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DETERMINANTS OF BANK LIQUIDITY IN ZIMBABWEAN COMMERCIAL BANKS (2010-2014)

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DEDICATION

This research is dedicated to my father, Felix Musarurwa, for believing in the girl child.

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I wish to acknowledge the assistance and guidance of my Supervisor, Dr E. Mutenheri, who tirelessly worked with me in carrying out this research. The success of the research is centred on his guidance, inspiration and support. Furthermore, I am indebted to my parents, friends, colleagues and siblings who provided me with prayers, invaluable suggestions and indispensable contributions. Special mention goes to my cheerleaders, my husband, Boyd, our sons, Randal and Ryan without whose support this endeavour would have been futile. Above all, I give all the glory to God for He makes all things beautiful in the fullness of time.

ABSTRACT

Zimbabwe is facing interwoven economic challenges, to the extent that financial distress amongst banks has been rampant owing to perennial liquidity constraints. The research focus was on identifying the determinants of bank liquidity for commercial banks in Zimbabwe during dollarization. The broad categories of determinants of liquidity entail the bank-specific factors and macroeconomic factors. The research adopted an explanatory research design and 16 commercial banks were used as the research subjects. Secondary data was obtained from the audited financial statements of banks, ZIMSTAT, RBZ monthly economic review reports and the monetary policy. Data collected covered the period from 2010 to 2014 and was analyzed using panel data fixed effect regression models through an econometric package, STATA 11.The study revealed a positive relationship between liquidity and bank-specific factors of size of bank and capital adequacy. The research findings also revealed that bank liquidity tends to decrease with higher loan growth, increase in non-performing loans and higher lending rate. The challenges of non-performing loans remain crucial to bank liquidity as it speeds up the deterioration of the advances book thereby increasing illiquid assets. The research recommends that banks adopt enhanced credit risk management techniques to minimize the effect of lending activity on liquidity. To promote prudent lending amongst Zimbabwean banks, the Central Bank is encouraged to enhance bank supervision and speed up the formation of a Credit Reference system. Finally, further research can take into consideration qualitative factors such as management efficiency changes in regulation or political incidences, salary and wages levels as probable determinants of liquidity in addition to the financial ratios.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

The main thrust of this research is to examine determinants of bank liquidity for Zimbabwean commercial banks during dollarization. Main emphasis was on evaluating impact of bank-specific and macro-economic elements on liquidity. An outlay of the research was presented in this chapter, focusing on problem statement, research objectives, statement of hypothesis and study significance.

1.2 Research background

Banks perform an in-between role between sectors which have excess monetary funds that can be utilised by other entities facing shortage of the same (Tesfaye, 2012). By so doing, banks boost the coffers of the country by ensuring that a saving culture is fostered. A bank is said to be liquid when it has the capability to finance growth in loans and fulfil its obligations to depositors and creditors at acceptable costs (BIS, 2008). To do so banks have to keep sufficient liquid assets on their balance sheet and what is more necessary besides maintaining their liquidity is the identification and management of important factors affecting the liquidity position of banks. A bank with adequate liquidity is more sustainable than a bank which is illiquid (Basel Committee, 2009). Consequently

sufficient liquidity is associated with having the desired balance in terms of liquidity and profitability, whereas insignificant liquidity is associated with bankruptcy or stumpy retained earnings in the event of excess liquidity thereby destroying shareholder wealth and other banks due to interbank dependencies.

Banks delicacy is mainly attributed to their intermediary responsibility of matching maturity profiles of deposits to loans (Diamond and Dybvig, 1983).The main purpose of so doing is to ensure that at any given time a bank is able to meet its client's withdrawal requests. The change in maturity tenor of deposits against loans exposes banks to liquidity risk both specific to the individual bank and across the banking sector.However, this delicateness is a basis of effectiveness. The financial intermediation arrangement is resourceful because it reduces banks appetite to provide loans (Diamond and Rajan, 2000). The possibility of a bank run prompts banks to invest in activities that have an attractive return. Therefore, proper adoption of liquidity risk measurement and management techniques will enable the bank to effectively manage its assets and liabilities so as to protect its liquidity levels as well as developing liquidity contingency plans so as to keep their optimal profitability.

Liquidity creation is twofold; firstly it is the prime foundation of commercial prosperity role through banks but also banks key cause of risk as argued by Diamond and Dybvig (1983). Therefore, essentially all business deal or guarantee has liquidity consequences. Retained earnings and bank capital can be negatively affected by risk related to bank

liquidity (Tesfaye, 2012). It becomes highly important that bank`s hold sufficient liquidity in anticipation of imminent demand of financial resources.

The main purpose of commercial banks is availing financial resources to its customers and the bank must be in a healthy liquidity position to do so (Litter, Silber and Udell 2004). Banks are obliged to reimburse depositors funds without causing any unnecessary delays that might inconvenience the client; therefore commercial banks should be able to meet in full all its obligations as they fall due. By enabling banks to meet their financial obligations promptly, Bernstein and Wild (2004), argue that, this instils a sense of confidence in the customers which goes further into building customers loyalty and satisfaction. On the contrary, a poor liquidity status could lead to inability of banks to meet their financial obligations. In the event of such situations, bank customers lose confidence and may engage in a run on the bank. This eventually results to bank failures since poor liquidity positions would further result in the financial institution`s inability to take advantage of favourable discount and other opportunities, lower profitability, delay in collection of interest and principal payments for creditors and damage to customer relationships.

Cernohorsky et al. (2010) indicated that during the international economic crunch several banks wriggled to retain sufficient liquidity. For banks to stay afloat, lender of last resort was expected to provide extraordinary liquidity support. Despite the comprehensive support from the central bank, bank failure and distress was witnessed (Teply, 2011).The

catastrophe revealed that liquidity is very imperative for the operational of the banking sector (Vodova, 2013).

Episodes of bank failures and closures coupled with existence of distressed banks in Zimbabwe continue to dominate in the multi-currency regime due to perennial liquidity constraints that the economy is experiencing. As commented in the World Bank 2014 report (Zimbabwe-overview), weaknesses are intensifying in the Zimbabwean finance industry as evidenced by the liquidity crunch and increase in risk related to lending with low liquidity levels. In 2014, Capital Bank and Interfin Bank were closed by the RBZ whilst during the first quarter of the year 2015, Allied Bank and Afrasia Bank had their banking licences void by the regulator due to chronic liquidity constraints and recapitalisation challenges. Due to the foregoing, liquidity management is a significant area of study. Therefore the researcher`s intention is to ascertain liquidity determinants of Zimbabwean commercial banks during 2010-2014.

1.3 Problem statement

Banking industry in Zimbabwe is going through a tough operational atmosphere prior and during multicurrency regime and this is posing severe threats to the stability of banks and the economy. Zimbabwe`s economy is characterized by interwoven challenges emanating from liquidity shortages, low production levels, growing joblessness in light of company closures and poor assets quality (RBZ,2014). Given these interwoven economic challenges, financial distress has been rampant owing to perennial liquidity constraints; however certain banking institutions are still operational and are sufficiently

liquid. Therefore it is imperative to examine whether there has been significant changes since dollarization in bank liquidity of local and foreign-owned banks and the factors influencing bank liquidity levels.

