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The Basic Concepts and Features of Bank Liquidity and its Risk

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Abstract

Liquidity is fundamental to the well-being of financial institutions particularly banking. It determines the growth and development of banks as it ensures proper functioning of financial markets. Inadequacy of liquidity causes adverse effect on the market values of asset.. Therefore studying and understanding liquidity has very important practical implications. However, understanding the term liquidity is an arduous task due the diversity in its meanings and connotations. This paper attempts to examine different liquidity definitions and the concepts as well as discusses sources of liquidity and its risk.

Keywords: Liquidity, Financial institution, Financial Markets, risk

1. Introduction

Liquidity is very critical phenomenon for smooth operation of banking businesses. In fact growth, development and survival of banks depend on liquidity. It has different meanings and connotations to different parties and organizations which makes its definition a very difficult task. Notwithstanding, frantic efforts are being made by the concerned parties to define liquidity with respects to their organizations.

In a specific term, liquidity can be described as a bank or firm's ability to meet the cash demand of its policy and contract that it holds with minimal or no loss (Bank,2004). In other words, the liquidity profile of a bank is a function of its assets and liabilities (Chorafaa, 2007). Banks in their course of managing a variety of assets and liabilities face a variety of risks, such as market risk, credit risk, operational risk, reputational risk, liquidity risk and a

host of others in their day-to-day operations (Greuning & Bratanovic, 2003). Interestingly, liquidity concept and its risks described by Belo (2010) as very vital for the smooth and efficient functioning of all financial and capital market institutions and invariably for the survival and stability of the financial system are yet to be given due attention as much as given to the market risk or credit risk.

However, recent global financial crunch as a result of liquidity problems in the international financial markets had spurred the management of banking institutions, regulators, supervisors and the policymakers to change their lukewarm attitudes and give prominent and special attentions to liquidity and its risk management in banking industry (Vento and Ganga, 2009). Their curious interest becomes urgently necessary because failure of a bank as a result of liquidity shortages may have a contagious effect, thereby destabilize the whole financial system and impair the growth of the economy as a whole (Kolga, 2006)..In order to give the subject matter the deserved attention and make necessary contribution, this paper discusses the fundamental concepts of the liquidity, its risk and some of basic features. The following section two discusses the variety definitions and concepts of liquidity, followed by section three which examines liquidity in relation to banking institutions. Section four looks at the generality of risks in banking institutions, while the last section five deals with the sources of liquidity risk.

2. Liquidity Concepts and Definitions

Liquidity is of paramount importance being a core issue of banking (Caruana and Kodres, 2008). Therefore, viability and efficiency of a bank is greatly influenced by the availability of liquidity in sufficient amount at all times. Banks must meet their due obligations and execute payments on the exact day they are due, otherwise, the banks stand the risk of being declared illiquid (Crocket, 2008).

Traditionally, banks basically function as financial intermediaries and collecting points of fund for different groups within the society. Therefore, banks are expected to maintain adequate liquidity in order to efficiently perform their daily obligations such as meeting depositors' demand or withdrawals, settling wholesale commitments and provision of funds when borrowers draw on committed credit facilities (FSC, 2010). They must also ensure sufficient funds in order to be able to finance increase in assets (Bank, 2004). Hence, banks automatically transform short-term, liquid liabilities into long-term illiquid assets (ECB, 2002). This function serves to protect customers against liquidity problems, but, however, exposes banks themselves to such risk which in extreme case or worst scenario is capable of causing bank runs regardless of soundness of the bank (ECB, 2002). The Central Bank argued that such liquidity problem in a bank is capable of spreading to the other banks and thereby causing a real bank panic.

The term liquidity is characterized by ambiguity due to so many facets and definitions, therefore, to use it productively and purposely, it needs further and clear definitions (Goodhart, 2008). Literature on finance agrees that in the real sense, liquidity is easy to identify than to define. In economics literature, the understanding of liquidity represents an economic agent's ability to exchange his/her current wealth for assets or others such as goods and services. Two important issues are emphasized in this meaning of liquidity. The first one describes liquidity as a flow concept while the second issue relates liquidity to the ability to realize these flows (ECB, 2002). Failure to achieve this would render the financial entity/firm illiquid. The Basel Committee on Banking Supervision (2006) describes liquidity as a reservoir of funds that management can readily have access to in order to meet funding requirements and business opportunities.

