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ASSESSMENT AND MANAGEMENT OF LIQUIDITY RISK IN A BANK: GTBANK CASE STUDY

End of training thesis

Author: ABANGWU George Richard
MBF 10th Batch- CESAG

Supervised by: Dr Momodou Mustapha Fanneh
Assistant Professor
School of Business and Public Administration
The University of the Gambia

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List of acronyms

ALCO	asset–liability committee
ALM	asset and liability management
bps	basis points
CBG	Central Bank of the Gambia
CP	commercial paper
CRR	Cash Reserves Requirement
ECP	Euro commercial paper
EMTN	Euro medium-term note
GICs	Guaranteed Investment Certificates
GTBank	Guaranty Trust Bank
IRR	Interest Rate Risk
LC	liquidity committee
LCMT	liquidity crisis management team
LR	liquidity risk
MTN	medium-term note
NFR	net funding requirement
OTC	over-the-counter
SPE	special purpose entity
TB	treasury bills
VAR	value-at-risk

Introduction

Risk management in banking is a set of policies and practices put in place to alleviate impact of crisis that may come from different sector of the business. Any management tools and techniques that measure, monitor and control risks is part of risk management. Different models and processes are adapted according to the type of risk, which can be categorized as follows: credit risk, market risk, interest rate risk, liquidity risk and operational risk. These are the major type of risks. Generally risk is defined as any uncertainty that might cause losses. Therefore liquidity risk is the probability of losses that might arise due to shortfall in the management of liquidity.

The economic meltdown, the Leman Brother collapse, the Enron closure, the Northern Rock Bank run down and other financial crisis have proven that the management of liquidity risk should be central in any business or organization. Nowadays, managers are conscious that profitability and capital are no defences against liquidity crisis. This comes as a result of the development of the market which is becoming more complex and unpredictable. So many financial products are created especially in the developed countries but sometimes their nature and control are not mastered by the stakeholders. On top of that systemic crisis are always rocking the financial stability of the world economy.

What can we do to improve the resilience of our bank? – First and foremost we must understand the market and our business in depth in order to better assess the liquidity risk we might face and from there we would be able to strategize for a sound liquidity management.

In the thesis we embark on, we firstly analyze liquidity risk generally speaking, then secondly we design a specific liquidity risk management for Guaranty Trust bank.

In the balance of Part I, we expand on the fundamentals of liquidity risk, firstly in Chapter 1, we consider the scope of liquidity management, and secondly, in Chapter 2 we will examine liquidity risk problems and solutions.

In Part II we will focus on Guaranty Trust bank liquidity management constraints and solutions. In Chapter 3 we will examine Guaranty Trust bank liquidity risk, and in Chapter 4, we will explore the challenges of putting in place an Asset and liability committee and a liquidity crisis management team.

Part 1: Fundamentals of liquidity risk: scope, problems and solutions

Chapitre 1 : Scope of liquidity management

As every industry is different in nature and situation, each industry will take a different approach to the liquidity risk analysis and management process. It is tempting to say that liquidity risk management is the most important function in financial institutions. It is true, because financial institutions are liquidity suppliers to all other industries and are subject to more systemic pressures. Nevertheless, liquidity problem can be destructive for firms in non-financial industries.

Despite that we concentrate our study in the liquidity risk for financial institutions; the principles are appropriate and applicable to corporate treasurers and CFOs running non-financial service and industrial companies, and also to government officials managing department/municipal money. The necessity for an adequate supply of cash resources is needed in any institution that deals with cash. In this chapter, we will focus on liquidity across industries and sources of liquidity.

1.1. Liquidity and risk

Liquidity is generally defined as the availability of cash or equivalent resources. Liquidity enables the business to settle expected and unexpected obligations so that daily operation flows without any interruption. Lack of sufficient cash resources compromises business activities; notably, the likelihood of encountering more severe financial problems increases.

1.1.1. Definition of liquidity

American Academy of Actuaries (USA)

Liquidity is the ability to meet expected and unexpected demands for cash. Specifically, it is a company's ability to meet the cash demands of its policy and contract holders without suffering any (or a very minimal) loss. The liquidity profile of a company is a function of both its assets and liabilities. Liquidity risk is inherent in the financial services industry and one must understand, measure, monitor, and manage this risk.

(AAA, 2000, p. 4)

Bank for International Settlements (Supranational)

A liquid market is a market where participants can rapidly execute large volume transactions with a small impact on prices.

(BIS, 2000, p. 5)

These two definitions are enough to illustrate that liquidity is the lifeblood of the economy. Without liquidity contracts are broken, losses multiply and stakeholders are demoralized.

1.1.2. Type of risks

Fifteen sources of risk can be identified in banking. They can be grouped into four major categories: market, credit, liquidity, and operational risks. Table1.1 shows the groups an sub group risks.

Although, we classified risks in different categories, they are interrelated. That is one type of risk can transform quickly to another one.

Credit Risk	Market Risk	Liquidity Risk	Operational Risk
Retail and Corporate Credit Risk	Interest Rate Risk		Execution Risk
Counterparty Risk	Foreign Exchange Risk		Model Risk
Settlement Risk	Equities		Fraud
Environmental Risk	Commodities		Legal Risk
Country Risk			

Table 1.1 Fifteen risks

Example1:

-when great number of customers in a bank are defaulting (retail credit risk) the bank may encounter problem of liquidity (liquidity risk).

Example 2:

-the court may order to pay to a customer huge amount (legal risk) of money, straining the liquidity of the bank (liquidity risk).

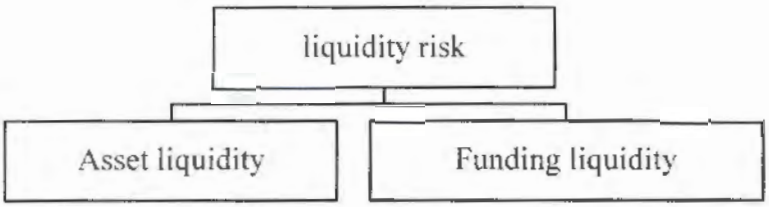
1.1.3. Liquidity risk

If liquidity is defined as the availability of cash or equivalents, then we conclude that liquidity risk as the risk of loss arising from a shortage of cash or its equivalent or, more specifically, the risk of loss coming up from an inability to obtain funding at economically reasonable levels, or sell or pledge an asset at carrying prices, in order to cover an expected or unexpected obligation. Fundamentally, liquidity risk is the risk of economic loss undergone in attempting to acquire the cash that is so vital for the business operations.

More granularities can be found in liquidity risk. It is helpful to differentiate funding (or liability) liquidity, and asset liquidity. Funding liquidity centers on the accessibility of unsecured liabilities (not backed by security) that can be drawn on to create cash, including short-term and long-term debt facilities. Consequently Funding liquidity risk is the risk of loss coming from the incapacity to get unsecured funding sources at an economically reasonable cost.

Asset liquidity centers on the accessibility of assets, such as marketable securities, inventories, receivables, and plant and equipment, which can be sold or pledged to generate cash. Asset

liquidity risk is thus the risk of loss arising from an inability to exchange assets into cash in order to meet obligations.



(Source: Erik Banks, Liquidity risk)

Figure 1.2 Two type of liquidity

1.2. Liquidity across industries

The intensity of liquidity risk differs from industries. We reflect on some of the general features of liquidity and liquidity risk in three different sectors: financial institutions, non-financial institution, and capital intensive companies. At first sight, government institutions followed by capital intensive companies have the lowest liquidity risk because they have small cash flow uncertainty. Figure 1.2 pictures the level of liquidity across institutions.

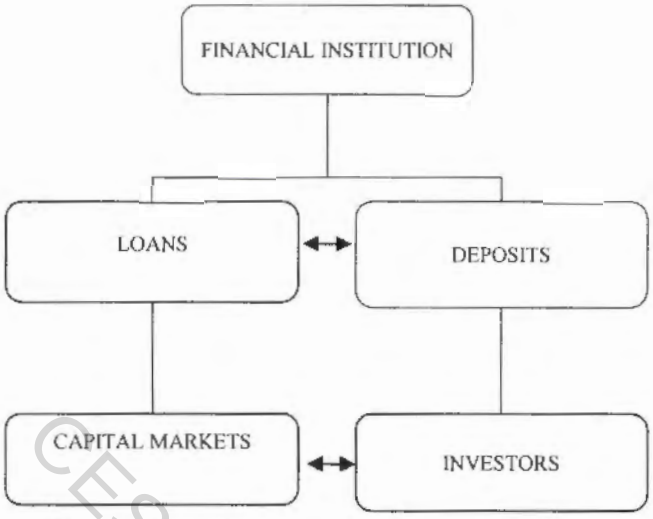
	Level of liquidity risk and unpredictable cash flow
Government institution	++++++
Capital-intensive Company	++++++++++++
Services	++++++++++++++++
Insurance	++++++++++++++++++++++
Bank	++++++++++++++++++++++++++++
Securities firms	++++++++++++++++++++++++++++++++

(Source: author's chart)

Figure 1.2 Level of liquidity risk in different sectors

1.2.1. Financial institution

Banks, insurance companies, investment funds and securities firms, are financial institutions. They are all involved in supplying investment, financial, and risk management services. Most of their activities carry an element of liquidity risk. Every financial transaction performed by, or passing through a financial institution carries some element of liquidity risk. With their intermediation responsibility, financial institutions match depositors' money with borrowers' loan, and investors with capital markets borrowers.



(Source: Baritsch Vincent, Bank Treasury management)

Figure 1.3 Role of financial institution

We will dwell in the function of banks and the liquidity apprehension they face. Bank assets are financial claims issued by borrowers, such as households, governments, and corporate firms. Bank liabilities are savings, deposits, deposits, term deposits, subordinated debt (loan capital), or equity shares (see Table1.2). The five functions of bank are:

- underwriting and placement
- portfolio management
- payment mechanism
- monitoring and information-related services
- risk-sharing service

Assets	**Liabilities and Shareholders' Equity**
Reserves in Central Bank account	Retail / Corporate Deposits
	Demand deposits
Retail / Corporate Loans	Savings deposits
	Term deposits
Interbank Loans	
	Interbank Deposits
Government Bonds	
	Subordinated Debt
Fixed assets	
	Equity

(Source: Bessis Joel, Risk management in Banking)

Table 1.2 Bank balance sheet

The third function performed by financial markets is the management of the payment system, i.e. to facilitate and keep track of transfers of wealth among individuals. Also, banks perform a useful function in reducing the costs of screening and monitoring borrowers. Finally, Banks share risk by taking the responsibility to be the provider of money transfer across states of the world.

All of these functions make liquidity management central for banks. A more detailed analysis of the bank balance sheet reveals that many liquidity pressures can happen at any point in type if the bank does not have a proper liquidity risk management.

Banks collect deposits on the retail and corporate markets. The maturities of deposits are said to be 'undefined', as deposits could stay in the bank for an overnight or few years. The undefined maturity creates a specific problem to measure the liquidity risks.