1.4 Research Objectives

The research was steered by the subsequent research goals:

- To establish the trend of commercial banks liquidity levels in the dollarization period.
- To establish the differences in liquidity trends of indigenous-owned and foreign-owned commercial banks operating in Zimbabwe.
- To determine the bank-specific and macro-economic elements that impact liquidity of Zimbabwean commercial banks.

1.5 Statement of Hypotheses

The following hypotheses were developed to break down the above research objectives. Therefore, this research work tested the following hypotheses in the case of commercial banks in Zimbabwe.

H1: Loan growth has negative impact on bank liquidity

H2: Non-performing loans has negative impact on bank liquidity

H3: Size of bank has positive effect on bank liquidity

H4: Capital adequacy has positive effect on commercial bank liquidity

H5: Asset quality has negative impact on liquidity

H6: Profitability has negative influence on bank liquidity

H7: GDP has positive effect on bank liquidity

H8: Inflation has positive effect on bank liquidity

H9: Unemployment has negative influence on commercial bank liquidity

H10: Lending rate has negative impact on bank liquidity

1.6 Justification of the Study

The research sought to enhance the field of study in liquidity especially bring out the factors that influence liquidity of commercial banks in the context of Zimbabwe. The banks will get to know of the factors that influence their liquidity levels as well as opening a ground of analysis of factors to determine which factors the bank would have direct control on and how. Credit managers will be challenged to place liquidity in the context of the wider internal and external factors and this will put them in a position to make more informed decisions. The study will enlighten the depositors and enable them to make rational decisions especially in cyclical economic trends that may influence banks liquidity.

Through determination of factors that influence liquidity level and their relative importance, the central bank will determine whether its measure of liquidity level remains the most important thing. As a regulator the central bank would be able to determine whether banks should be left free since other influence will determine the liquidity level. The study will also tend to enhance the government's adoption of policies such as the foreign exchange controls, foreign direct investments, cash outflows and fiscal policies. By virtue of liquidity being a key indicator and predictor of bankruptcy

and solvency, financial analysts will therefore be in a position to appreciate the factors that influence the liquidity level of commercial banks in Zimbabwe and therefore advice the banks appropriately.

1.7 Conceptual Framework

The conceptual model is a modification of concepts studied by several researchers on control environment and liquidity levels. The broad conceptual framework as illustrated in Figure 1 entails the independent variables which include both internal and external factors and liquidity being the dependent variable.

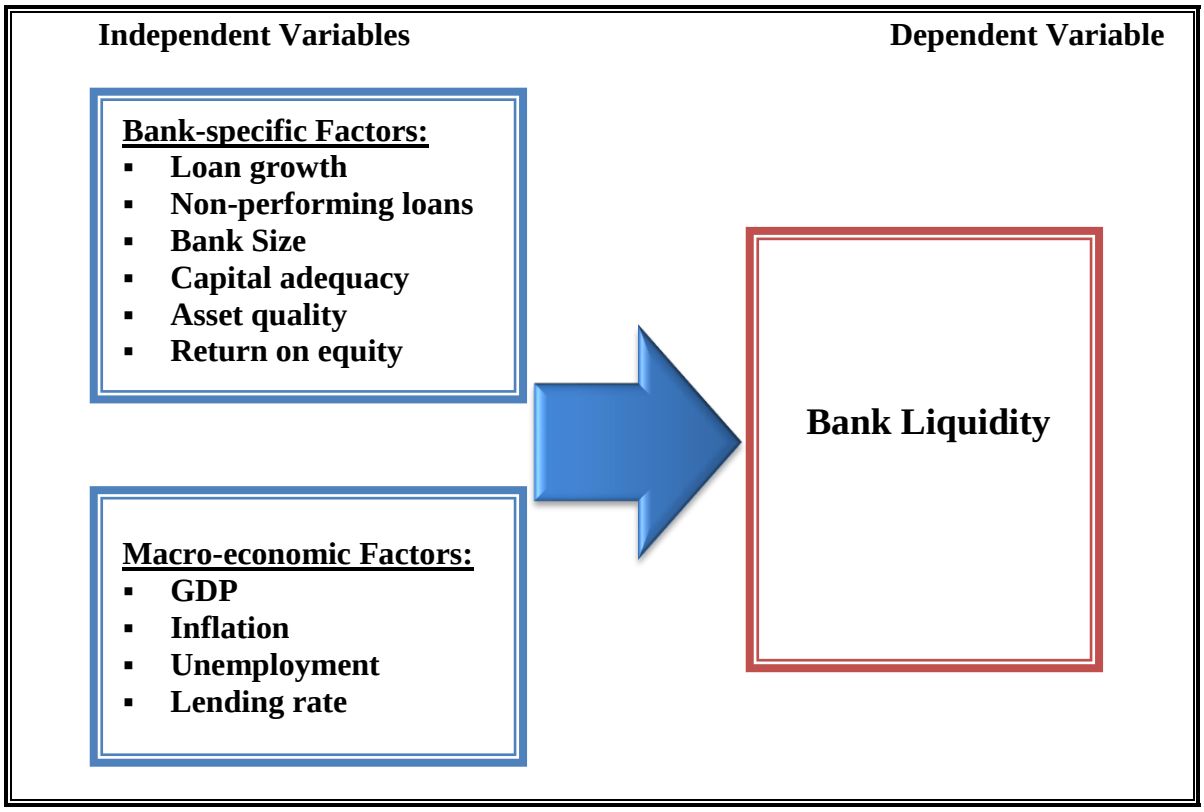

Figure 1.1: Conceptual Framework
Source: Self –conceptualization, 2015

1.8 Delimitation of the Study

The researcher chose commercial banks because they constitute the greatest percentage of banks licensed to operate in Zimbabwe. Both foreign-owned and indigenous-owned banks have been included for analysis and these include CBZ, NMB, Standard Chartered and Barclays. In terms of data used in the analysis, it was only restricted to secondary data from audited financial statements covering the period 2010-2014, as these are deemed to be a fair and true representation of a bank`s financial position. Financial statements were useful in calculating the bank-specific variables whilst macroeconomic rates were accessed from the RBZ and Zimstat.

1.9 Limitations

The research only focused on the determinants of liquidity during the multi-currency period that is 2010-2014. However, there is a likelihood of omitting data and other relevant factors that have pronounced influence on bank liquidity from the hyperinflationary period .To mitigate this limitation, results of other studies done prior to dollarization were taken into consideration in this study.

1.10 Chapter Summary

This was the first chapter of the study. Scope of the research was outlined taking cognizance of statement of the problem, study objectives and hypothesis formulation. Research significance of and limitations were also stated in this chapter.