However, the Swiss Takeover Board in 2007 argued that there is no precise definition for liquidity, and the issue of definition should be left open. Hence, the Board suggests that, it

should be the Supervisory authority's prerogative to define liquidity in its jurisdiction and decide the criteria to be used for determining the liquidity and illiquidity of a security and a firm and should publish a report to clarify the liquidity concepts. In a similar vein, both Vento and Ganga (2009) and David (2007) agreed that in financial parlance, liquidity has multiple connotations. However, Vento & Ganga (2009) went further to define liquidity in a broader sense as "the amplitude of a financial firm to keep up all the time a balance between the financial inflows and outflows over time."

2.2 Liquidity in Banking Institutions

Most recent studies considered the banking sector as an important source of financing in an economy. There is diversification in the role of banks into financial intermediaries, facilitators and supporters (Freixas et al., 2010). In other words, banks act as liquidity providers and financial intermediaries in a financial system. This is accomplished by mobilizing funds (short-term deposits/liabilities) from the surplus units (lenders) and making use of the funds for financing the deficit units (borrowers) in form of loans and investments (long-term assets). At times, banks as liquidity provider, may unexpectedly experience extreme shortages of liquidity which could be triggered by larger amount of standby credit drawn or/and unexpected reduction in the availability of deposits (Crockett, 2008). Therefore, efficient coordination of the cash inflows and cash outflows, in order to meet the cash flow shortfalls, requires effective risk management structure for managing liquidity (Nagret, 2009).

It had been well argued by studies that banks' liquidity acts as the grease that facilitates the smooth functioning of the financial system. The importance of liquidity goes beyond individual banking institution as liquidity shortages in one bank can spread to others and have repercussion on the entire financial system (Kodakkal, 2010). Ordinarily, liquidity can be described as the easiness of acquiring value from assets which could be realized either

by using creditworthiness to obtain external funding or selling owned assets in the marketplace (Crockett, 2008). However, in banking system the term liquidity is used among many other applications to express specific conditions for a product, an institution, a market segment or even an economy (Brumermier & Pedersen, 2008). Thus, liquidity is neither an amount nor a ratio, but rather an expression of the capability of a financial institution or bank to fulfill its mandatory obligations (Tian, 2009). He submitted that in that case, liquidity represents a qualitative element of a bank's financial position or strength.

Some literature classified liquidity in a financial system into three main notions, such as central bank liquidity, market liquidity and funding liquidity (see, Nikolaou, 2009). While, some argued in favour of two notions or facets of financial (market) liquidity, i.e. funding liquidity and market liquidity (see ECB, 2002 and ORACLE, 2009). Their argument is based on the belief that the role of Central Bank as provider of liquidity during financial crisis only cushions the effects but does not guarantee success since it cannot tackle the roots of the liquidity risk. Furthermore, Central Bank lacks the ability to clearly differentiate with certainty between illiquid and insolvent banks (Nikolaou, 2009).

Nevertheless, the focus of this study is on funding liquidity (risk), since it directly relates to the ability of banking or financial institutions to perform their financial intermediation functions. That is the ability of banks to fund their positions (Nikolaou, 2009). In addition, though there are complex and dynamic linkages among the different concepts of financial market liquidity, the study discusses the interaction between funding liquidity and market liquidity. The rationale is that both concepts have close relationship but they do not bear a resemblance (ECB, 2002).

2.2.1 Market Liquidity

The last two decades witnessed increasing banks' usage of the financial markets as a means of financing long-term assets such as loan (Deutsche Bundesbank, 2008). Banks have also,

increasingly used both the interbank markets through which banks source for funds among themselves, and the markets for innovative financial instruments such as repurchase agreements, credit derivatives and securitizations to complement their traditional sources of finance such as savings deposits (Deutsche Bundesbank, 2008).