1.2.2. Non-financial institution

A great number of non-financial service companies are seriously exposed to liquidity risk – less than most financial service firms, but often more than the average industrial company. Non-financial service companies, including those from retailing, beverages, foodstuffs, hospitality, consulting, computer services, pharmaceuticals, and so on, often obtain a great deal of funding from short and medium-term facilities, payables, and revolving credit facilities. Some of these facilities can be volatile, especially in period of market stress or deterioration of credit quality.

1.2.3. Capital intensive companies

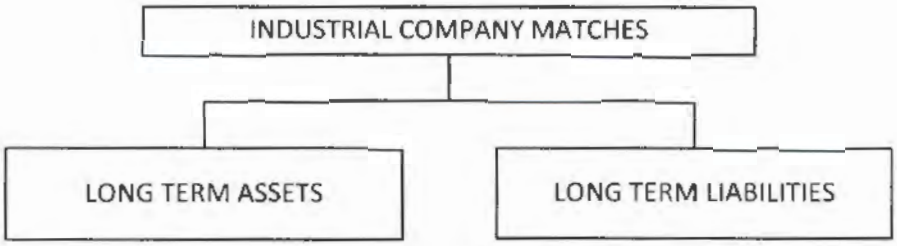
Companies in capital-intensive industries use a great amount of their resources to produce or refine resources, produce hard assets, or create durable goods. Obviously, they invest primarily in plant, property, and equipment, including depreciable assets with lives of 10, 15, 30 or more years. Since these assets are long-term in nature, they are often funded with long-term capital; short-term liabilities are used primarily to balance or cover short-term activities, such as receivables and inventories.

Liquid assets in a capital-intensive company (also big industry) represent 10 to 30 percent (compared to 80 percent plus for a bank, and 60 percent for a medium size non-financial business).

1.3. Sources of asset liquidity

The balance sheet is a snapshot reflecting the financial structure of a firm's business. Like we said earlier, an industrial firm typically has a larger amount of fixed assets and a smaller amount of liquid assets than a financial or non-financial service firm.

Fixed assets are less liquid than short-term securities inventories, it does not mean that the industrial firm has a greater amount of liquidity risk; as we noted in the last chapter, the typical industrial company is likely to match its long-term fixed assets with long-term liabilities, and must therefore only balance short-term assets and liabilities to ensure a proper liquidity position.



(Source: author's chart)

Figure 1.4 Industrial Company challenges

Similarly, although a bank or service company might have a greater percentage of its assets in liquid form, it is likely to have a larger amount of short-term or uncertain liabilities and contingencies, and must therefore be even more acutely aware of its liquidity position. The following lines will shed more light on the sources of liquidity. Figure 1.5 depicts them as they position in the balance sheet.

1.3.1. Liquid assets

Bank liquid asset includes: reserves with central bank, retail loans corporate loans, interbank loans and government bonds while corporate balance sheet comprises: cash and marketable securities, receivables, inventories.

Reserves with Central Banks

They are a cushion that can help in case of financial distress. Central bank can impose a percentage of depositors' funds to be kept in its vault. The bank is under liquidity pressure if it does not fulfil the requirement. In that case it will resort to the interbank.

Retail Loans

Retail loans are liquid asset for the bank. The loans must be backed by a security otherwise the customer will default easily. Proper documentation is also needed to be able to call for the security when the customer is unable to pay., Another problem for the banks is that most of the collaterals are not easily saleable, therefore, retail loans is not as liquid as reserves.

Corporate Loans

The same principles in retail loans are applicable here. The difference is that consequences of a default will impact drastically on the bank liquidity as amounts involved are generally very significant.

Interbank Loans

Just like the Central bank reserves interbank asset, they are risk free and are good investment for the bank.

Government Bonds

Treasury bills and bonds are much secured investment product. Instead of letting the money lying uselessly in the vault or reserves of the bank, it is better to invested in TB or bonds. It is also called "near cash"

Cash and marketable securities

Cash and near-cash instruments are the most liquid assets in the corporate portfolio. Cash is held to meet expected and unexpected payments. Nonetheless, knowing that cash is a non-earning asset, companies should improve their liquidity risk/return trade-off by minimizing their pure cash holdings. It is better to keep some amount of cash in the "near cash" category earning instruments that can be sold immediately at the carrying price (investment in TB or securities)

Receivables

They represent credit extended by a company to its customers. The delayed payments must generate implicit interest for the firm, transforming that receivable into simply short-term, unsecured loans to customers. Receivables represent future cash inflows to the firm; they are valuable assets that can be liquefied at an appropriate discount. (E.g. factoring)

Inventories

Inventory is generally classified as stock, raw materials, work in progress, or finished goods, each with its own value and value-added elements. Inventory is ranked below receivables in order of liquidity and potential for conversion into cash.

1.3.2. Fixed assets

They include the means of production of companies in the industrial sector. They are important to revenue generation as financial assets are to banks.

Plant and equipment used to transform raw materials into finished goods must be avoided to be pledged or sold. In practice, long-term fixed assets are financed with long-term capital, including equity and long-term debt. The debt supporting plant and equipment might or might not be secured, depending on the credit strength of the company and the nature and life of the asset. The

strongest credits (international big firm) do not usually pledge fixed assets in support of borrowings, while those of medium and low quality typically must.

1.3.3. Intangible assets

Intangibles are assets that generate value but have no physical or tangible qualities. They cannot be considered as a potential source of liquidity. The primary intangible of the corporate world is goodwill – the (reputation, branding, and intellectual property of a firm) Goodwill has value to a company and marketplace – but not necessarily a value that can be immediately converted into cash.

1.4. Sources of funding liquidity

Funding is the first line of defence in raising cash to meet payments; only when funding has been exhausted or proves too expensive that a company is obliged to pledge or sell assets in order to supplement the cash needed. Companies employ a range of liabilities, including:

- short-term financing facilities
- medium/long-term facilities

Some firms, may also have access to intra-company cash; provided other group members have excess liquidity, and provided no regulatory and legal restrictions exist regarding intra-company flow of funds. Otherwise, this can be considered another source of financing.

Mixing short versus medium/long-term does not help; it cannot indicate a firm's relative level of liquidity. Even if a firm has most of its funding obligations maturing in two years may have fewer immediate funding pressures, it might still be subject to liquidity risk if it is short of immediate access to cash to meet urgent payment.

1.4.1. Short-term funding market

Short-term funding markets include the following financial instruments:

Commercial paper[1] The commercial paper (CP) markets are a fashionable source of short-term unsecured funding for creditworthy companies. However, these products are not available in The Gambia.

Short-term bank facilities

Corporations regularly utilize short-term credit facilities availed by banks to, cover seasonal or emergency requirements. Those facilities offered can be as revolvers or fixed-term loans; have maturities ranging from 6 to 24 months. They constitute a relatively stable source of funding during the period stipulated in the contract.

Payables

Payables are important form of short-term funding, mainly for non-financial service and industrial companies. Just as a company grants credit to its clients by allowing delayed payment on invoices, it accepts credit from suppliers by utilizing delayed payment terms. In fact, companies often seek to extend their payables to the last possible moment in order to enjoy funding access. Payables, like receivables, carry an implicit interest rate with is a cost born by the firm.

Deposits and repurchase agreements

For financial institutions deposits and repurchase agreements form the two primary sources of short-term; these liabilities tend to be very liquid, with maturities ranging from overnight to several weeks, months or years.

Interbank deposits are funds accepted by banks from other banks; most mature in 1 to 30 days and may be denominated in any one of several reserve currencies. Consequently, deposit takers must be prepared to fill the gap when funds disappear or the offer price turns out to be too large.

1.4.2. Medium and long-term funding market

Many of the medium/long-term funding products are not in existence in The Gambia and in Africa generally. However, medium- and long-term loans are available.

[1] In the global market commercial paper is an unsecured promissory note with affixed maturity of 1 to 270 days. CP is money market security sold by large banks and corporations to get liquidity to meet short term obligation.

Medium-term notes[2] and Euronote[3] facilities

Companies in Europe regularly access funding through medium-term notes (MTNs), Euro MTNs and Euronotes.

Funding agreements and GICs[4]

Insurance companies in industrialized countries rely heavily on funding agreements and GICs to finance portions of their insurance and investment management activities.

Long-term bonds

Long-term bond provides corporate financing in the 10 to 30 year sector. Long-term bonds are issued in the US and Euro markets, as well as in the domestic markets of other advanced national systems but not yet in the Gambia.

Loans

Medium- and long-term loans are one of the famous form of financing for a number of companies and are, certainly, the most stable form of debt capital. Even when the public debt securities markets are in turmoil and the ability to issue is limited, companies are generally able to access the bank loan markets. Obviously, this relates, of course, to documented credit facilities for which a borrower pays commitment and borrowing fees. In a period of trouble those facilities that are merely advised or undocumented cannot be regarded as reliable or dependable.

1.4.3. Equity capital

Equity capital supports the assets and liabilities of the firm. Equity capital includes paid-in capital, retained earnings, and capital although extremely decisive to the solvency of the

[2] A **medium-term note** (MTN) is a liability that usually matures in 5 to 10 years, but the term may be less than one year or as long as 50 years. They can be issued on a fixed or floating coupon basis.

[3] A flexible medium-term debt instrument that is issued and traded outside of Canada and the United States and requires fixed dollar payments. EMTNs are issued directly to the market with maturities of less than five years and are offered continuously rather than all at once like a bond issue.

[4] A Guaranteed Investment Certificate (GIC) is a secure investment that guarantees 100% of the original amount that you invested. Your investment earns interest, at either a fixed or a variable rate, or based on a pre-determined formula.

company and protection against unexpected losses, is not typically viewed as a short-term source of liquidity. Equity capital is also more expensive than general debt financing, and thus not a rational way of attempting to maximize enterprise value. It is then better to exclude equity capital accounts from the source of liquidity.

1.5. Sources of off-balance sheet liquidity

The importance of off-balance sheet transactions has increase drastically over the last three decades and is now an important elemental of financial and corporate risk management. As the name implies, off-balance sheet transactions are outside the corporate balance, and are characterize by uncertain value.

1.5.1. Securitization[5]

Securitization helps to transfer risk and generates liquidity. In a standard securitization a firm sells a portfolio of assets into a conduit (generally a trust or special purpose entity (SPE)), engendering a cash inflow. Securitization is yet to be available in our country although the potential is here. Developing a stock exchange and securitization house will make the financial market more fluid.

1.5.2. Contingent financing

Contingent financings are an extremely popular form of liquidity for institutions. The firm will pay a fee for the facility (that is, a commitment or arrangement fee), it will pay an issuance fee at the time it needs the facility.