Chapter Two of this study forms the Literature review section. Chapter Three forms the Research Methodology section of this research, main highlights being on reliability and validity of data as well as the model specification. Chapter four, being Data Presentation and Analysis was discussed in Chapter four which basically focuses on descriptive summary of collected data and research findings. The final is Chapter five, Conclusions, recommendations and suggestions for future studies.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter strived to perform an in-depth analysis of empirical literature related to factors influencing liquidity of banks. Main emphasis is placed on empirical study findings on the determinants and level of effect on liquidity in line with this study goal. This chapter holistically analysed the various propositions, opinions and references from different researchers who executed studies related to bank liquidity and its determinants across the globe.

2.2 Liquidity Overview

The life-blood of any bank is its liquidity position for without adequate liquidity, insolvency is imminent (Basel Committee, 2009). An entity like a bank is considered to be financially sound when its liquidity gap is positive that is when assets are greater than liabilities (Nikolaou, 2010). Bank liquidity is crucial for lubricating effectiveness within the economy as banks provide finance services to depositors whose funds will be converted to long term loans by the bank at a margin to willing takers of advances.

According to Moore (2009:9),"a bank needs to hold liquid assets to meet the cash requirements of its customers…if the institution does not have the resources to satisfy its

customers' demand, then it either has to borrow on the inter-bank market or the central bank". It follows therefore that a bank incapable of meeting its clients' requests leaves itself vulnerable to a bank run and reputational risk arising from the public`s perception on the banking system. Bank run occurs when depositors get anxious on the repayment capabilities of a bank; as a result depositors immediately rush to withdraw their funds in response to information like an impeding financial crunch that is projected to have an adverse effect on the competency of banks to pay depositors on demand (Bordo et al., 2001). Monetary crisis is a phase that ought to happen in any business lifecycle in response to financial principles. For instance, during an economy slump returns fall especially on assets due to noon-performing loans as well as depositors stampede to withdraw funds at the bank. Resultantly, insolvency might creep in as banks are faced with liquidity challenges of meeting the customers' demands which are to be funded by highly illiquid assets.

The three types of liquidity are accounting, market and funding. Market liquidity is defined as how easily an asset can be transformed to cash, which is highly liquid, whereas funding liquidity illustrates the easiness with which potential borrowers can access loans and advances. Lastly, accounting liquidity is bank-specific with main emphasis on the financial soundness of the bank so as to assess bank`s capability to honour its responsibilities when due as reflected on its statement of financial position and statement of comprehensive profit and loss and other comprehensive income. The three types of liquidity ought to be synchronized because disharmony of the three, results in

shockwave across the economy and run on banks thereby affecting overall liquidity levels such that lending activity is also suppressed (Abel, 2014).

Liquidity risk arises from situations in which a party interested in trading an asset cannot do so because nobody in the market wants to trade for that asset. "There is an inverse relationship between liquidity and liquidity risk, the higher the liquidity risk, the higher the probability of becoming illiquid, and therefore, the lower the liquidity" (Nikolaou, 2010). From individual bank`s point of view, holding adequate liquidity is indispensable in mitigating liquidity risk (Diamond, 2005).

2.3 Theoretical Literature on determinants of Bank Liquidity

The theories, hypothesis and models under this section seek to explain the determinants of bank liquidity. Researchers have come out with some theories, which reflected scenarios and factors that can affect bank liquidity in commercial banks.

2.3.1 Liquidity creation and financial fragility theory

Financial intermediation theory attests that banks responsibility is the provision of financial resources required in the economy to ensure its growth and sustainability. To fully accomplish its role, banks engage in liquidity creation by providing deposit taking services whilst holding onto illiquid assets. Diamond and Dybvig (1983) emphasized the "preference for liquidity under uncertainty of economic agents to justify the existence of banks". Banks are in existence for the reason that they offer enhanced liquidity protection than stock markets. However, by virtue of banks extending liquidity cover, they are

exposed to the risk of transformation and bank run ,therefore the more the bank engages in creation of liquidity the greater the risk of losses arising from sale of loans so as to cover immediate request for cash from depositors (Tesfaye, 2012).

An explanation for the existence of deposit-taking institutions and lending activity by banks was primarily modeled by (Bryant 1980). He highlighted that banks finance loans with call deposits which are a source of liquidity that banks offer depositors with insurance against unique depletion shocks such that banks. This arrangement a source of prospective bank instability because in situations of an unanticipated increase in depositors willing to withdraw their money for non-liquidity requests this triggers a loom of run on the bank.

The Bryant model has been subject to supplementary and evaluation papers. Of special mention are the articles by (Diamond and Rajan 2001), which established and underscored the opinion that a call liability has remarkable incentive. The debate is that banks regard advances as assets whose fair values ought to be lower than their in-house book prices in case of a forced disposal. Early call back or disposal of illiquid assets mainly results in a loss, as such banks have to manage their credit book prudently since credit monitoring and evaluation is confidential information to the banks and not visible to the public. However, bank's liabilities are also comprised of demandable deposits which are by classification and by bylaw must be paid on demand and on a first-come first-serve basis. This rule of dispersion is a source of concern to depositors as they fear that there might be a timing mismatch of when to withdraw before liquidity challenges hit

hard on a bank. Such uncertainties result in a run on the bank. Based on this argument Diamond and Rajan (2001), made an enquiry on whether or not it is an applicable state for banks if financial fragility can have large effects on asset prices. They claimed that the reality of the instability itself gives banks the right motivations to generate liquidity.

Diamond and Rajan (2005) suggest that there is a relationship between lack of liquidity and universal banking catastrophes'. They stipulate that if one bank is experiencing financial distress it has the capacity to drain available liquidity in the market consequently affecting other players in the banking sector resulting in a contagion-effect. However, once insolvency and illiquidity effects interrelate it becomes difficult to establish the cause of a recession.

2.3.2 Anticipated Income Theory

This theory stipulates that a bank's liquidity can be maintained through appropriate phasing and structuring of the loan guarantees made by a bank to customers. Bank liquidity can be controlled by ensuring that the customer is granted a facility based on the future repayment capacity of the customer so as to mitigate against non-performing loans which in turn will affect the asset quality book as well as cash flows. Ibe (2013) emphasized that need to evaluate earning potential and the credit worthiness of a borrower as this is the ultimate security for ensuring sufficient liquidity. In addition, this theory encourages banks to adopt a ladder effects when carrying out lending activities as well as when accepting money market investments so that there will not be a huge influx of withdrawals or non-repayment of loans during the same period of time.

2.3.3 Shiftability Theory

This theory postulates that liquidity of banks is conserved if the bank has assets that can be shifted or sold to other moneylenders or stakeholders for cash. This concept highlights that bank liquidity can be boosted if the bank has available assets to sell and provided the Central Bank and the discount market stands ready to purchase the asset offered for discount. Thus this theory distinguishes that shiftability, marketability or transferability of a bank's assets is a basis for safeguarding liquidity (Ibe, 2013).