Traditionally, the general belief is that a market which provides an investor the ability to buy and sell a sizeable amount of assets without appreciably affecting the price of the asset is a liquid market (Caruana & Kodres, 2008). The liquidity of the market is an important dimension of market conditions as it is the center point of stability of financial system because it is a precondition for market efficiency, while, its disappearance or insufficiency is capable of causing financial instability which may lead to systemic risk (Berves, 2008). A perfect liquid market would therefore, guarantee a simple bid/ask price at all times irrespective of the quantity of assets/securities being traded (Berves, 2008). Therefore, achieving a smooth functioning and liquid market entails availability of liquidity in the market as well as its continuous enhancement. There are several market structural factors that ensure the availability of liquidity and its enhancement in the market.

Some of these factors enumerated by David (2007) and Caruana & Kodres, (2008) include: (i) there is high chance that liquidity will be enhanced if there is symmetrical distribution of information about the values of assets in the market among the potential buyers and sellers and the intermediaries; (ii) liquidity in the market can be enhanced by the availability of large amount of the assets to be bought or sold compared to the number of the investors who desired to trade and (iii) the appearance of new market players who are very active attracts new capitals to the markets, thereby, increases their liquidity. Another important factor of the market structure that enhances liquidity of financial market is advances in technology. Also, of equal importance is the introduction of new and innovative financial instruments into the market. As noted by David (2009), liquidity of a financial

market is normally supported by the financial innovations enabled by technological advancement, which lowers the trading costs and increases transparency and competition in price, resulting in greater liquidity.

Furthermore, a very important factor is the mode of business transaction between buyers and sellers either physically or electronically. A well-managed environment which allows buyers and sellers to meet and well established methods of documenting prices encourages easier transaction than over the counter (OTC) markets, where a party has to find another party to trade with. Though, this problem is being reduced through the aid of technology, yet, a formal clearing house that documents transactions and guarantees the performance of the opposing parties is still lacking (Caruana and Kodres, 2008).

From the aforementioned, it could be inferred that the market liquidity is a feature of market which allows assets such as loans and securities to be sold at any time without adverse effects on assets prices (Deutsche Bundesbank, 2008). However, recent literature on financial market liquidity defines market liquidity as “the ability to trade an asset at short notice, at low cost and with little impact on its price” (Nikolaou, 2009). Based on the definition Nikolaou stressed that market liquidity should be assessed on several grounds and emphasized that the most glaring one is the ability to trade.

Giving credence to Nikolaou’s opinion Kolja (2006), Deutsche Bundesbank (2008) and Berves (2008) enumerate basic and essential criteria which should be the basis on which the degree of liquidity of a market should be measured. The criteria are as follows;

- i. Tightness of the market: - it is measured using the bid-ask spread and it determines the cost of unwinding a position at short notice for a standard amount.
- ii. Depth of the market: - this assesses the actual transaction volume that can be instantly executed without affecting the market prices.

iii. Market resilience: - this describes the momentum at which the market price recuperates to their equilibrium position after a major shock from the transaction.

A very important element not mentioned by Berves (2008) but emphasized by both Kolja (2006) and Deutsche Bundesbank (2008) is ‘Immediacy’ which describes the time between the launching and final completion of a business transaction in the markets. These criteria are schematically depicted by Berves (2008) as shown in the figure 1 below.