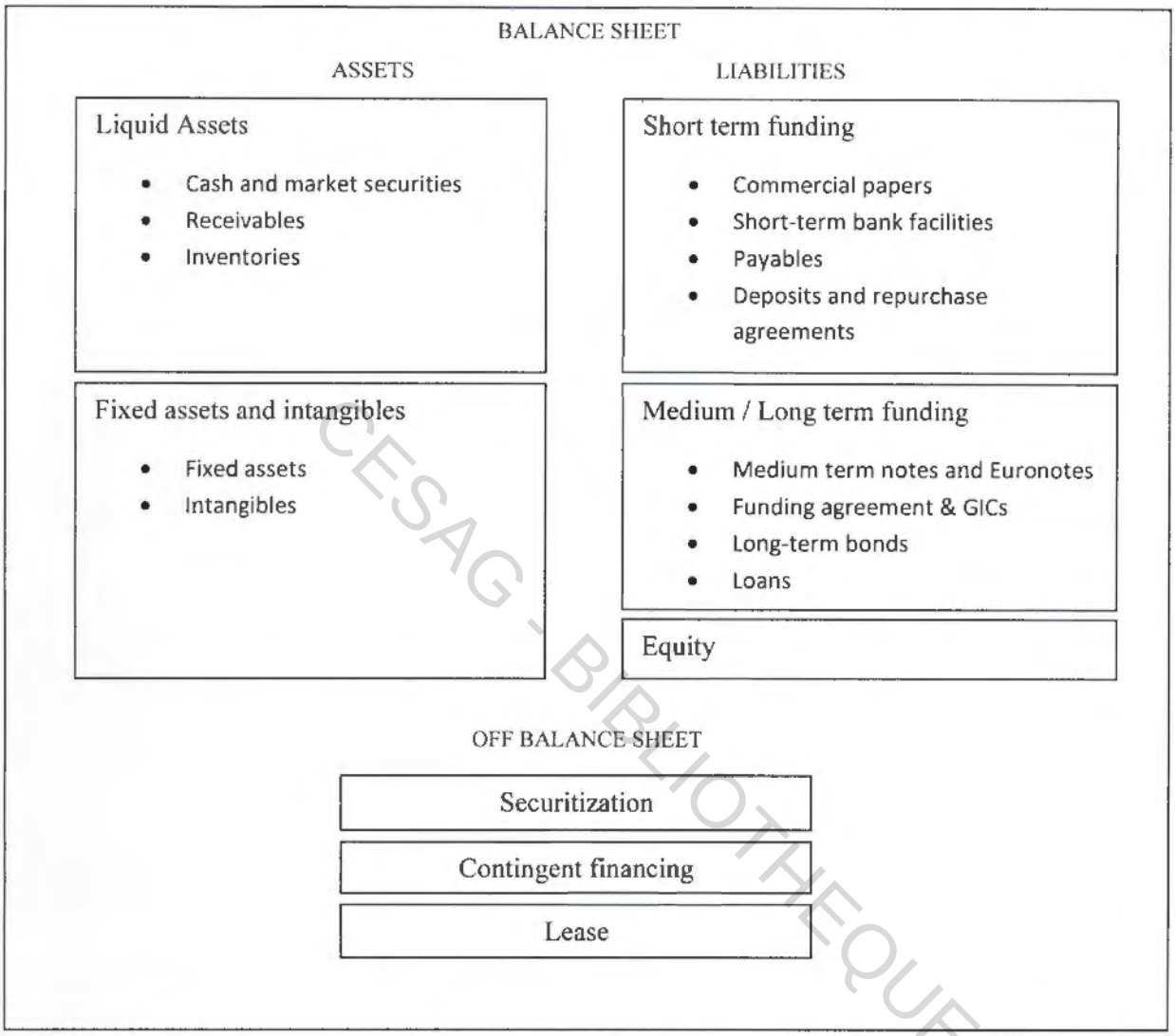
Contingent financings are presented in different forms, including revolving lines of credit (known also as a line of credit, revolver, or loan commitment), direct pay letters of credit, backup

[5] **Securitization** is the financial practice of pooling various types of contractual debt such as residential mortgages, commercial mortgages, auto loans or credit card debt obligations and selling said consolidated debt as bonds, pass-through securities, or collateralized mortgage obligation (CMOs), to various investors. The principal and interest on the debt, underlying the security, is paid back to the various investors regularly. Securities backed by mortgage receivables are called mortgage-backed securities (MBS), while those backed by other types of Receivables are asset- backed securities (ABS).

lines, and swing lines. Access to funds may be direct, as in a draw-down of a credit line, or indirect.

1.5.3. Leases

Lease contracts can be another source of off-balance sheet liquidity for companies which prefer to lease, rather than purchase some kind of assets. Operating leases enable the lessee to use an asset without having to fund the principal element of the acquisition cost. The fact that the lessee does not own or fund the underlying asset creates a cash flow that can be used for other purposes, including the establishment of a liquidity buffer for the payment of obligations.



(Source: Erik Banks, Liquidity risk)

Figure 1.5 Sources of liquidity

Chapitre 2 : Liquidity risk problems and solutions

The particularities of the developed financial markets is that in times of market stress some sources of liquidity, such as, payables, or uncommitted facilities, might disappear, creating a shortfall when weigh against the theoretical source we enumerate just above.

Though not all types of asset, funding, and off-balance sheet liquidity are accessible to all companies at all times, many of them are available most of the time. If companies seek to manage their liquidity profiles efficiently, they have to make as many as possible *ex ante arrangements* (before the need arises). Although this implies a cost, it can help curtail the probability of liquidity-induced losses, particularly those that might appear during difficult market conditions.

2.1. Assets liquidity problems

Unexpected demand for cash is at the heart of asset liquidity risk, but becomes more serious concern once unsecured funding (i.e. funds without security) alternatives have been exhausted. Obligations that are anticipated can generally be accommodate within the funding plan. But sudden demand for cash – caused by the unpredictable cash flows, unfavourable legal, regulatory, or financial mismanagement[6], or negative market perceptions cannot be met by a firm's normal and contingency financing plans. Exogenous factors that consume available funding thus fuel asset pressures

2.1.1. Exogenous considerations

A firm can manage its asset liquidity in a cautious manner, but still come across problems related to external effects and actions. This is most often expressed in terms of marketability, concentration, and misvaluation. If the market rejects a company's asset for any reasons (price, quality…) **Market** conditions impact on the liquidity of the company.

Concentration in one type of financial asset, or portfolio can turn to be devastating because tension in the financial system can erase the entire group of assets.

A firm might **believe** that its portfolios of receivables are marketable, but stress within the economic system might cause demand for such assets to disappear.

2.1.2. The nature of asset problem

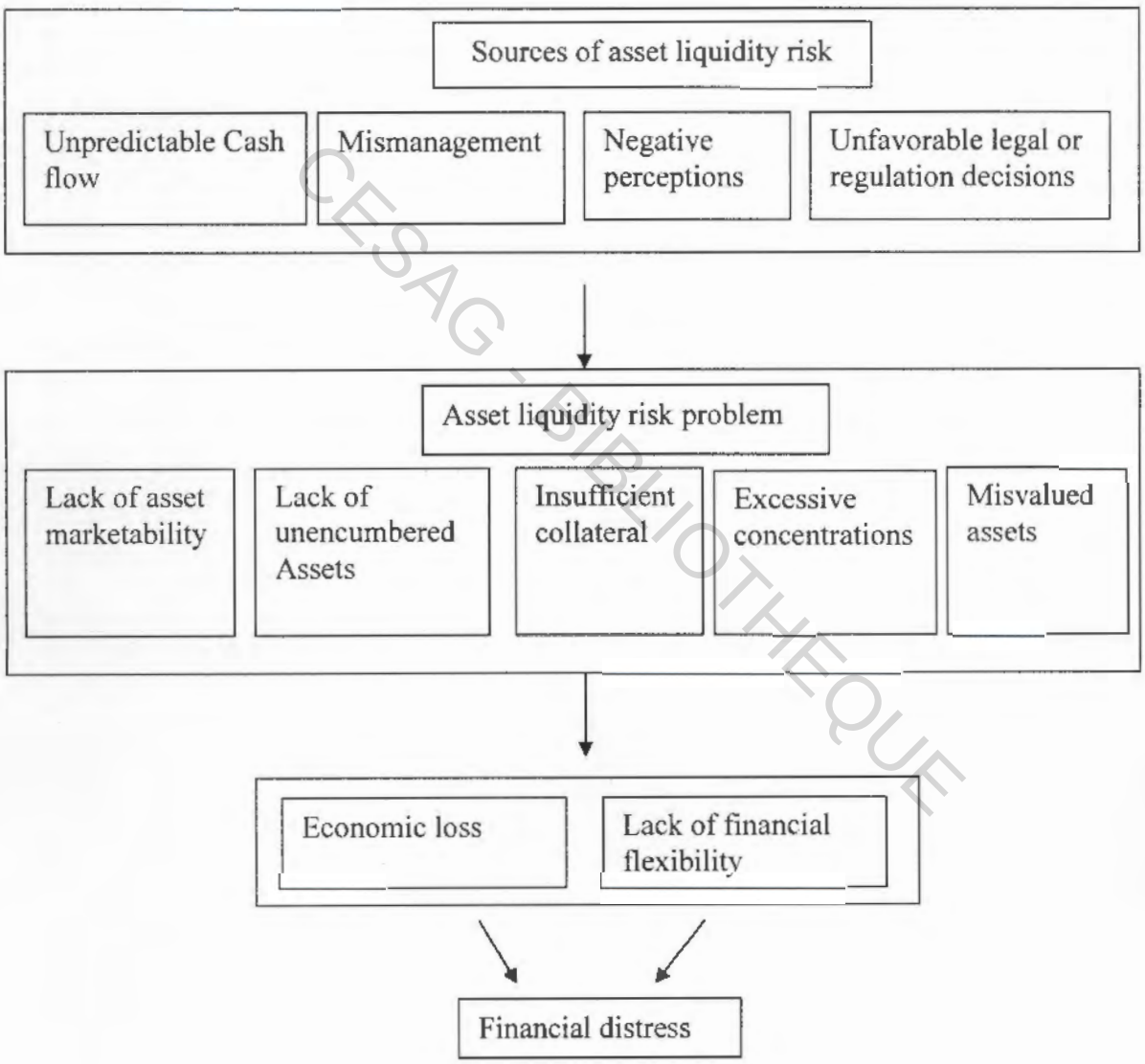
In case a firm cannot economically access enough unsecured funds to meet obligations, it must depend on its asset portfolio to make up for the shortfall. The focal point turns to:

- pledging unencumbered assets (not given as security) to secure loans
- selling liquid assets from the liquidity warehouse(securities, receivables, and inventories)
- securitizing assets
- selling additional illiquid assets, including fixed assets and business units.

In many cases these solutions can be implemented successfully; although they might lead to some loss of flexibility and economic value. There are five problems common to asset:

[6]Financial mismanagement has been at the center stage of corporate problems over the past few years, including those associated with Enron, Tyco, WorldCom, Swissair, and many others. Many problems ultimately manifested themselves in the form of severe liquidity pressure.

- lack of asset marketability: large amount of unmarketable assets create asset liquidity risk.
- lack of unencumbered assets: reduces financial flexibility by reducing borrowing capacity.
- excessive concentrations obstruct the company to sell at carrying value when forced disposal is required.
- misvalued assets make realizable price from pledging or disposal to fall short of expectation
- insufficient collateralization limit borrowing from banks.