2.3.4 Commercial Loan Theory

The theory emphasizes on the maturity structure of bank assets (loan and investments) and not necessarily the marketability or the shiftability of the assets. The theory assumes that repayment from the self-liquidating assets of the bank would be sufficient to provide for liquidity. This ignores the fact that periodic deposit withdrawals and meeting credit request could affect the liquidity position adversely. The theory does not reveal the typical steadiness of demand deposits under liquidity consideration. This obvious view may ultimately impact on the liquidity position of the bank. This theory has been subjected to criticism by Dodds (1982) and Nwankwo (1992) as cited by Ibe (2013), the major limitation is that the theory is inconsistent with the demands of economic development especially for developing countries since it excludes long term loans which are the engine of growth.

2.3.5 Liquidity management theory

According to Dodds (1982), "… liquidity management theory consists of activities that are undertaken in obtaining depositors funds and other creditors in the market and determining the appropriate funds mix for a bank". Management has the responsibility of examining the activities involved in complementing the liquidity needs of the bank through the use of borrowed funds. The liquidity management theory mainly focuses on the deposits and attests that during period of liquidity constraints, a bank might find it difficult to obtain the desired liquidity due to lack of confidence by the market players in the credit worthiness of the troubled bank. However, for a liquid bank, deposits, market funds and other creditors are recognized as crucial liquidity sources.

2.3.6 "Too big to fail" hypothesis

Big banks in terms of size guard against liquidity challenges through enhanced deposit mobilization. As such big banks depend on further assistance on liquidity from the interbank market or the Central bank which has the responsibility of performing the lender of last resort function. On another note, liquidity tends to decline with bank size, worse still if big banks view themselves as "too big to fail", their enthusiasm to hold liquidity becomes restricted (Vodova, 2012).

2.4 Bank Liquidity proxies

Empirical literature has shown that liquidity of banks can be measured with at most two of the four different liquidity ratios. The four ratios entail firstly, the liquid assets to total

assets ratio (LATA), secondly, liquid assets to deposits plus short term borrowing ratio (LATD), thirdly, loans to total assets ratio (TLTA) and lastly, loans to deposits plus short term financing ratio (TLTD). Literature has argued diversely on the most appropriate indicator for bank liquidity. Vodova (2011) suggested all four ratios as measures of liquidity for his studies on banks in Czech Republic, Slovakia and Poland.

Majority of studies used LATA as measures for liquidity (Aymen, 2015; Malik, 2013; Vodova, 2013; Subedi, 2013 and Tesfaye, 2012). LATA is represented as liquid assets to total assets ratio provides evidence on the overall liquidity shock absorption capability of a bank (Vodova, 2012). Interpretation of the ratio is premised on the notion that the higher the share of liquid assets in total assets, the greater the aptitude of a bank to engross liquidity shock. However, high value of this ratio may be also understood as inefficiency, since liquid assets yield lower income whilst liquidity bears high opportunity costs for the bank.

Some researchers, Monteanu (2012) and Vodova (2013) adopted the LATD ratio as a measure for bank liquidity. The LATD ratio defined as liquid assets to deposits plus short term borrowing captures the banks` vulnerability to selected types of funding, including retail deposits of individuals and corporates. The ratio is most preferable when it exceeds 100% because at that point the bank is able to meet its funding obligations. In contrast, a lesser ratio shows the level of sensitivity of a bank to withdrawals by depositors.

Malik (2013); Vodova (2012) and Munteanu (2012) used the TLTA proxy as a measure for liquidity. The TLTA variable is defined as the loans to total assets and the ratio

indicates what proportion of total bank assets is classified as illiquid loans. A higher ratio signals low liquidity on part of the bank. TLTD was also used as a measure of liquidity by Kamau et al, 2013; Aymen, 2015; Malik et al, 2013; Vodova, 2013; Subedi, 2013 and Tesfaye, 2012). The TLTD which is the ratio of loans to deposits plus short term financing, illustrates extend of transformation of deposits to loans (Dogan, 2013). A higher ratio signals low liquidity on part of the bank.

2.5 Determinants of Bank Liquidity

This study focused on two broad sources of determinants of liquidity, which are bank-specific causes and macroeconomic factors. Bank specific factors are internal to the respective bank and these can be controlled, monitored, measured and monitored by management whist macro-economic factors are external such that banks have no direct control to minimise their influence as these factors are driven by other economic fundamentals.

2.5.1 Bank-specific Determinants

Several internal factors have been taking into consideration during empirical studies and for the purposes of this research the following internal determinants have been adopted, loan growth, non-performing loans, profitability, asset quality, capital adequacy and bank size.

Loan growth

The principal business activity for most commercial banks is granting credit (Diamond and Rajan, 2002). The loan portfolio is typically the largest asset and the predominate source of revenue. As such, it is one of the greatest sources of risk to a bank's safety and soundness (Kiyotaki & Moore, 2008). Kiyotaki and Moore (2008) added that since most of the assets are in the form of loans which are illiquid by nature, an increase in the amount of loans mean a corresponding rise in illiquid bank assets. This was supported by Eakins (2008) who noted that in reality the quantity of liquidity held by banks is greatly subjective to loan demand which in turn is the base for increase in loans. Weisel et al. (2003) concluded that there is a low request for loans, then a banking institution tends to grasp extra liquid assets whereas if request for advances is high they tend to hold fewer liquid assets since extended tenure advances are generally lucrative. Therefore, a growth in advances usually has adverse effect on liquidity. Tesfaye (2012) found out that profitability negatively affects liquidity.

Non-performing loans

Auronen (2003) emphasized that non-performing loans in asset range disturb operational effectiveness and ultimately bank liquidity. Dinger (2009) suggested that NPLs create a venomous influence on lending existence and development and if not managed appropriately, might result in a bank experiencing financial distress linked to liquidity challenges. This notion was supported by Auronen (2003) who concluded that the direct impact of large amount of NPLs in the financial sector is bank insolvency due to liquidity

challenges. A study by Dermirgue-Kunt (1989) supported this when he argued that NPLs is a substantial predictor of liquidation. Barr and Siems (1994) also concluded that banks experiencing financial distress always have greater percentage of their assets tied up as illiquid loans subsequent to the bank failure and this high level of non-performing loans leads to liquidity crunch when banks are now reluctant to give more loans in an attempt to reduce the level of NPLs. He further added that such a liquidity crunch caused by a bad loan book will further worsen the liquidity position of banks as customers will not deposit with banks that do not give them loans. This leads to bank runs and more bank failures.

However, Diamond and Rajan (2002) contrasted the above views arguing that the influence of NPLs on liquidity risk hinge on whether the economy has a ready market to sell the bad loan book. They argued that if the loans can be sold readily, then NPLs do not affect bank liquidity risk. This was supported by Hughes and Moon (2005) and Resti (2005) who both concurred and concluded that the capability of banks to simply sell bad loan in the marketplace may generate an extra source of liquidity that permits banks to improve on management of internal and external liquidity shocks. Consequently, non-performing loans are negatively correlated to liquidity. Munteanu (2012) in the study of Romania banks and Subedi et al. (2013) in Nepalese commercial banks found non-performing loans to have an adverse effect on bank liquidity. Studies by Vodova (2011) on Czech Republic, Choon et al. (2013) and Tesfaye (2012) on Ethiopia are in contradiction to the findings as they suggest a positive relationship among non-performing loans and liquidity.