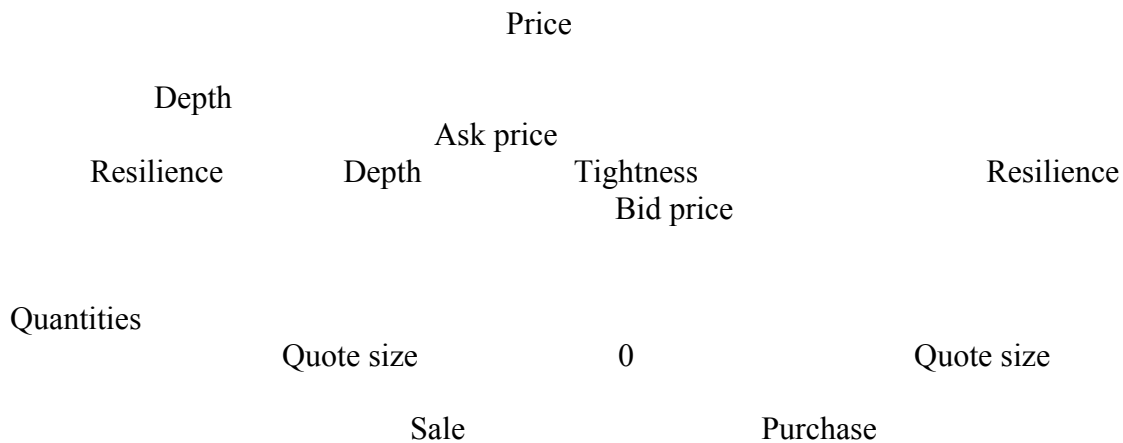


Figure 1: Kyle's Characteristics

Source: Berves (2008)

Berves (2008) describes the first characteristic as a direct measure of the costs of transactions which includes operational costs such as commission charged for brokerage and clearing, and settlement fees. While, he claims that the other two criteria represent the ability of the market to absorb significant volume without adverse effect on the market price.

Therefore, market liquidity is made up of key elements of time, volume and transaction costs upon which it should be defined (Nikolaou, 2009). However, Caruana & Kodres (2008) are of the opinion that in order to have a complete understanding and analysis of financial market liquidity, the characteristics of the asset itself, in addition to the characteristics of the market are relevant. They assert that the homogeneity of asset tends to attract multiple buyers and sellers. Often, the standardized features of assets such as maturity date, a specified deliverable item with transparent characteristics and an established trading unit influence the degree of liquidity (Caruana & Kodres, 2008). Of paramount importance

to the banking institutions are two types of market liquidity namely; (i) liquidity in the interbank market, for trading liquidity among banks and (ii) liquidity in the asset market where financial agents (i.e. banks) trade assets among themselves (Nikolaou, 2008). The raison d'être is that they help in explaining the interaction between various liquidity types and most especially, they are the major sources of acquiring funding liquidity from the market.

2.2.2 Funding Liquidity

Among the financial institutions, banks are very unique in the sense that they are the cheapest source of liquidity in the economy (Drahmann and Nikolaou, 2010). The responsibility of a bank is to mobilize liquidity as well as to manage the liquidity in such a way that would alienate mismatches between future cash outflows and inflows (Greuning & Bratanovic, 2003). A bank mobilizes funds from the entity with surplus funds (depositors) and lends the funds to another entity (borrowers/investors). Surely, there is almost certainty that bank will have to honour the liquidity by the depositors, but there is no certainty that banks will be repaid by the borrowers (Koddakal, 2010). Hence, banks deplore more liquid short –term deposits in financing high profitable long-term portfolio of loans (illiquid assets) to generate profits that would make up for any default (Nagret, 2009). On the long-run, the degree of uncertainty with respect to these mismatches is clearly much higher in the banking system which is suffice to say that for a smooth and efficient banking operation, banks are required to have access to sufficient funding in the form of liquidity in order to service their financial obligations as they fall due.

Literally, funding liquidity refers to the ability of a financial intermediary to raise cash on demand within a short notice (Drahmann & Nikolaou, 2010). This explains why banks traditionally, provide funding liquidity to customers by issuing transactions deposits which allow account holders to take cash on demand from the bank (Strahan, 2008). The banks'

liquidity insurance role tends to expose them to the risk of unexpected liquidity demand from their customers and risk that they may not be able to have enough cash to satisfy the random demand of their depositors and borrowers (Gatev et al., 2006).