(Source: Erik Banks, Liquidity risk)

Figure 2.1 Asset liquidity risk

2.1.3. The effect of asset liquidity risk

In a normal situation, business will be able to manage its expected and unexpected obligations without difficulty. If it cannot, it turns primarily to its unsecured funding program, gaining resources through the acquisition of liabilities. However, in situation where cash flow surprises are so significant that they overcome the firm's ability to meet the excess with unsecured funding (or when such funding becomes prohibitively expensive), asset liquidity pressures move to the forefront. The intensity of these pressures will depend largely on the company's actions and the presence of external forces.

2.2. Funding liquidity problems

Unexpected claim for cash is at the genesis of funding liquidity risk. When obligations are predicted the bank will contain them without trouble, since they are part of the bank plans and forecasts.

If the obligations are not anticipated, they will be difficultly incorporate in a risk management plan, although some amount of contingent funding can be established to manage "surprises". Unexpected demand for liquidity can come from various sources:

- negative perceptions/market actions.
- unfavorable legal or regulatory judgments
- mismanagement
- unpredictable cash flows

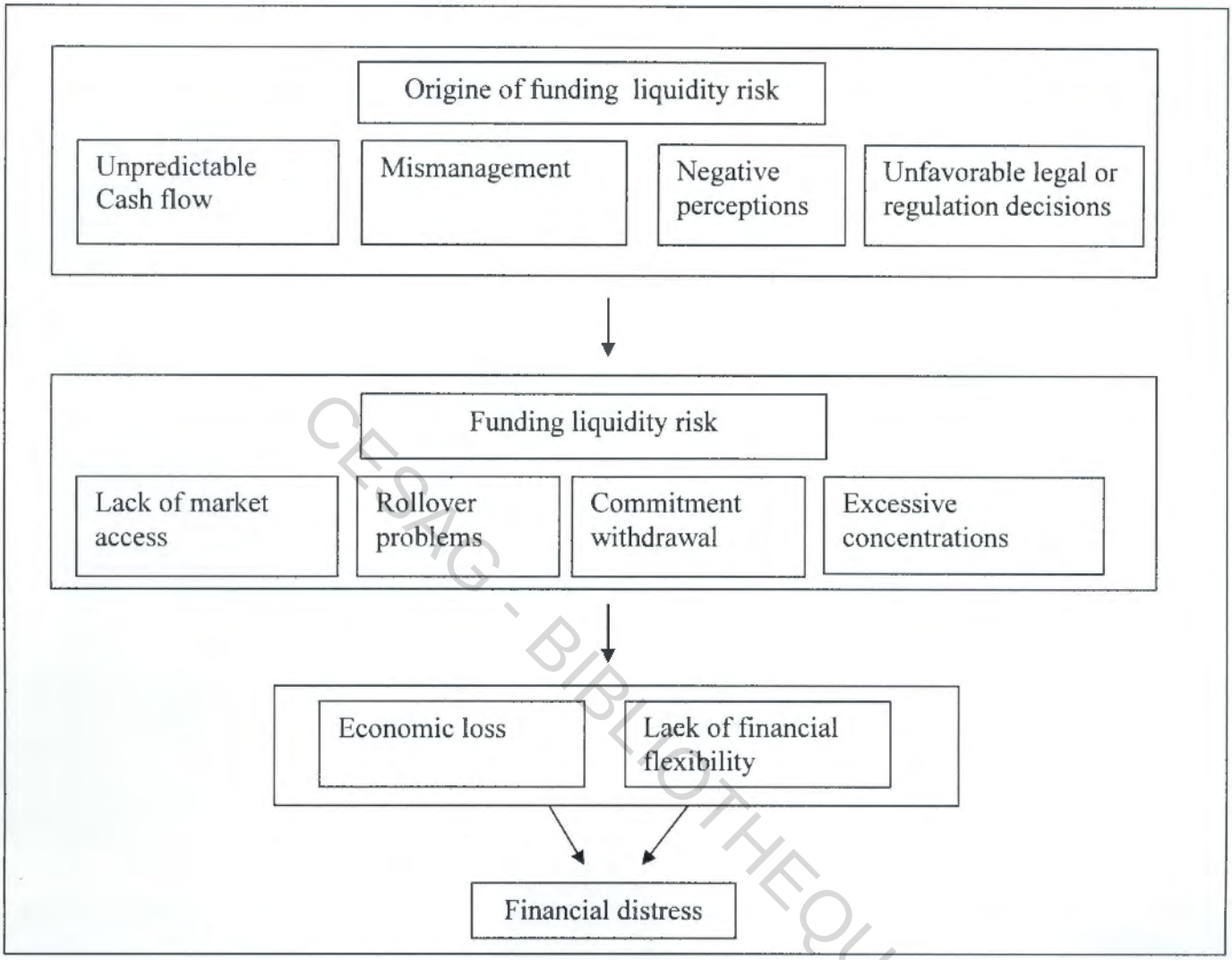
2.2.1. The nature of funding problems

One of the reasons cited above can increase liquidity difficulties. In the normal course of affairs, obligations can be met without difficulty. Access to incremental or rollover liquidity is gained through one or more of the liability sources, necessary payments are made, and the firm continues to operate as it normally would.

There are, however, instances when the funding program does not function as it should. There are various reasons why access to funding might be temporarily or permanently affected:

- rollover problems,
- commitment withdrawal,
- excessive concentrations,
- lack of market access.

While each one of these difficulties is in general endogenous, they can occasionally be aggravated by exogenous forces.



(Source: Erik Banks, Liquidity risk)

Figure 2.2 Asset liquidity risk

2.2.2. The effect of funding liquidity risk

The effects of funding liquidity risk are severely felt by financial firms operating in the "high liquidity risk". While a financial firm might appear to have sufficient liquidity based on normal market conditions, that liquidity could evaporate almost instantly. Banks must have sufficient contingency plan to face any future liquidity pressures.

2.2.3. Liquidity spirals

The onset of a funding liquidity problem can lead to actions within the asset portfolio that can actually create more constraints, difficulties, and losses. Joint asset/funding problems might be contained when the crisis is in the early stages and management deals aggressively with mounting problems. While the initial reasons for liquidity problems might be totally endogenous (cash flow surprises, mismanagement of a liquidity facility, unexpected disbursement, and so on), the accelerating spiral might be a mix of exogenous and endogenous factors, based on both loss of stakeholder confidence and management inability to respond to the crisis. Loss of confidence can appear in investors, depositors, bankers, and rating agencies.

2.3. Measuring liquidity risk

In the above lines we have seen why liquidity is so vital to corporate operations and illustrated what can go wrong. The degree of financial damage that can happen differ. Sometimes it may be limited to losses from asset disposals at prices below carrying value; in other cases it may be more serious, extending to case of financial distress and bankruptcy. Businesses exposed to liquidity risk must therefore attempt to avoid damage through a liquidity risk management process. Proper measurement of the liquidity is needed in order to set limits and controls.

2.3.1. Common liquidity measures

Measuring liquidity risk can be challenging, because the underlying variables that drive exposures can be dynamic and unpredictable. Liquidity risk is considered to be more difficult to measure than other dimensions of financials.

Despite the challenges, some attempt must be made to estimate the relative magnitude of risk. After that the next step in the process will be to control risk through limit mechanisms.

2.3.2. Liquidity ratios

There are many types of liquidity ratios that corporate and banks can use to measure their liquidity. Ratios are more useful when they are compared with historical data or competitors results. However, relevant ratio can be of tremendous help especially the liquidity coverage ratio to determine the liquidity level of the bank. The following table 2.1 illustrates ratios used by corporates.

LIQUIDITY RATIOS
Current Assets = Cash + Marketable Securities + Receivables + Inventories
Current Liabilities = Short-Term Debt Obligations + Current Portion of Long-Term Debt + Payables
Liquidity Coverage Ratio = (Current Assets – Inventories)/Average Daily Operating Expenses
Average Payables Maturity (days) = (365 * Average Payables)/Purchases
Receivables Turnover = Sales/Average Annual Receivables

Table **2.1 Corporate liquidity ratios**

Financial institutions also use various liquidity ratios that are standardized to their operations. Table 2.2 features some of them.

FINANCIAL INSTITUTION LIQUIDITY RATIOS
Borrowing Ratio = Total Deposits/Borrowed Funds
Loan to Deposit Ratio = Total Loans/Total Deposits
Cash Liquidity Ratio = Cash/Total Assets
Gap Ratio = Rate Sensitive Assets/Rate Sensitive Liabilities
Liquidity coverage ratio = Cash Inflows/Cash Outflows

Table **2.2 Financial institution liquidity ratios**

For financial institutions the most important measures are based on the liability accounts. **Borrowing ratios**, such as total deposits divided by borrowed funds, measure a bank's need to use volatile borrowings to support business, and the degree to which cash and equivalents can be used to repay "hot money"(Interbank money) that might be presented for repayment on very short notice.

The loan to deposit ratio, or total loans divided by total deposits, indicates the degree to which a bank can support its core lending business with deposits.

Bank cash liquidity ratio which is cash divided by total assets; indicates how well a bank can meet hot money calls without curtailing credit business.

Coverage ratio informs the bank whether the borrower will be able to meet his payments from the projected balance sheet, income statement and cash flow projections. The banker should use the assumptions of the customer to build the later.

2.3.3. Cash flow gap

Well-run banks manage liquidity risk with dynamic forward-looking tools, such as cash flow reports. Those tools allow bankers to project funding needs reasonably and identify sources. Many banks still rely on static liquidity measures, such as balance sheet ratios. Static balance sheet ratios are point-in-time indicators, but not reliable risk measures. Cash flow or funding GAP[7] reports are excellent risk tools, when prepared properly. ALM models can be helpful in that regard. The following lines will shed more light on cash flow gaps.

Cash inflows from:

- Operations
- Maturing assets
- Early assets retirement
- Assets pledged/sales
- Credit draw-down
- Off balance sheet activities

[7] GAP reports will be used to measure risk to net interest income arising from the repricing of assets and liabilities over time. While the GAP reports will be used to indicate the timing and sources of interest rate risk, it is understood that maintaining a balanced position for all time periods in a GAP report does not ensure immunity from interest rate risk. The Bank will take into account the following limitations of GAP reporting:

1. Interest rates on assets and liabilities do not always move in the same magnitude or velocity
2. Significant risk may be hidden in the repricing time frames of the GAP report
3. Option features of many deposit instruments and loans are not readily determinable
4. Exposures arising from new business generally are not captured.
5. Repriceable investments/funds may roll off at rates significantly different from current rates

Less
Cash outflows due to:

- Operations
- Maturing liabilities
- Early liabilities retirement
- Off balance sheet activities

= Net funding Requirement (NFR)
Figure 2.3 Calculation of the NFR

2.4. ALM and liquidity gap

Asset Liability Management (ALM) is in charge of managing the Interest Rate Risk[8] (IRR) and the liquidity of the bank. It focuses essentially on the commercial banking domain. In the following line, we will focus mainly on the liquidity management and will not elaborate on IRR in order not to divert from our objective.