Bank Size

Bank size is normally defined as the total value of bank assets or relatively as the total assets less the total liabilities divided by total assets (Kashyap and Stein, 1997). The "too big to fail" hypothesis is based on the argument that big banks have access to cheap government deposits which boosts their liquidity coffers. Big banks are also attractive to foreign investors due to their tried and tested records hence have higher access to offshore deposits than do smaller banks. This improves their liquidity position hence there is almost always a positive correlation between bank size and liquidity position (Vento & Ganga, 2009). However Kiyotaki (2008) argued that the "too big to fail" hypothesis is a source of influence on banks to invest in projects that are above their risk appetite as an institution.

In the event of liquidity crisis, large banks depend on the Central bank for liquidity support. Thus, big banks are expected to achieve greater levels of liquidity formation that exposes them to losses related to selling loans to meet clients liquidity requests (Kiyotaki & Moore, 2008). Kashyap, Rajan and Stein (2002) who used a large panel of U.S. banks found a strong effect of bank size on holdings of liquid assets, with smaller banks being more liquid. Dinger (2009) also concluded that smaller Eastern European banks hold more liquidity than larger banks in the same region.

A positive relationship between bank size and liquidity is expected. Studies by Tesfaye (2012) and Sebedi et al. (2013) revealed a positive relationship between banks size and

liquidity and contrary to the findings were studies by Moussa et al. (2015), Vodova (2013), Choon et al. (2013) and Rauch et al. (2010) who found the relationship to have a negative effect.

Capital adequacy

Banks' capital is common stock plus surplus plus undivided profits plus reserves for contingencies and other capital reserves (Patheja, 1994). Basel Committee on Bank Supervision (BCBS) (2010) proposed that bank's loan-loss reserves be included in the definition of capital since reserves act as an available financial resource to cushion the bank against any losses. Kashyap, Rajan, and Stein (2009) argued that the global financial crisis has raised important concerns about the role of bank capital. Their argument was strongly supported by other authors who argued that banks ought to hold additional capital as a safeguard to liquidity risk (Basel III, 2010).

Gorton and Winton (2000) indicated that banks can generate additional or smaller amounts of liquidity by basically varying their funding sources of deposits. Empirical studies done by Thakor (1996) and Maness and Zietlow (2004) show that capital may also affect banks' asset portfolio, thereby impacting liquidity creation through an alteration in the asset composition.

The theoretical literature provides two contrasting views on the relationship between bank capital and liquidity. Under the first view, bank capital tends to inhibit liquidity creation through two distinct effects: the financial fragility structure and the crowding-out of deposits hypothesis. Indeed, financial fragility structure, characterized by lower

capital, tends to favour liquidity creation (Diamond and Rajan, 2000, 2001), while higher capital ratios may affect deposits thereby reducing liquidity creation (Gorton and Winton 2000).

Allen and Santomero (1998) argued that liquidity formation increases the bank's exposure to risk because banks that create more liquidity face greater losses when they are forced to sell illiquid assets to satisfy the liquidity demands of customers. This view was also supported by Allen and Gale (2004). By contrast, Bhattacharya and Thakor (1993) and Repullo (2004) argued that more capital permits banks to absorb liquidity and credit risks. Under another view, the greater the capital ratio, the higher is its liquidity formation. Therefore capital adequacy can either affect bank liquidity in a positive or a negative way. Vodova (2011) findings on Czech Republic banks suggested a capital adequacy to have a positive effect on liquidity and in contrast studies done by Hovath et.al (2012) and Choon et al. (2013) in Malaysia revealed a negative relationship.

Asset quality

Good asset quality is essential for the build-up of liquidity as this enhances the banks capability to fulfil its obligations on the liability side in a timeous manner. In as much as this position is desirable,by virtue of banks undertaking the lending activity there is also an element of credit risk inherent which is in line with the Bad management hypothesis which stipulates that poor credit book influences liquidity through non-performing loans. As such a negative relationship is suggested concerning asset quality and liquidity. Raeisi

et al. (2014) proved a negative effect of asset quality on liquidity whilst findings by Munteanu (2012) were in contradiction.

Profitability

Naceur and Goaied (2001) and Naceur in (2003) concurred that banks are in business to earn profits otherwise all the shareholders would sell their shares if proper dividends are not earned. Hence commercial banks need to create value for their shareholders while at the same time satisfying the banking needs of their customers. Rasiah (2010) supported this notion by highlighting that the main problem faced by banks is the endeavour to balance between liquidity and profitability as both contradict each other. Morris and Shin (2010) agreed emphasising that there is the compromise between liquidity and profitability since banks offer more loans to the customers for the benefit of interest revenue whilst there is possibility for liquidity risk .Vodova (2012) and Rauch et al. (2010) established an adverse relationship between profitability and liquidity. Findings by Choon et al. (2013) and Vodova (2013) on Hungary banks are in contradiction as they established a positive relationship between profitability and liquidity, which is inconsistent with standard economic theory. According to Vodova (2013), the positive relationship was as a result of the recession, which resulted in substantial decline in profitability of many banks due to a shrink in granting of credit, hence liquidity levels were stagnant as financial institutions preferred holding onto their cash for speculative purposes.

2.5.2 External Determinants

Studies done by Munteanu, (2012) and Vodova, (2011) advocate that in addition to bank-specific factors; macro-economic determinants also influence bank liquidity. External determinants under evaluation are GDP growth, inflation, unemployment and lending rate. These variables reflect the operating environment in Zimbabwe; as such variations in the external factors translate into variations in bank liquidity.

GDP

GDP is proposed to be an indicator of the business cycle (Ommeren, 2011 and Schipper, 2013). Bank liquidity will vary in response to changes in the operating environment. The volume of lending activity is influenced by the prevailing business phase. During a recession, demand for loans decreases and servicing of advances principal amount and interest is problematic due to liquidity constraints (Schipper, 2013). On the other hand, during an economic boom banks are likely to offload liquid assets due to increased opportunities to lend. This suggests that liquidity is closely related to measures of the real GDP growth and policy interest rates (Aspach, et al., 2012). Aspach et al (2012) concluded that a rise in the real GDP of a country will improve the liquidity position of banks due to increased deposits from savings and the ability of the borrowers to repay loans timeously.

Gerlach et al (2005) argued that an increase in real GDP growth may have a positive effect on bank liquidity in the interim; this rise may result in banks issuing loans to everybody in the economy which will result in non-performing loans ballooning which

will adversely affect the liquidity position of banks in the long run. Swamy (2012) is however of the view that the relationship between GDP and liquidity is indirect. He argued that GDP only affects other bank variable directly, for example profitability, net interest margin, loan growth, bank deposits and these factors will then affect bank liquidity directly. Earnest & Young (2001) were of a different view as they concluded that a rise in GDP may cause a rise in interest rates by the monetary authorities, which in turn will increase the liquidity risk of banks as bank lend out more due to increased returns in interest, while at the same time borrowers may fail to service the loans resulting in losses to the bank which will ultimately affect liquidity position of the banks.

