by increasing in funding cost and investing into more risky assets to compensate on the lower returns (Blundell-Wignall & Atkinson, 2010).

It is recommended that banks start depending on their own risk management team to quantify the liquidity risk models through more sophisticated techniques. The results of these tests shall be shared and monitored by the regulatory authorities.

6.4 Managing Liquidity Risk

When economic downturn occurs, it affects all parties including commercial banks and their customers; thus, it is advisable for banks to work on negotiating enhanced terms with customers since during an economic crisis the payment abilities of customers will be challenged. The enhanced terms should be in accordance with the current cash flow situation in addition to the fact that terms are expected to not be favorable to either a bank or its customers as part of its contingency plan to prevent loans payback default.

6.5 Responses to Global Liquidity Issues

This recommendation is to be implemented on the higher levels concerning the central bank and the regulatory authorities. The financial sector is globally interconnected, so when a disaster hits one major economy, it shall affect the whole world. To mitigate such effects into the local financial market, banks must: first, mitigate the private liquidity surges or flow and their associated assets and currency surges; and second, address sudden shortages of global liquidity and related symptoms of trouble in the financial systems globally. To be able to overcome economic downturn, flexible policies shall evolve in a way that these policies prevent high liquidity flow from weakening financial systems to the stronger ones, as a negative liquidity flow will severely affect the financial system. The central bank has provisions in place to build larger reserves of foreign assets, but at time of crisis it is difficult to decide on which foreign investments would serve the local financial system best.

The central bank's use of flexible monetary policies in times of economic crisis takes the burden off of commercial banks who try to build up huge reserves and put them on the central bank; however, it is the central bank's obligation to provide liquidity support to banks when needed. To further elaborate, the following are policy approaches that impact banks to be able to encounter and enhance elasticity to negative liquidity flows.

6.5.1 Capital Related Measures

The agreement for the Basel III framework suggests higher capital ratios where minimum capital requirements for common equity capital go from 2% to 4.5% of risk-weighted assets and the Tier 1 ratio, from 4% to 6% to be effective by 2015 and operated by 2019; moreover, an additional increase of 2.5% is to be added in 2019 (Slovik & Cournède, 2011). These requirements propose to strengthen the financial system by way of additional capital requirements to ensure that banks are well prepared and can survive financial shocks; it is known that financial shocks are applied to all parties involved, which makes it difficult for a bank to access funding markets at reasonable costs. This should reduce the risk of private liquidity drying up and the need to rely on public sources of funding.

6.5.2 Liquidity Related Measures

Liquidity regulation, introduced as part of Basel III, requires banks to hold higher capital levels, and it also constrains the ability of banks to provide maturity transformation services in forms of advances, which will provide lower returns to banks in addition to reducing the effects from the economic boom in the global liquidity provision. Moreover, new liquidity measures were introduced including the liquidity coverage ratio (LCR) and the net stable funding ratio (NSFR). The LCR requires banks to have sufficient high quality uncommitted assets that can be used to fund projected cash outflows and can be easily and immediately converted into cash to meet the needs for up to 30 days, with different “run off” rates assumed for different liabilities. The purpose is for banks to be able to overcome periods of funding stress, to reduce the likelihood of a collapse of banks and private liquidity sources and the need for emergency injections of liquidity from the central bank (Basel Committee on Banking Supervision, 2013).

According to the Basel Committee on Banking Supervision (2013), the net stability funding ratio (NSFR), in turn, is designed to prevent excessive maturity transformation by requiring a minimum amount of “stable” funding sources, taking into consideration the liquidity profile of the assets and off balance sheet commitments over a one year horizon. This requirement should help limit the dependency on short-term funding associated with private liquidity, thus reducing liquidity cycles.

The overall effect of these new rules on global liquidity cycles depends on how the liquidity measurements will be implemented. The effectiveness of additional capital buffers to help in reducing the negative effects in the event of liquidity shocks also depends on the ability to liquidate those high quality assets. A related issue concerns the ability of international banks to pool and transfer liquidity internationally in the event of a shock. (Basel Committee on Banking Supervision, 2013).

Chapter 7: Conclusion and Future Research

7.1 Conclusion

Ever since the economic crisis in 2008, banks around the world started to get drained of liquidity, leading them to fail on their short-term and long-term obligations, which in return affected the maturity gap practice and eventually led to banks' failures and bankruptcy. Moreover, banks started to change how to balance their liquidity risk and their role as liquidity providers as well as restructure their liquidity management. Being exposed to high liquidity risk can bring severe consequences to the bank including investors running away, deposit runs, ratings downgrades, and more difficulty finding funding sources. Banks work on avoiding such consequences by implementing liquidity risk policies to protect themselves from potential risks.

The research is very important to the UAE financial market since UAE is an emerging market and it is important to reach the sovereignty status and maintain stability; moreover, the UAE central bank is putting high emphasis and expectations on banks to address the liquidity issue in accordance with guidelines published from international regulatory bodies including the Bank for International Settlement. A questionnaire was constructed addressing qualitative areas as well as quantitative areas of liquidity risk management and given to a sample of eight UAE banks. Along with in-person interviews with risk managers, the questionnaire aims to address the following issues: whether or not bankers have a clear plan on how to manage their liquidity risk, how clear their framework for liquidity risk analysis is in line with the UAE central bank and international regulatory authorities, and what are the sources of liquidity these banks depend on.

This research attempts to examine the UAE banks' effectiveness in managing their liquidity risk through qualitative and quantitative approaches; qualitative data analysis looked into banks' general policies in regards to forecasting their cash flows and financial ratio analysis, including cash flow, liquidity, and leverage indicators. The qualitative approach looked specifically at liquidity performance using financial statements and ratios which are universally used including the ratios of interbank lending, net loans to total assets, net loans to deposits and short-term funding, net loans to total deposits and borrowing, liquid assets to deposits and short-term

funding, and liquid assets to deposit borrowing. Furthermore, this research examines the level of transparency UAE banks have in accordance with the Basel III guidelines of disclosing information regarding liquidity position to the public and investors. However, the main obstacles were in the lack of data in regard to liquidity risk due to the nature of occurrence, and the high level of confidentiality and lack of transparency in UAE banks.

Based on the input given above, it has been found that UAE banks are practicing basic liquidity risk management techniques, but they should use more sophisticated techniques based on quantitative data approaches; however, the blame is not fully on the banks, as the UAE Central Bank and international regulatory bodies provide minimum guidelines on quantitative data analysis for liquidity risk. Furthermore, it has been concluded that liquidity risk is given the least importance compared to credit and market risk due to the high level of transparency it requires. The main finding is that all UAE banks are facing high concentration risk because a few high value depositors make up the largest proportion of deposits in the banks. By building on the findings from the questionnaire in addition to the literature, several recommendations are suggested: banks should adapt different approaches to liquidity crises instead of depending on a central bank for emergency liquid injections; moving from qualitative data into more quantifying liquidity risk; managing liquidity risk by working on negotiating enhanced terms with their customers based on market situations as part of a contingency plan to not default on loans; working on better responding to global liquidity issues by using flexible monetary policies such as higher capital and liquidity related measures.

7.2 Future Research

Given the fact that banks and regulators are working on enhancing and changing monetary policies in regard to liquidity risk, further research is needed to identify potential gaps, especially in areas of opportunity loss and earnings decrease; more sophisticated statistical techniques shall be suggested and more research in regard to the effects of the international regulatory requirements on the central banks and commercial banks in emerging economies.

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