2.4.1. Liquidity gap and balance sheet analysis

Asset–liability gaps are important in the effective management of liquidity risk (and aspects of market risk). A firm might have stable funding and/or asset liquidity sources, but it must still manage the gap between the two if it is to create a robust liquidity plan. Firms often measure cash flow mismatches because any gap that leads to a funding deficit will place demands on the firm's liquidity program; it is therefore important to consider just how severe such deficits can become and whether cash cushions should be accumulated in advance. Equally, any mismatch that creates a surplus can be utilized to reinforce the liquidity buffer in anticipation of future deficits or emergencies. Liquidity gaps are differences between the outstanding balances of assets and liabilities, or between their changes over time.

[8] It is the policy of the Bank to measure and manage its rate sensitivity position to ensure the long run earning power of the bank. In addressing this challenge, the ratios of rate sensitive assets
to rate sensitive liabilities and gap to equity, as well as gap to total assets will be reviewed based on 30, 60, 90, 180, and 365-day, 1-2 year, and greater than 2 year definitions. More importantly, however, special emphasis is to be placed on the change in net interest income that will result from possible fluctuations in interest rates.

2.4.2. Maturities and volumes matches

Cash matching is a fundamental notion for the management of liquidity and interest rate risks. The company assets should be matching with its liabilities. For the bank the volume of deposits should match with that of loans. Mismatching asset and liability is crucial especially with the foreign currency, because any deviation from the cash matching benchmark generates interest rate risk, unless the bank had set up hedges to minimize losses. We will talk about it again when we shall talk about solution to GTBank constraints in the next chapter.

For banks and securities firms, the gap ratio mentioned above can be extended to each individual maturity/duration bucket to provide a more meaningful assessment of cash surpluses/deficits arising from mismatches.

Table 2.3 reflects a matrix of cash sources and uses against a time horizon based on simple maturity or more precise durations. The final goal is to measure the net cash balance requiring funding in the near future. The granularity of time horizons must be considered carefully.

Cash flow Sources/uses	**1 day**	**2 day**	**3 day**	**4 day**	**5 day**	**2 week**	**3 week**	**1 month**	**2 month**	**3 month**
Assets										
-										
-										
-										
Liabilities										
-										
-										
-										
Off-balance										
-										
NFR										

Table **2.3 Cash flow sources/uses by maturity bucket or duration**

2.4.3. Benefit of matching

The benefits of matching are many. First, with cash matching, liquidity gaps are equal to zero. Secondly, matching both cash and interest rate locks in the interest income. Therefore, the margins between the interest rate paid and received are maintained despise the variation of interest rate.

In banking cash matching is only a reference as deposits do not match loans. Both depend on the customers' behaviour. However, it is possible to structure the financial debt in order to resolve the assets' time and volume profile.

2.5. Controlling liquidity risk

The ALCO should be the operating arm of the board on all matters relating to liquidity. It should include senior representatives from relevant disciplines, including business units, finance, treasury, and risk management.

The duties of the executive team and the ALCO must be very clearly defined, and the audit committee should regularly review their functions. They must have a specific plan of action, and an efficient financial and human resource. The duties and responsibilities of each member should be clearly stated in a document signed.

2.5.1. Liquidity risk controls and limits

Liquidity[9] procedures give details on how to execute the liquidity policy. An efficient set of procedures, based on limit controls and other safeguards, constrains exposures, reduces surprises and errors, and build up a valuable audit trail.

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[9] Liquidity is measured by our ability to accommodate decreases in deposits and other purchased liabilities, and fund increases in assets. In assessing the bank's liquidity position, consideration shall be given to: (1) present and anticipated asset quality (2) present and future earnings capacity (3) historical funding requirements (4) current liquidity position (5) anticipated future funding needs, and (6) sources of funds. The committee will monitor the Bank's liquidity position by reviewing the following measures:

1. Loans/Deposits Less than _____ %
2. Investments/Deposits Less than _____ %
3. Loans/capital Less than _____ %
4. Net Fed Funds Purchased/Loans Less than _____ %
5. Dependency ratio Less than _____ %

Controls can be applied to minimize liquidity risk in the following areas:

- asset liquidity controls
- funding liquidity controls
- off-balance sheet liquidity controls

Liquid and fixed asset limits

Asset liquidity should be limited. A percentage of each item in the Asset side should be put in place to monitor and control the excess or the deficit. In terms of concentration the corporate should have ex ante ratio limit. The maturities should be under controlled. The liquid assets should have different maturities so that the cash is always available. A certain amount of best credit quality must be maintained. The plan should set a target of a number of credit qualities the bank should try to obtain. The plan ought to put limits on complex financial product. These products are not available in our country but, in the future when our local banks will invest in the trading market of future, derivative, gold market…they should apply some limits.

The age of our assets should be under control if the company doesn't want to get a great number of outdated or obsolete assets which will be impossible to exchange or sell in the market. Interesting assets must be in the assets side to create interest from market at all time.

There must be limits to the collateral pledged. Since pledging assets for cash is often preferable to total disposal, a firm must avoid a situation where all of its assets have been pledged in support of other funding facilities. A limit structure can cap the maximum amount of assets that can be pledged, in support of funding.

Funding liquidity limits

The establishment of maximum amounts that can be drawn from any deposit, loan, or bond markets is fundamental. Limits can be established in percentage terms or in value.

The value or percentage of the funding portfolio can be limited by product type. A composition can be for example: deposit 20% capital50%, investors20, debt 10%.

The maturity of liabilities in the different contracts must be constrained so that a firm does not face an excessive repayment or rollover burden in a point in time. Limits on funding maturities (durations) should be considered in relation with asset maturities.

Limits that constrain the type of contingent funding commitment drawn from the loan markets represent another form of control. It is essential for a firm relying on bank lines to be confident that facilities will be available precisely when they are needed; this means explicitly limiting or

minimizing those that might not be available under stress situation. Advised facilities can be withdrawn at the first instance of internal or external difficulty, meaning a source of funding will be lost. The firm should be using them hardly ever. A greater amount of a firm's diversified loan program should be based committed facilities. They are more binding than Advised facility and are more robust and dependable.

Off-balance sheet controls

Since loan participations, revolving credit agreements, letters of credit, leases and guarantees absorb cash, they must be explicitly controlled. This can be done through limits on forward commitments and contingencies.

2.5.2. Other safeguards

Firms can use other tools to manage their liquidity exposures. The most useful are: reserves, , penalties, and external relationship management.

Reserves are certainly the most famous solution to preserve a firm against a liquidity risk. A company might decide to put in reserve a percentage of its income while bank can put in reserve at central bank a percentage of total deposit.

Penalties serve as deterrent to the staff or team for exceeding the set limits or control.

Smoothening the relationship with the lenders and investors is key to solid business. Getting them informed and showing them as important partners are crucial to increase their confidence in the business.

2.5.3. Liquidity risk monitoring

The controls and limits presented above are only possible with suitable monitoring. Indeed, there is no point in attempting to manage liquidity risk if no mechanisms are not in place to monitor and report on the results. The ALCO will be in charge of distributing the monitoring roles but most of them is concentrated in the Treasury department.

Proper technological infrastructure is necessary to monitor and report liquidity risks especially in large organization. Liquidity risks that can appear across business, product, legal, and/or geographic divisions must be captured within a reliable data management and technology setting. This requires the aptitude to use that information to gauge risks and plan stress scenarios. Specific computerized programs are needed to report on ledger balances, cash inflows and outflows, loans, placements, and other funding activity.

Part 2: Guaranty Trust bank liquidity management: constraints and solutions.

Chapitre 3 : The Basel Committee, the Central Bank of the Gambia and Guaranty Trust bank on liquidity risk management.

The importance of liquidity risk management cannot be overemphasized. Liquidity crisis is confirmed to be the leading factor of bank bankruptcy and in a macro-economic level the main reason of financial crisis. The Basel committee concurred to strengthen the bank liquidity management by putting in place the "principle for sound liquidity risk management and supervision" as well as the counter cyclical buffer.

Bank around the world are encouraged to apply those principles. The CBG in its governing principle, written in the CBG Act 2005, can intervene to solve any unusual movement in the liquidity of the country and must ensure supervision of the banks. Based on its regulations banks must maintain certain ratio in term of deposit, and send the periodic returns as slated.

The GTBank treasury department complies with the CBG rules and has even put in place an ALM unit to be more proactive.

3.1. The Basel Committee on liquidity risk

The Basel accords Basel I, Basel II, Basel III) are formulated in response to the shortcomings in the financial regulations observed so far. The members of the Basel Committee on Banking Supervision agreed to put in place Basel III in 2010-11 to standardize global regulation with respect to capital adequacy[10], stress testing[11] and market liquidity.

3.1.1. Basel III on liquidity risk

Basel III reinforces bank capital requirement and bring in new regulatory requirements on bank liquidity. For the liquidity, the Basel Committee has issued the "principles for sound liquidity risk management and supervision".

The principles underscore the importance of establishing a robust liquidity risk management framework that is well integrated into the bank-wide risk management process. The First

[10] The Bank will maintain a primary capital to asset ratio of not less than 7% and an equity capital to asset ratio of not less than 6%. Further, the ALCO Committee will ensure that the Bank's capital levels based on Risk-Based Capital guidelines will be maintained at a minimum of 10% of risk-weighted assets. The Committee shall use its best efforts to ensure that the Bank's Total Risk Based Capital ratio, Tier 1 Risk Based Capital ratio and Tier 1 Leverage Ratio are maintained at levels which will afford the Bank "Well Capitalized" status.

[11] The focus of simulation is to measure risk to net income by projecting the future composition of the bank and applying different interest rate scenarios. Simulation modeling will be incorporated to run "what if" analyses to determine the effect of different strategies on the bank's risk profile and profitability.
In using simulation, the Bank will consider the varying interest rate spreads (Basis Risk) between deposits, CD rates, loans, investments, etc. The impact of prepayment rates on loans and mortgage securities, interest rate caps and floors, and other options will also be taken into account. Further, management will carefully assess and document the assumptions underlying the simulations including anticipated management reaction to a rise or decline in interest rates or changes in the yield curve.
While simulation can adequately assess short term (1-2 years) interest rate risk, the Bank will not rely on this analysis to capture and isolate the risks associated with longer term repricing imbalances. Subjective analysis of the balance sheet and duration analysis of the investment portfolio will be utilized to evaluate long term fixed-rate positions.

objective of this guidance is to boost up resilience of banks to liquidity difficulties. Among other things, the principles try to improve the standards in the following areas:

- governance of liquidity risk tolerance;
- liquidity risk measurement;
- stress tests resulting to a development of effective contingency funding plans;
- strong management of intraday liquidity risks and collateral positions;
- maintenance of a robust cushion of unencumbered, high quality liquid assets to be in a position to survive prolonged periods of liquidity pressure;
- regular public disclosures of bank's liquidity risk profile and management;
- the need for supervisors to intervene in a timely manner to address deficiencies and the importance of communication with other supervisors and public authorities, both within and across national borders.