Therefore, Basel Committee on Banking Supervision defines funding liquidity as the banks' ability to meet their obligations, unwind or settle their positions as they come due (Nikolaou, 2009). However, Drehmann and Nikolaou (2009) argued that a bank is considered having enough funding liquidity (i.e. liquid) as long as its cash outflows are less to or of equal proportion with the cash inflows and the stock of money held by the bank. Their argument is based on the understanding that funding liquidity is a flow concept which they mathematically represented as follows;

$$\text{Outflows} \leq \text{Inflows} + \text{Stock of money}$$

Nikolaou (2009) stressed the importance of banks' funding liquidity as the means of distributing liquidity in the financial system. Therefore, he maintained that banks must ensure adequate liquidity at all times. Also, it is necessary that banks should constantly assess the maturity profile of their liabilities and assets together with their associated returns and costs in order to enable them to determine the types and amount of liquidity to hold in order to meet a desired threshold for maturity mismatch (ECB, 2002). In determining the scale/amount of potential liquidity needs to be held by banks in meeting their day-to-day obligations, Kelvin (2008) suggested a number of dimensions which include the following:

- i. Ensuring availability of adequate 'cash' at customers' outlets to meet withdrawals.
- ii. Maintaining sufficient settlement account balance to meet overnight settlement.
- iii. Making projection of likelihood of future net withdrawals and cash inflows based on maturing deposits, loan draw downs, customer's transactions and so on.

However, the nature of banking business involves making investments that are structured with assets of different degree of liquidity (Vento & Ganga, 2009). Thus, PBDI (1998) believed that banks are vulnerable to sudden and unexpected demand for funds by their customers. Inability to honour those demands due to liquidity problems may have serious and negative implications for the whole financial system. To avoid this kind of scenario, Basel Committee on Banking and Supervision in 2006 (BCBS, 144) suggested a list of potential sources of funding liquidity which banks have to consider in their liquidity management strategy. These funding sources include the following:

- a. Deposit growth.
- b. Lengthening of maturities of liabilities.
- c. New issues of short and long-term debt instruments.
- d. Inter-group funds transfer, new capital issues and the sale of subsidiaries lines of business.
- e. Asset securitization.
- f. Sales of repo of unencumbered, highly liquid assets.
- g. Drawing-down committed facilities.
- h. Borrowing from the Central Bank's managed lending facilities.

Though, Wagner (2006) argued that in a normal time, banks can always satisfy their liquidity needs through borrowing at the interbank money market. But he agreed that the interbank lending breaks down when there is an aggregate liquidity shortage and banks are thereby exposed to liquidity risk. Thus, efficient liquidity transfer may not occur between banks with liquidity surplus and those that are liquidity stricken (Acharaya et al., 2009). However, in contrast, when asset or interbank money market is booming, liquidity is then in good shape and funding will be readily attainable for financial institution at a low cost (Tian, 2009).

2.3 General Concept of Banking Risk

Risk is a very broad concept, complex and naturally inherent in every sphere of life either social or economic, human or corporation and it represents an exposure to a chance of loss (Astril, 1997 and Chorafas, 2007). It virtually touches every aspect of modern corporate operations. In the general term, risk is referred to “as uncertainty associated with a future outcome or event” (Bank, 2004). Chorafas (2007) describes risk as the possibility of loss, injury, damage or hazard. In the corporate parlance, he defined risk “as the expected variance in profits, losses, or cash flows arising from an uncertain event”.

Risk usually arises when there is uncertainty about the future and when there are possibilities of array of future outcomes. The future uncertainty gives room for the doubt whether the estimates made in respect of the future will occur or not. However, making financial decisions involves making estimate and forecast about the future events and making reliable forecast can be extremely difficult especially when it involves a fast changing environment or steady and continuous new product development (Wagner, 2006). Thus, risk which represents the likelihood that a forecasted event will actually occur or not becomes an important aspect of financial decision making (Astril, 1997). Astril therefore, stressed that risk is quantitatively expressed in insurance and banking system as the degree of an adverse effect and its financial aftermath.