Findings by Moore (2010) on a study done during a financial crisis reveal that banks in the same business cycle should anticipate reduced demand for money due to the effects of depression being experienced in the economy which ultimately result to a drop in liquidity as there is little or no liquidity creation. Therefore a positive relationship between GDP and bank liquidity is expected. Vodova (2013) found the relationship positive for banks in Hungary. Moussa (2015), Dinger (2009), Painceira (2010), Valla and SaesEscorbia (2006) found a negative relationship between GDP and bank liquidity.

Inflation

Huybens and Smith (1999) argued that a rise in inflation could initially have negative influence on banking industry performance before affecting economic grow through credit market frictions thereby reducing bank liquidity. Shortage of liquidity caused by inflationary pressures entails the rationing of credit by banks, which reduces their

intermediary activity as well as capital formation capability of banks. The decrease in capital investment undesirably influences both on long-run economic development and stock exchange activity. Caprio and Levine (2004) supported this view by adding that an economy experiencing high inflation rates is perceived negatively by investors and as such local banks are unable to attract offshore deposits which are important in boosting liquidity coffers. In this case banks will have to rely mainly on local deposits which are unpredictable in nature. This view was supported by Bernanke (2005) who added that high inflation reduces the savings culture among individuals in an economy. Reduced savings will then mean reduced deposit in banks which ultimately reduces liquidity and viability of financial institutions. However, Azariadis and Smith (1996) emphasized the importance of threshold level of inflation in the relationship between inflation and bank liquidity. They argued that negative consequence of inflation on financial sector efficiency becomes effective once the rate of inflation exceeds a particular threshold. Additional increase of inflation has no damaging impact on financial sector liquidity until a certain level of inflation is reached (Boyd and Smith, 1998 & Huybens and Smith, 1999).

A negative relationship between inflation and bank liquidity was found by (Moussa et al., 2015), Malik and Rafique, 2013, Bunda and Desquilbet, 2008). Subedi et al (2013), Raeisi et al. (2014) and Vodova (2013) found contrasting results that is a positive association between liquidity and inflation.

Unemployment

Rauch et al. (2010) suggested that there is a link between level of unemployment and demand for advances. Vodova (2012) found an adverse relationship between unemployment and liquidity in the study of Polish banks, citing that an increase in the unemployment rate due to financial crisis affects borrower's ability to pay back loans and can result in a decrease in liquidity. Raesi et al. (2014) and Rauch et al. (2010) findings reveal a negative correlation between unemployment and liquidity. However, Munteanu (2012) had contrasting results for banks in Romania.

Lending rate

Bunda and Desquilbet (2008) highlighted that lending rate measures lending profitability of a bank and concluded a negative association amongst lending rate and liquidity. Monetary policy interest rate also indicates capacity of a bank to provide credit to willing borrowers (Lucchetta, 2007). Increase in the lending rate motivates banks to focus on lending activity consequently decreasing the bank liquidity. Studies done by Vodova (2010) on Czech banks and Rauch et al. (2010) on Germany`s savings banks revealed a negative relationship between liquidity and lending rate. Vodova (2013) findings on Hungary banks revealed a positive effect of interest rate on loans on liquidity, which is quite an unanticipated result as it highlighted that even if the lending rates increase, bank do not recognise it as an incentive to lend (Vodova,2013).In light of the above a negative relationship is expected between lending rate and liquidity.

2.6 Summary

Chapter two discussed the literature review of the study. The selected variables for this study both bank-specific and macro-economic were discussed in detail making reference to empirical literature and how they relay to bank liquidity. Previous researchers had contrasting views on certain variables and for purposes of this study relevance of variable was linked to the Zimbabwean context. From the evidence from both theoretical and empirical literature highlighted above it can be ascertained that liquidity plays a significant part in the continued existence of financial institutions across the globe. The next chapter looks at the research methodology that was used in the collection and analysis of data.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

This chapter focuses on clearly articulating the research design of the study, target population, research instruments implored for data collection and justification of the same. Also included in the chapter is the data presentation and analysis procedures.

3.2 Research plan

A research plan aims to provide a framework that acts as a guiding tool to achieve the research objectives. An explanatory research design was adopted for this study since it is most appropriate for investigating cause and effect association amongst independent and dependent variables. The explanatory design mainly emphasises on investigating the influence of independent variables on dependent variables and level and direction of change prompted in the dependent variable. For purposes of drawing meaningful references to banks, an explorative research was implored. The main reason for adopting this strategy was it simplifies how some banks are sufficiently liquid at the same time other banks are experiencing liquidity shortages in an economy that is characterised by chronic liquidity constraints. Therefore, explorative design and explanatory design were implemented in this study.

3.3 Research Population

The target population for this research was commercial banks operating in Zimbabwe and should have been operational for the period 2010-2014.Commercial banks are considered to be a fair representation of banks because they constitute the largest market share of financial institutions in terms of assets and liabilities(RBZ,2014).Out of the nineteen commercial banks that were operating since dollarization, sixteen banks were selected for the study with the exclusion of the other three banks (Royal, Genesis and Interfin) which were placed under curatorship by the regulator as such the number of commercial banks dropped to 16 in 2014 from 19 since dollarization in 2009. Annual statements for sixteen commercial banks in Zimbabwe were collected from the respective bank`s company secretary office and generated as soft copies from the bank`s websites. The number of commercial banks dropped to 16 in 2014 from 19 since dollarization in 2009.

3.4 Research instruments

Research instruments are the fact finding strategies implored to collect data for purposes of analysing the research objectives. The researcher ensured that data validity and reliability was not compromised.

3.4.1 Secondary Data

Data that is collected and processed by the researcher for its initial purpose and can still be used for other uses is regarded as secondary data (Wegner, 1993).For purposes of this study, secondary data was used and it was extracted from the banks audited financial

statements which were initially crafted for purposes of publishing their financial position as per regulatory requirement. The financial statements for the period 2010-2014, were used to calculate the liquidity ratios, that is the dependent variable as well as the bank-specific factors which are part of the independent variables. For the external factors, secondary data was collected from RBZ and Zimstat for the following variables, unemployment, GDP, lending rate and inflation.

Data pertaining to these internal and external factors is not easily collectable as primary data by an individual researcher because they entail huge geographical coverage hence there are dedicated units to do the data collection. This scenario brings in some element of data integrity being comprised in light of creative accounting by banks or misrepresentation of true facts in the economy, such that the figures might be biased. To mitigate this concern the researcher has used audited financial statements riding on the notion that external auditors of the banks have certified that the financial statements are a true and fair representation of the bank`s financial position.

3.4.2 Data Validity and Reliability

Data validity ascertains the strength and relevance of a test to evaluate that which it is intended to measure (Cohen et al., 2010) .For starters, data validity was enhanced through the exclusion of three banks that ceased operations during the dollarization period implying a retention rate of about 90% of the Zimbabwean commercial banks. Study objectives were specified as clear as possible thereby improving validity of the study.