3.1.2. The counter cyclical buffer

Banks are very sensitive to liquidity crises, a liquidity pressure caused by massive withdrawal can result in continuous slippage. To alleviate or counter this phenomenon Basel III introduces among other the counter cyclical buffer. Mainly, it is a provision suggested to be 2.5% every year to add up to the capital requirement. Knowing that capital is the primary protection against losses, in the long run, the counter cyclical buffer will strengthen the resilience of the banking sector. The counter cyclical buffer will:

- diminish excessive reliance on the minimum capital requirement;
- encourage more forward looking provisions;
- conserve strong capital to build buffers at individual banks and the banking sector in general that can be used in financial stress periods; and protect the banking sector against credit growth collapse and lack of liquidity.

3.2. CBG regulation on liquidity risk

The Central bank regulation is based on the provisions of the CBG Act 2005. It should be noted that since then many adjustments had been made but it still remains fundamental text. Therefore, in our study, we refer to it when talking about CBG regulation.

According to the Act, the main function of the CBG is to achieve and maintain price and exchange stability, promote a sound financial system and contribute to the achievement and maintenance of sustainable economic development. In order not to deviate from our topic let us consider what are the provisions concerning liquidity management. There are general directives with respect to macro-economic level and specific provisions for the bank and financial institutions supervision.

3.2.1. Banking act and liquidity risk

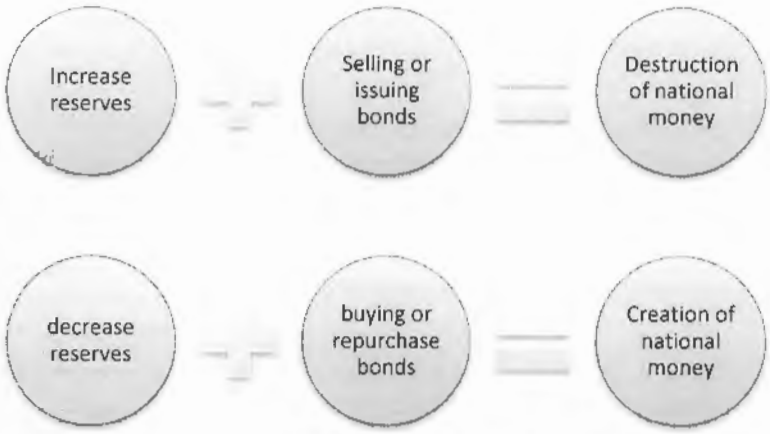
The CBG Act 2005 gives mandate to the CBG to control the movement of supply of money in other words the liquidity of the country. This can be done by controlling the balance of payment of the country to ensure that the country has the potential to export and have a positive balance of payment.

In an open economy the creation or the destruction of money results from the change in the net foreign assets and in the domestic credit to public (net) and private sectors.

(Source: Gilles Morisson, Macro-economic and Macro-financial Equilibrium)

Figure 3.1 National Money stock

At the risk of perpetuating disequilibrium the central bank can neutralize the expansive effect on the money supply by increasing reserves through selling or issuing bonds in the interbank money market. It can ease or cancel the depressive effect on the money supply by decreasing reserves through buying or repurchasing bonds.



(Source: Gilles Morisson, Macro-economic and Macro-financial Equilibrium)

Figure 3.2 Monetary policy

CBG exercises monetary and fiscal policies to control inflation, encourage investments or promote savings. Chapter 62 of CBG Act 2005 stipulates that CBG must monitor banks and financial institutions. Chapter 63 elaborates more on the need for the CBG to ensure the maintenance of required reserves against deposit and other similar liabilities. The required reserve must be maintained in cash holding with financial institution or in the current account with CBG or both.

These and other prescriptions issued by CBG are subject to changes. However, presently banks must adhere to a 12% Cash Reserve Requirement and must meet the present Statutory Capital which is 200 million Dalasis (equivalent to 6.67 million USD). Bank that fails to meet the required reserves faces a penal interest of 5% above CBG rate as long as the deficiency continues. However, CBG will apply interest paid at such rate whenever it thinks fit.

3.2.2. The Cash Reserves Requirement (CRR)

The Cash Reserve Requirement is one of the CBG return that bank must submit every week. The actual CRR is 12%. This means that 12% of the weekly deposits must be kept in reserve.
From the 12%, 80% must be in the CBG account of the bank while 20% is held in the bank vault.
As an example, let's assume that 5 million of deposits are registered in the bank this week.
It means that the CRR equals to:
CRR= 5MM *12%=600,000
CBG account= 600,000*80%=480,000

Bank Vault= 600,000*20%=120,000

Apart from the CRR, there are many other central bank regulatory requirements vital to liquidity management, like:

- the consolidated interim Profit and loss Statement(quarterly),
- the interim change in reserves accounts and allowances for credit statement(quarterly),
- the capital adequacy ratio of 10% (quarterly),
- The statement of liquid assets (biweekly),

The liquid ratio which is the total liquid asset over the total deposit liability should not be less than 30% for two consecutive periods. Otherwise penalty will be applied.

Regulators are central in providing sound liquidity in the macroeconomic level. Banks should adjust their interest according to the CBG prime rates and abide by the regulation put in place to promote prudential practice. More controls will be even welcomed to improve the resilience of the banks. Ratios like: solvency ratio, portfolio structure ratio, borrowing ratio as well as the obligation to create an ALCO in each bank will further strengthen the banking system. In trying to do so, CBG will need to computerize the reporting system. Banks will only be required to insert data in a CD or in a webpage and sent it to CBG. The report processing can be automated and consequently time and resource will be spared. Problem of staff to cover central bank on site visit will be solved ultimately.

3.3. GTBank ALM and Liquidity management

GTBank has an ALM unit in the treasury department. It is a new unit as it came into existence in 2008. The ALM and Financial Institution group manage the liquidity. The group is in constant contacts with others banks, central bank of the Gambia and international banks. They monitor various Gtbank accounts in local banks as well as in international banks.

Furthermore, the group is responsible of buying and selling foreign currency locally and internationally (immediate value, shipment, swaps). They are aware of the change of position (short or long) of the bank and based on that they can make projections for the following weeks or days.

From the database of the bank, the group knows exactly how much amount is needed to fulfil the CBG's CRR requirement.

3.3.1. Structure

Treasury and Financial Institutions group is the most important unit of GTBank because of the income they generates but also because of their central position in the management of liquidity risk and management. The group frequently realizes in terms of profit, one third of the bank total, due to its marketing function of dealing with financial institutions and being also the hub for any currency trading.

The treasury Department is composed of two groups: ALM and Financial Institution group and the currency trading and Financial Institution retail group. While the Currency and Financial Institution retail group deals with the trading of currency ALM and Financial Institution group treats with local banks central bank as well as foreign banks.

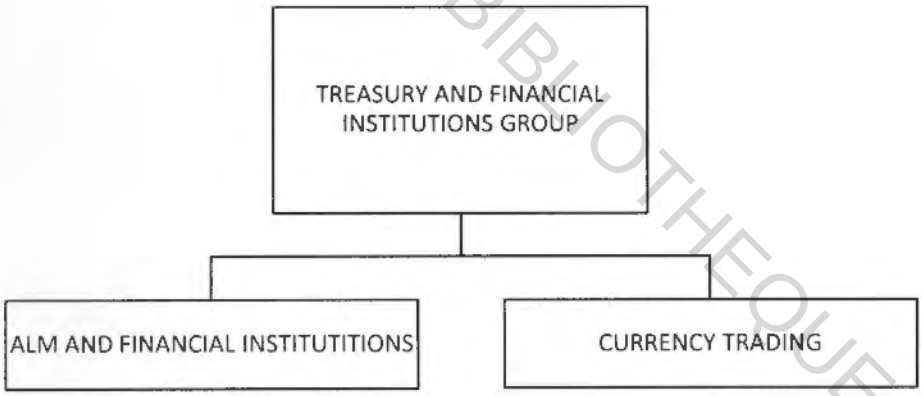


Figure 3.3 Composition of treasury management

The later monitor the position of the bank and make projections in terms of transactions. An automated template should be developed to forecast projections more accurately using historical data as well as computerized calculations. This is in fact, the wish of the present treasurer. A precise and concise projection reduces the likelihood of making wrong budget. It will also enable the team to forecast on the bank asset and liability and create a match. Thus, cost of borrowing

in the interbank market will drop significantly. The template will also allow the group to set limits and control them.

Electronic forms should be sent to the marketing teams who will fill in their request and return them to treasury. Treasury will match those one with the historical data to find the average. Then it will he a matter of matching the assets and the liabilities efficiently.

3.3.2. Mechanism

As the function of ALM is to deal with Central bank, it must ensure to send daily report to CBG notifying them on their liquidity position as well as their CRR. The main objective of the unit is to fulfil regulatory requirement and to meet operational needs.

Fulfilment of regulatory requirement

One of the most important CBG return to control liquidity is the CRR (Cash Requirement Ratio) which was previously 8 % but now it is 12 % of the total deposits made by customers.

From the 12%, 80 % should be kept in central bank and 20% in the bank vault at all time. As a result the bank can only use 88% of it deposit to finance loans. Failure to meet this requirement results in penalties. The charge will depend on the amount concern and the time of violation.

Operational needs

As it is a necessity to meet regulatory and operational requirements, ALM has to ensure proper liquidity management by projecting for the following week. Here again comes the necessity of the template talked about previously. As for now, ALM uses previous week average to project the current week with some transactions that were luckily spotted. The projection will be distorted as some unexpected events may appear. In addition, ALM caters for the operational needs that come up as a result of withdrawal and drawdown from facilities.

3.4. GTBank sources of liquidity

Just like, any other corporate, GTbank has its source of liquidity in the asset side of the balance sheet as well as in the liability side. As bank has a greater percentage of its assets in liquid form,

it is likely to have a larger amount of short-term liabilities, and contingencies, and must therefore be even more acutely aware of its liquidity position. Different products are offered by GTBank and each of them can present some liquidity risk.

3.4.1. Source of asset liquidity

As we noted earlier the excess of funds is invested in Treasury Bills, Banker's Acceptance, Usances (loan in foreign currency), Placements (trading in foreign currency), Time/Term loan, Overdraft, Interbank (asset), and Lease Finance.

Reserves in the CBG are primary source of asset liquidity in case of liquidity constraints.

TB (Treasury Bills) are one of the must secure investment. However, the bond and security market is not well developed. The bank could have discounted them to meet urgent payment or to alleviate liquidity pressures.

BA (Bank Acceptance) assets is another asset of the bank but they cannot be resold or pledged in the market. It must be recalled that our market is not very liquid. Certain products cannot be discounted in the market because they are not popular.

Usances (loan in foreign currency) are excellent product for exporters. They generate lots of income for the bank as exchange income and interest paid will be collected. But, like the previous in case of liquidity problem, GTBank won't be able to resell them.