In financial terms risk usually refers to as the probability that there may be difference between the actual return and the expected return (Rose and Hudgins, 2010). The banks' financial intermediation function through funds mobilization and application of funds makes risks to be part and parcel of the banking system. For instance, the Manager of a financial institution will be concerned with questions such as; whether a customer will renew his or her loan or not? Will there be growth in deposit and other sources as anticipated? Will interest rate rise or fall in the subsequent week and what will happen to the financial institution's

income or value if either of two occurs? Risk is very important particularly when it comes to investment decisions (Rose & Hudgins, 2010).

Therefore, the ability of a bank to efficiently manage its risks determines its survival and success in the banking business. As failure of substantial number of banks emanating from liquidity risk may destabilize the whole financial system and impair the growth of the economy in general. Greuning & Bratonovic (2003) generally, classified banking crisis into four broad categories, namely: (i) financial risk, (ii) operational risk, (iii) business risk and (iv) event risk. Regardless of the type, Chorafas (2007) affirmed that banking risk and its probability are a function of the following;

- i. The type of loss that is addressed.
- ii. Risk factor(s) characterizing loss likelihood.
- iii. Prevailing market volatility and
- iv. Amount of leverage behind the transaction or inventoried position.

Although, all these risks are of great importance to the banks, but the focus of this study is on the liquidity risk because it represents the cumulative effects of other risks and of a surge in its importance owing to the ongoing global financial crisis. Financial risk is divided into two types. First, pure risk which include liquidity, credit, market and currency risks. The second is speculative risk which is based on financial arbitrage such as interest rate, currency and market price risks. The risks as depicted in the Figure 2 below are complexly interdependent and interact with influences on one another. These risks are relevantly common to both conventional and Islamic banks. However, the difference in their principle of operations calls for different approach in handling the risks.

Figure 2 Types of Risk
Source: Geuning & Baratanovic (2003)

2.4 Sources of Liquidity Risk

The nature of banking business exposes banks to fundamental risk. Banks liquidity risk can emanate from factors that are exogenous as well as from those internal to the banking institution (i.e. from bank's financing and operational policies) (Salman, 2004). Banking operations involve financial intermediation and maturity transformation. That is mobilizing callable on demand deposits with short-term maturity for financing contracts of relatively long-term maturity. The maturity transformation in the form of cash inflows and cash outflows exposes banks to liquidity risk as they try to provide liquidity insurance to the depositors. Therefore, Neu (2007) argued that liquidity risk can emanate from both sides of balance sheet. However, Salman (2004) pointed out that source of liquidity risk is not limited to the maturity mismatch. He said it can come from some other directions and its impact depends on different factors. He categorized all the sources into two broad groups namely; behavioural and exogenous sources which include the following;

1. Over confident or incorrect judgment attitude of the bank in respect of timing of its cash flows.
2. Unforeseen changes in the availability of funding or cost of capital.
3. Financial markets' abnormal behavior when under stress.
4. Variety of assumptions employed in predicting cash flows.
5. Secondary sources' risk activation such as:
 - i. Failure of Business strategy.
 - ii. Failure in Corporate governance.
 - iii. Assumptions in Modeling.

- iv. Policy involved in merger and acquisition.
6. Collapse of payment and settlement system.
7. Imbalances in macro-economy.

Conclusion

Liquidity which can be described as a firm's solvency and its ability to convert assets to cash is very critical to the growth and survival of any organization. Liquidity determines the smooth operations of a bank. It is measured by comparing assets and liabilities of a business. Specifically, liquidity can be referred to as a bank's ability to meet the cash demands and obligations that it holds with minimal of tolerable loss. Inability to easily convert assets to cash results to liquidity shortfalls which can impair the growth of the whole economy. However, the cause of liquidity problems is not limited to maturity mismatch alone, it can also be traced to other sources and its effects depend on the different factors. Preventing liquidity shortages requires efficient and effective coordination of the cash inflows and cash outflows and effective risk management infrastructures for managing liquidity. In addition understand the banks' funding sources as well as the potential causes of liquidity shortages is very critical for proper liquidity management

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