Reliability is associated with the degree to which research tools produce truthful and dependable outcomes (Cohen et al, 2010). The researcher guaranteed data reliability byadopting an explanatory research design which is easier for replication by other researchers as well as making use of audited annual financial statements and different external rates which were obtained from trustworthy sources which are the, the Reserve Bank of Zimbabwe, ZIMSTAT and academic papers. A reputable statistical package, Stata 11 was chosen for data analysis because of its consistency in producing similar results found by the former researcher as long as the latter researcher uses the same data.

3.4.3 Model Description

One of the objectives of this study is to evaluate the determinants of bank liquidity and this was achieved by imploring a quantitave based approach with main emphasis on panel data regression model .Empirical researchers Moussa (2015) and Vodova (2011) have also incorporated this approach under their respective studies. Time series data and cross sectional data are the main components of pane data, hence the model aims to incorporate the liquidity determinants.

In this study a panel data analysis was executed for purposes of identifying the factors that influence liquidity. Adoption of the panel data model was necessitated by the fact that data for different variables could be grouped together irrespective of being for different time intervals either as a fixed effects model or random effects model. Theoretically, panel data model is firstly, time bound as such this study is only focusing on the dollarization period that is from 2010to 2014, with the exclusion of 2009 as it was

a year of experiments in view of the preceding year being characterised by hyperinflation. Secondly, panel data model permits cross-sectional analysis as revealed in this study that analysis was enabled for sixteen commercial banks. Four random effects models were estimated for the purposes of evaluating the factors that influenced bank liquidity for the period 2010-2014 and the regression models are illustrated as follows:

Model 1

$$\boldsymbol{LATA_{it}} = \beta_0 + \beta_1 ROE_{it} + \beta_2 LG_{it} + \beta_3 NPL_{it} + \beta_4 NLTA_{it} + \beta_5 EQTA_{it} + \beta_6 LLP_{it} + \beta_7 GDP_{it} + \beta_8 INF_{it} + \beta_9 UNEMP_{it} + \beta_{10} LR_{it} + \mu_{it}$$

Model 2

$$\boldsymbol{LATD_{it}} = \beta_0 + \beta_1 ROE_{it} + \beta_2 LG_{it} + \beta_3 NPL_{it} + \beta_4 NLTA_{it} + \beta_5 EQTA_{it} + \beta_6 LLP_{it} + \beta_7 GDP_{it} + \beta_8 INF_{it} + \beta_9 UNEMP_{it} + \beta_{10} LR_{it} + \mu_{it}$$

Model 3

$$\boldsymbol{TLTA_{it}} = \beta_0 + \beta_1 ROE_{it} + \beta_2 LG_{it} + \beta_3 NPL_{it} + \beta_4 NLTA_{it} + \beta_5 EQTA_{it} + \beta_6 LLP_{it} + \beta_7 GDP_{it} + \beta_8 INF_{it} + \beta_9 UNEMP_{it} + \beta_{10} LR_{it} + \mu_{it}$$

Model 4

$$\boldsymbol{TLTD_{it}} = \beta_0 + \beta_1 ROE_{it} + \beta_2 LG_{it} + \beta_3 NPL_{it} + \beta_4 NLTA_{it} + \beta_5 EQTA_{it} + \beta_6 LLP_{it} + \beta_7 GDP_{it} + \beta_8 INF_{it} + \beta_9 UNEMP_{it} + \beta_{10} LR_{it} + \mu_{it}$$

where:

i represents commercial banks where i=1,.....N

t represents time where t=1,.....T

LATA: liquidity ratio 1 - a measure of bank liquidity

LATD: liquidity ratio 2 - a measure of bank liquidity

TLTA: liquidity ratio 3 - a measure of bank liquidity

TLTA: liquidity ratio 4 - a measure of bank liquidity

μ: error term

β0: an intercept

ROE: return on equity

LG: loan growth

NPL: non-performing loans

NLTA: bank size

EQTA: capital adequacy

LLP: asset quality

GDP: Gross domestic product

INFL: inflation

UNEMP: unemployment

LR: lending rate

The formulas pertaining to the dependent and independent variables and their estimated signs

Table 3.1: Summary of variables and estimated signs

Variable	Formula	Estimated Sign	Reference
Dependent			
Liquidity 1 ***LATA***	$\frac{Liquid\ Assets}{Total\ assets}$	N/A	Tesfaye (2012) Vodova (2011) Moore (2010)
Liquidity 2 ***LATD***	$\frac{Liquid\ Assets}{Deposits + short\ term\ borrowing}$	N/A	Vodova (2011) Munteanu (2012)

Liquidity 3 ***TLTA***	$\frac{Total\ Loans}{Total\ assets}$	N/A	Vodova (2011) Munteanu (2012)
Liquidity 4 ***TLTD***	$\frac{Total\ Loans}{Customer\ deposits + short\ term\ financing}$	N/A	Tesfaye(2012) Vodova (2011) Moore (2010)
Independent			
Return on equity	$\frac{Net\ Profit}{Equity}$	-	Vodova (2011)
Loan growth	$\frac{Gross\ Loans\ at\ end\ of\ year - Gross\ Loans\ at\ beginning\ of\ year}{Gross\ Loans\ at\ beginning\ of\ year}$	-	Tesfaye (2012)
Non-performing	$\frac{Non - Perfoming\ Loans}{Total\ Loans}$	-	Munteanu (2012)

loans			Subediet al. (2012)
Bank Size	Natural Log (ln) of Total Assets	+	Tesfaye (2012) Subedi et al. (2012)
Capital adequacy	$\frac{Equity}{Total\ Assets}$	+	Tesfaye (2012) Munteanu (2012) Vodova(2011)
Asset quality	$\frac{Loan\ Loss\ Provision}{Interest\ income}$	-	Raesi et al. (2014)
Gross Domestic Product	GDP	+	Choon et al. (2013) Munteanu (2012)

Inflation rate	Consumer price index	+	Raesi et al. (2014) Tesfaye (2012) Vodova (2011)
Unemployment	Unemployment rate	-	Rauch et.al.(2010) Vodova (2012) Raesi et al (2014)
Lending rate	policy rate	-	Vodova (2011) Bunda and Desquilbet (2008)

3.5 Justification of Model Variables

The main objective of this section is to focus on how the variables were deliberated as appropriate for the model and also how empirical literature has defined the same variables. The variables selected were prominent to have been broadly used in prior studies on bank liquidity for both developed and developing countries. These variables include loan growth (LG), non-performing loans (NPL), capital adequacy (EQTA), bank size (NLTA), asset quality (LLP), return on equity (ROE),inflation (INF), unemployment (UNEMP), lending rate(LR),GDP among others. Outlined below are the definitions and justification of model variables and their respective expected coefficients signs.

3.5.1 Dependent Variables

This study seeks to identify determinants of bank liquidity for commercial banks in Zimbabwe by making use of quantitative models in which the dependent variable is estimated by using different independent variables. Liquidity is therefore the dependent variable of the model which can be estimated using different liquidity ratios. Empirical studies reveal two main methods of measuring liquidity risk which are liquidity gap and liquidity ratios. This study reviewed the liquidity ratios method which is an account based liquidity measures only.