Placements (trading in foreign currency/overnight placement) can be done only abroad. The bank can use its deposits in corresponding bank to invest in FX. This requires that the bank masters the trading gain or loss parameters.

Time/Term loans represent important portion of the asset total. Therefore, they must be efficiently monitored and controlled, knowing that the bank cannot sell them to a factoring firm and that they can turn to be bad loans and losses.

Overdraft facilities are very short loans. Only big customer requesting for huge withdrawal can create liquidity pressure. In that case the branches might have a problem of float (cash floating) to meet payment. Unsecure overdraft facilities are hotcake for bank brigands (people fund of taking loans and refusing to pay). The bank cannot sell or pledge this asset neither.

Interbank (asset) is "hot money" and contributes to the financial sector stability as bank support each other. The risk of default is also very minimal. In case of liquidity pressure the bank can go to the money market (interbank liability) to secure a fast loan for 1 to 30 days.

3.4.2. Source of liability liquidity

Generally, banks collect deposits which are liabilities and give the money to creditors as loans which constitute assets. In our environment, we have seen in the previous section that most of the bank assets cannot be sold to meet urgent disbursement. Therefore, it is critical to manage efficiently source of funding.

BA (Bank Acceptance) liabilities could be an interesting source of funding. But, the bank must ensure that it has exhausted all the sources of cheap fund before turning to BA. The best practice is to match maturities and volumes but it is very difficult to achieve the goal of matching.

FX deposit (call account) Businesses are most of time in need of foreign currency. Call accounts remain limited in volume because the uses are more than the sources. The banks and the CBG are avoiding engaging to much in it because of the instable nature of FX trading. The banks want to minimize any loss due to exchange rate risk. However this is without counting on the enormous income generated by the FX exchange. Furthermore hedging strategy can be adapted.

Interbank (liability/taking), as stated previously, can provide "hot money" to fill up a liquidity gap.

Fixed deposit and savings are crucial for banks. Savings generate cheap funds for the bank. All deposits cannot be demanded simultaneously. Theoretically, there will be always some float. The bank should continuously look for these types of funds in order to expand.

Current accounts aren't stable source of money but they create float for the bank for its daily transactions. They match with overdrafts.

The other sources of liquidity are off-balance sheet activities: letter of credit, bond guaranty, bank guaranty, advance payment guaranty, shipment, and international money transfer. They are not in the normal balance sheet of bank and that's why they are called off-balance sheet.

Nowadays, banks live by those products because lots of incomes are obtained from them. As an example, GTBank collected 70% of its revenue from off-balance sheet items fees.
Meanwhile, they can create serious liquidity pressure, and consequently enter the balance sheet. Besides, none of them can be pledged or sold to generate liquidity in case of pressing need. Proper scrutiny of the contract and transaction are needed to avoid propelling them into the bank liability or loss accounts.

3.5. GTBank liquidity risk problems and solutions

After we have seen the different items influencing the bank liquidity in the balance sheet, especially the one that can generate substantial liquidity stress in case of difficulty, we will see how the bank is managing the liquidity. Most specifically we will dwell in the ALM structure of the bank to see what is done? and what could be done?

3.5.1. Management techniques

GTBank has put in place different techniques to monitor the liquidity risk of the bank. A sound liquidity management will improve the bank profitability and sustainability. The management of asset and liabilities is the spinal cord of the bank.

Management of the balance sheet

In managing the balance sheet the bank uses, mainly:

- Funding gap (control loans volumes and maturities to match fixed deposits volumes and maturities)

Management of Foreign Currency

Foreign currency is at the heart of Gambia banking system because if the bank must have enough FX to be able to sell dollars to businesses, finance their LC and transfer their money abroad. Otherwise, businesses will go to another bank. The bank tries to have an appropriate answer to

the unpredictable foreign currency market by establishing some instruments to control the position:

- Currency position (difference between FX sales and FX purchases)
- Revaluation gain or loss (Using the mid rate to revaluate the currency position)

Management of requirements (CBG Returns, open position limits)

- Projection table (The table monitors: total deposit , the global CRR, the CBG CRR, the Net Clearing, Interbank placement, interbank taking, treasury bill invested, TB invested from Primary Dealers, Treasury Bills rediscounted, TB maturing, TB from Primary Dealers maturing... among others)
- Open position limits (25% of core capital of the bank should not be in foreign currency trading)

Management of Interest rate

- CBG prime lending rate (directive rate giving by CBG from it the bank add a margin)
- ALMAC (Asset and Liability Management Committee is another name like ALCO)

3.5.2. Assessment

ALCO Team

A stronger Asset and liability Committee should be put in place. In the next chapter we see in depth what the requisite for an efficient ALCO team are? In this regard, the ALCO will help to limit, control and monitor liquidity risk.

Trading Room

ALCO will work on the foreign currency risk appetite and can even put in place a trading room. It will be an opportunity to have fast and voluminous FX trading. It will also give us a proper

view of the world market options to buy or sell any financial product. Finally the trading room can be utilized to buy and sell companies' shares. This activity will generate income for us and liquidity for the companies.

Increasing foreign currency supply

There is insufficient FX to meet the need of our customer and this is a loss of opportunity. The bank can manage to have FX loan from its parent company or create a line with its corresponding banks or any offshore bank. Hedging techniques are not foster right now. But if applied, they possibly will reduce risks (hedge Dollars against Euros = 2 opposite currencies). Furthermore there is no proper budgeting based on marketing teams projection and previous year request (historical data) to forecast the FX demand for letter of credit, import payments, and shipment. In conclusion, the bank treasury is risk avert, it is leaving tremendous opportunities to go unexploited. Knowing that banking is a business of taking risk, risk appetite must be put forward to increase bank profitability but needs to be follow and manage as well.

Cheap Funds

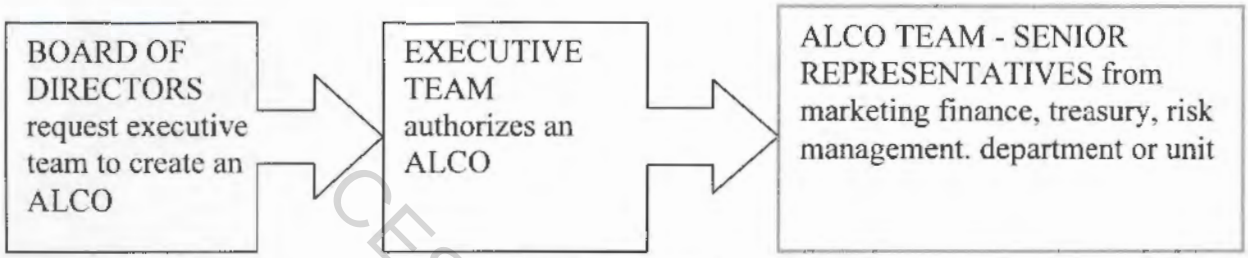
Bank-assurance is an innovating product that enables banks to have supplementary cheap funds and is also an opportunity to diversify their products.

Chapitre 4 : The ALCO and LCMT challenge

Having seen all the implications of a sound liquidity management in a banking system, we deem it necessary to revisit the basis of a proper control. Without a doubt, putting in place a committee in charge of liquidity risks management is necessary. The ALCO will put limits and controls in place, assign responsibilities to specific staff and monitor results. In times of serious crisis, a Liquidity Crisis Management Team (LCMT) will be formed, according to principle set ex ante.

4.1. ALCO formation and perspective

Creating an effective risk governance structure is the first thing to do if the bank wants to control liquidity. The decision to create an ALCO must come from the Board of Directors.



(Source: author's chart)

Figure 4.1 Process of ALCO formation

Asset liability committee (ALCO) oversees the implementation of liquidity risk management[12] process. ALCO is the operating arm of the board on all matters relating to liquidity.

Treasury duty is to manage daily balance sheet funding and short-term liquidity risks, while ALCO function is long-term liquidity risks. Therefore close cooperation must be fostered between the two groups. To avoid conflict, the duties of the executive team and the ALCO must be clearly specified.

[12] The assets and liabilities shall be managed to attempt to achieve the following minimum objectives:

1. A return on assets above ____ %.
2. A return on equity above ____ %.
3. An equity capital-to-assets ratio above ____ %.
4. A risk-based capital ratio of ____ %.

4.1.1. Responsibilities[13]

ALCO should be responsible for:

- defining the firm's liquidity risk mandate
- developing a business and liquidity risk strategy based on the liquidity risk mandate
- creating a liquidity crisis management program
- putting in place appropriate risk measures
- evaluating the liquidity impact of new products
- delegating duties and authorities related to the management of liquidity risk to the business units or staff
- reviewing for the board and senior executives the status of liquidity risks and recommending periodic adjustments

As part of the management group, senior executives should be responsible for:

- ensuring prudent daily management of the firm's liquidity process,
- allocating and directing resources in support of a sound liquidity
- making certain that new products, strategies, and business lines with liquidity risk implications are submitted to the liquidity committee for deliberation
- testing the liquidity crisis management program and invoking and directing it when needed.

[13] **Duties**

At its quarterly meeting the ALCO shall review the following:

1. Local and national economic forecasts 2. Interest rate forecasts and spreads including a consensus interest rate forecast for the Bank developed by Bank management 3. Internal cost of funds (recent pricing)

4. Mismatches in the balance sheet 5. Year-to-date operating results 6. Anticipated funding needs

7. Anticipated loan demands 8. Liquidity position 9. Maturity distribution of certificates of deposit of e.g. $100,000

10. (GAP) Rate Sensitivity measures 11. Net Interest Margin/Interest Rate Risk Measures 12. Simulation

13. Capital Positions 14. Ratio of loan loss reserves to outstanding risk loans 15. Tax position 16. Investment portfolio 17. Current loan investment and funding strategies 18. An explanation of any known exceptions to this policy as well as an action plan and timetable to bring the bank into compliance with such policy limits.

4.1.2. Execution

In general, it is good to have some degree of local/business flexibility is important, as it permits those with the best knowledge of a region, market, or product to take appropriate actions in managing daily liquidity needs.

Also, a firm's risk governance structure must ensure that the liquidity risk management process is robust, well designed, and capable of minimizing liquidity induced problems. If the ALCO team efficiently synchronizes their efforts the bank will certainly gain in terms of liquidity and the unexpected liquidity pressures will he dealt more without difficulty.

4.2. Putting in place an LCMT

In normal conditions the bank will be able to rely on its mandate, policies and limits to control the liquidity exposure inherent to its transactions. Nonetheless, there may still be instances when endogenous or exogenous factors overcome the firm, deepening greater financial problems and even creating of financial distress. In such event the bank must immediately put into operation a liquidity crisis management program. A good program will allow the bank to go beyond the crisis stage and normalize its operations avoiding further complication, spirals and insolvency.

4.2.1. Scope and focus

Although liquidity crisis management can differ from one bank to the other, crisis programs typically have the same end goals: ensuring sufficiency of cash, and limiting reputational and economic damage so that operations can be regularized rapidly. In most cases crisis program focuses on three broad areas:

- ex ante market access;
- defensive measures;
- communications.

In practice, a bank may concentrate authority in a liquidity crisis management team (LCMT), comprised of the:

- CEO (chief executive officer) or COO (chief financial officer)
- CFO (chief financial officer)
- treasurer

- head of risk management
- head of operations/settlements
- Alco team

This small team should be able to meet quickly, and coordinate all necessary actions. Certainly, the LCMT must arrange time-table that addresses in order of priority, the specific tasks that need to be performed:

- those that must be completed within 24;
- those that must be completed within 48 hour;
- those that must be completed within one week;
- those that must be completed within two weeks, and so forth.

With information on anticipated cash flows in hand, a prioritized action plan can be developed and put into motion. An example might be as follows:

1. Modifying liabilities (such as drawing down bank lines, changing maturities).
2. Suspending non-essential cash outflows.
3. Pledging assets from the liquidity warehouse.
4. Neutralizing other financial risks through hedging.
5. Selling marketable assets from the liquidity warehouse (receivable, TB, and inventory).
6. Reducing other assets (for example, slowing new business and shrinking the balance sheet).
8. Selling hold-to-maturity investments, fixed assets, and business units.

4.2.2. Communication

Negative information can be extremely damaging for the bank and even worsen a negative situation, meaning external and internal communications are vital.

- **External communications**

From an external viewpoint, stakeholders need to be kept apprised of developing events in the bank, its financial condition, and future prospects. This is even more necessary when the spectre

of default is increasing. Consequently, the contingency program must comprise robust and effective external communication instrument. Management must take steps to ensure a regular flow of information to debt and equity investors, lenders, regulators, credit rating agencies, and the financial media at large. Particular attention must be paid to regulatory queries.

- **Internal communications**

Communicating internally is evenly important. Staff and managers that drive a firm's business do not want to learn about potential problems through rumours. They must be given relevant information about the state of affairs during the crisis period. Communication must flow towards management as well. Managers operating business units or marketing unit often have valuable and unique information regarding the bank's condition in their vested areas. Mechanism like daily conference calls or message (using social media, intranet) ensure that the flow of information is timely and efficient.

4.3. Defensive measures

To cope with a liquidity crisis first of all the management should be recentralized. Then other measure can help to reduce the pressure these techniques call for a change in the management of the assets of the bank as well as its liabilities.

4.3.1. Recentralization

The authority is recentralized in time of crisis management mode. All delegated authorities to manage a department, product, or region; should be temporarily annulled so that actions can be properly coordinated from the center. They can still be part of the crisis management process, as they are likely to be intimately familiar with certain questions that can impact the firm's liquidity. But their responsibility must temporarily be limited to one of communication and guidance rather than action or decision making.

4.3.2. Funding and asset management

- **Funding management**

The LCMT turns to the funding program as a priority; because the liability portfolio always provides the first line of defence in generating cash (apart from cash flows generated by operations). Crisis-based funding management centers on:

- prioritizing draw-downs,
- extending funding maturities, and
- suspending non-essential cash flows.

Prioritizing funding draw-downs: The bank or the firm must determine which facilities to access, when, and in what amount, in order to secure the cash it needs.

Extending liability maturities means replacing short-term, credit and market sensitive liabilities with longer term funding.

Suspending non essential cash flows without damaging enterprise value or reputation is another defensive measure. During the pre-crisis planning stage, the LCMT should obtain information on discretionary payments that can safely be eliminated, postponed, or reduced in stress period.

- **Asset management**

Despite that the bank or the firm in is in a crisis mode, it still needs to fund its assets in order to continue operation. Therefore, the program must centre on opportunities to decrease the amount of assets requiring funding: that is, reducing the balance sheet.

While liquid assets that are coming due can be allowed to roll off, sold at carrying value, or pledged against new funding, and are thus unlikely to present a problem, less liquid assets that are only marginally productive might represent an unnecessary burden asset. A company should identify, on an ex ante basis, assets that can be sold during a crisis phase in order to relieve associated financing pressure. Assets can be reacquired once the crisis has passed and the firm is in a better position to finance its portfolio of less liquid, or illiquid, assets.

The price of asset in the bank especially the FX, bond and marketable securities is subject to interest rate, exchange rate, credit and market risks. Crisis management program must neutralize, or minimize those risks, reducing the chance that the bank liquidity profile be further pressured

in the event of new or incremental risk challenges. The LCMT must hedge the different risk by offsetting transactions or derivatives in order to ease cash flow pressures.

4.4. Invoking and terminating the program

The LCMT as we have said earlier is set when liquidity crisis appear. Certain indicators must trigger its formation. Later, when the program has been successfully implemented, management should terminate the LCTM program.

4.4.1. Invoking the program

The bank or firm must identify measures that reflect changing liquidity circumstances; these should be supplemented by evidence from the marketplace and management's interpretation of such facts (such as difficulties with rollovers, widening spreads, reluctance by lenders to renew long-term facilities, increased reliance on brokers to source funds). Measures should be agreed in advance by executives and the financial controllers responsible for compiling statistics, and should form part of the regular monitoring process. When the objective measures are triggered, or reach pre-defined warning thresholds, the LCMT must quickly obtain additional qualitative information from the marketplace on the nature of the liquidity disorder or pressure. The combination of objective and subjective inputs should be satisfactory for authorized parties to determine the need to invoke the program. It is important that the process be sufficiently automated so that response can be quick, but not so mechanical, or full of partisanship, which it is subject to misinterpretation or misuse.

4.4.2. Terminating the program

Ex ante measures developed by the LCMT should be use as indicators that the firm has returned to a normal operating condition. Therefore, it can safely hand over duties back to the managers, restore business, refill the liquidity warehouse, redesign funding maturities, and so forth. The procedure can again consist of objective measurement, such as a return to the liquidity risk measures that existed before the crisis, accompanied with subjective opinions and analysis from market sources, investors, and lenders.

Most of the time it take one or two quarters to regain; lenders and investors confidence as reflected through credit spread movements, ease of rollovers, and access to fresh funds. It is

unlikely to occur in a matter of days or weeks, particularly if the firm has been through a difficult episode.

Once terminated, the ALCO and internal/external auditors should examine the crisis program in detail to find out whether there is any weakness or areas to improve. Necessary adjustment should be made immediately after the termination of the program.

4.5. Summary of the best practice

This last section is a kind of summary of the best practice. The micro role focuses on the key principles cutting across all corporate liquidity management. The macro role addresses to macroeconomic authorities and regulators.

4.5.1. What banks can do

Processes that are effective for one company can be of limited use to another, those that are best suited for normal market conditions can be unsuitable for a crisis, and so forth. Hence, the theoretical foundation for managing liquidity is universal and opened. However, it is possible to develop a micro-level summary of best practices, applicable across firms and market conditions. This summary can be crystallized in 4 points:

- Creating a sound governance framework
- Implementing proper measures and reporting
- Using tactical controls
- Developing a crisis management process

Creating a sound governance framework is a prerequisite to a proper liquidity management. The setting of the ALCO, with its mandate, policy, and limit and monitoring system is vital to any liquidity management.

The ALCO will put in place efficient measurement tools and system to report. Thus, it will be on alert of any significant change of the company liquidity. The committee will use tactical controls and limits to compare its liquidity exposure with its liquidity mandate.

Finally, the ALCO must put in place a crisis management program, tests it often and programming the indicators for its invoking as well as its termination.

4.5.2. What regulators can do

Macro bodies have a role to play in preserving a sound liquidity management in the country or and in the world. Any regime or government that encourages system-wide liquidity helps individual institutions and banks to cope with their own liquidity. The impact is even more important as global asset and funding markets become more intricately related and dependent. The world has become one big market: effective funding, trading, financing, investing, hedging, and speculating require systemic stability.

Unfortunately, some companies may decide to ignore their risk because of market share or profitability. As a result entire sectors may misprice or ignore their risks, which can add to systemic instability.

Accordingly, it is for regulators to consider mechanisms that can help promote and expand stability. The following activities should be carried by regulators:

- conducting regular inspections,
- promoting competition,
- minimizing costs,
- harmonizing accounting treatment,
- reinforcing proper capital allocations, and
- providing selective lender of last resort support.

Regular inspection should be conducted to examine the liquidity practices of institutions. The inspection must focus on measurement, monitoring and management.

Competition must be promoted because more participants will make the bid-offer spreads tightened and volume increased. Thus an additional participant comes in, and like a vicious cycle the market develops.

Reducing the cost of participating in a trading, investment or funding market lead to an increase in financial activities, thus in liquidity.

The best and up-to-date accounting rules should be adopted by the entire participants enabling the regulators and all the stakeholders to have a clear picture of the market and company position.

Lastly, providing a lender of last resort especially for financial institution is without a doubt a necessity, knowing the impact that banking or financial market crisis can have.

Conclusion

Our objective was to reflect on liquidity risk management and to propose a sound management of it to GTBank as a case study. Improving liquidity risk management signifies greater profitability and sustenance for the bank. We look into the tools by focusing first in the sources of liquidity. We discover that the assets have their own source, the liabilities their own spring and the off-balance sheet item also. Then, we realized that there are specific liquidity problems related to each of them.

Several measurements including: liquidity ratios, cash flow gap, matching of volumes and maturities of ALM were examined. Different solutions are put forward in order to overcome liquidity pressures. We come to the conclusion that to manage efficiently liquidity we need to control, limit and monitor all the items in the balance sheet and off-balance sheet.

We have also revisited the Basel committee, the CBG and GTBank on liquidity risk. Focusing on GTBank, and specifically on the balance sheet, we assessed the liquidity risks that are concealed behind each item. Problems are detected and solutions are given. More importantly, we come to the conclusion that GTBank must put in place an ALCO to be more efficient in the management of its liquidity risk. This is in line in fact with the latest best practices that are yet to come in the rules and regulations of CBG.

The bases are given to put in place an ALCO as well as an LTCM. The ALCO will also improve the FX liquidity as it is a recurrent issue in the bank. The FX risk and currency risk will be hedged and profit from International trade will sky rocket.

We would like to stress on certain aspect of liquidity like the one associated with the bond market and the money market. But unfortunately, in The Gambia, those products are not available. So, it is an opportunities for we, financiers and bankers to come forward and initiate a secondary market[14].

Moreover, the discussion could have been centred in bank only but we deliberately incorporate the non-financial aspect of it to be more complete and be able to use this study whether we are in financial institution or in corporate.

[14] It is a market where investors purchase securities or assets from other investors, rather than from issuing companies, Central bank or state. The national exchanges - such as the New York Stock Exchange and the NASDAQ are example of secondary markets.

Finally, we wish to reiterate again that in an era of financial uncertainty, a firm must manage its liquidity diligently, through a combination of internal best practices and external support. CBG and macro-economic authorities must be part of the process. The end goal should be to minimize, or avoid, the likelihood of disrupting access to cash resources which is so vital to the development of the nation. The bank must ultimately seek to maintain its business despite the most severe financial stresses. It must remain intact to continue prospering. Prudent, and proactive, liquidity risk management makes this goal attainable.

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