A**ccounting based measures of Liquidity**

Liquidity ratios are calculated using information appearing on the banks published financial statements which should identify key bank liquidity trends. As such liquidity ratios are a snapshot in time and may not reflect the financial position of the company going forward. In addition to the assessment of the ratios, the researcher examined each line item appearing in the current assets and current liabilities section of the balance sheet. Previous studies have suggested the liquid assets to total assets ratio(LATA),liquid assets to total deposits (LATD),loans to total assets ratio(TLTA) and loans to deposits ratio(TLTD) as accounting based measures of bank liquidity. Moussa (2015) and Vodova (2011) suggested the liquid assets to total assets ratio as a measure for bank liquidity, Monteanu (2012) and Vodova (2013) adopted the liquid assets to total deposits ratio, Malik (2013) and Vodova (2012) suggested loans to total assets and Subedi (2013) and Tesfaye(2012) suggested loans to deposits ratio as a proxy for bank liquidity. Empirical literature shows that liquidity ratios are a respectable measure of bank liquidity (Moore, 2010; Praet and Herzberg, 2008; Rychtarik, 2009).This study seeks to measure liquidity by adopting all four liquidity ratios which are LATA, LATD, TLTA and TLTD so as to capture all discrepancies that may affect each ratio.

3.5.2 Independent Variables

This section converses the independent variables used in the econometric model in estimating the regression models for bank liquidity. Prior studies suggest that commercial

banks` liquidity is determined by bank specific factors and macroeconomic factors (Raesi et al., 2014; Rauch et al., 2010; Vodova, 2011) among others.

Loan growth

Tesfaye (2012) used annual growth rate of gross loans and advances to customers as proxy for loan growth and hypothesized a negative relationship between liquidity and loan growth. This study defines loan growth as annual growth rate of total loans and the expected sign is negative.

Non-performing loans

Non-performing loans are outstanding loans in both principal and interest for an extensive time disagreeing to the contents of the advance contract. If the loan is considered to be uncollectable that leads to reduction in banks liquidity but increase in illiquid loans, resultantly a bank run, triggered by depositor`s insecurity. Therefore, a negative relationship between bank liquidity and the amount of non-performing loans is expected following the studies by (Munteanu 2012; Subedi et al. 2013). The proxy used for non-performing loans was the percentage of non-performing loans in the total amount of bank loan.

Bank Size

Empirical literature defined bank size as the natural logarithm of total assets (e.g. Vodova 2011, Choon et al. 2013 and Rauch et al. 2010). The effect of bank size on liquidity is

expected to be positive according to studies by (Tesfaye, 2012 and Sebedi et al., 2013). The proxy for bank size in this study is natural logarithm of total bank assets.

Capital adequacy

The most common proxy for bank capital adequacy is the ratio of total equity to total assets (Schipper, 2013).Empirical literature is mixed regarding the effects of capital adequacy on bank liquidity as highlighted in the literature review. The first argument suggests that there is negative relationship between capital adequacy and bank liquidity whereas; the second argument is contradictory to this. This study considered the second hypothesis as suggested in other studies by (Vodova, 2011; Raesi et al., 2014; Bunda and Desquilbet, 2008). The proxy for capital adequacy used in this study was the ratio of equity to total assets and a positive relationship between capital adequacy and bank liquidity is expected.

Asset Quality

There are two approaches to measuring risk-taking behaviour of a bank whereby liquid banks should reduce the risk-taking behaviour. First approach is the balance sheet approach, the loan loss provision to gross loans ratio (Dietrich and Wanzenried, 2011) and the second one being loan loss provision divided by interest income, a profit and loss oriented approach (Ommeren, 2011). This study adopted the profit and loss oriented

approach proxy for credit risk. Studies by (Raiesi et al, 2014; Lucchetta, 2007) showed that a negative relationship is expected between asset quality and bank liquidity.

Profitability

Empirical evidence by Moussa et al. (2015) suggests the net profit to equity ratio as a proxy for profitability. The expected sign for the relationship between net profit to equity ratio and banks' liquidity is negative following the studies by (Vodova, 2012; Rauch et al., 2010; Valla and Saes-Escorbiac, 2006).

GDP

Saes-Escorbiac (2006) has defined gross domestic product as an indicator of business cycle. Low economic growth is associated with reduced demand for money and therefore leads to decreased liquidity (Vodova, 2013). Choon et al. (2013), Vodova (2013), Munteanu (2012) and Moore (2010) estimate a positive relationship between GDP and liquidity. The expected sign for this external variable is positive.

Inflation

Inflation is measured by the percentage change in consumer price index. According to the information asymmetry theory an increase in the rate of inflation drives down the real rate of assets return in the credit market as a result, the financial sector makes fewer loans. In turn, the amount of liquid assets held by economic agents including banks rise with the rise in inflation (Tesfaye, 2012). Raesi et al (2014); Bunda and Desquilbet

(2008) conclude a positive relationship between inflation and banks' liquidity. Thus the expected sign is positive.

Unemployment

Rauch et al. (2010) highlighted that the level of unemployment is connected with the demand for loans and concluded a negative relationship between unemployment and bank liquidity. Default risk of borrowers and potential borrowers rises in periods of high unemployment, hence banks reduce the volume of loans provided thus increase their liquidity (Vodova, 2012).This study expected a negative impact of unemployment on bank liquidity.

Lending rate

Bunda and Desquilbet (2008) defined the lending rate as a measure of lending profitability and concluded a negative relationship between lending rate and bank liquidity. Increase in the lending rate motivates banks to focus on lending activity consequently decreasing the bank liquidity. Thus a negative relationship is expected between lending rate and bank liquidity.

3.6 Data analysis plan

The researcher adopted an econometric method to measure the strength of relationship between the depended variables of liquidity (liquid assets to total assets ratio (LATA), liquid assets to total deposits (LATD), loans to total assets ratio (TLTA) and loans to

deposits ratio (TLTD)) and explanatory variables (internal and external variables) in a multiple regression analysis by making use of Stata Version 11. Study results were presented using descriptive statistics in the form of frequency tables and graphs. Statistical tables made it easier to group data for further exploration and interpretation of findings. Graphs were used to solve the weaknesses of tables, which are not able to display liquidity trends.

3.7 Summary

The chapter outlined the research design and justified each of the techniques and methods selected. Secondary data was gathered from relevant sources for presentation and analysis. The data collected was required to answer research questions essentially on the determinants of commercial bank liquidity in Zimbabwe. Various techniques were employed to ensure reliability and validity of data gathered. The next chapter will look at data analysis, presentation and interpretation.

CHAPTER 4

RESULTS AND DISCUSSION

4.1 Introduction

This chapter looks at the presentation and analysis of the results from the study of the determinants of bank liquidity in Zimbabwe. The chapter covers the diagnostics test conducted on the liquidity model such as heteroscedasticity test, Haussmann tests, tests for autocorrelation and multicollinearity tests. The chapter also presents and discusses the study results.

The study examines the effects of internal and external determinants on bank liquidity in Zimbabwe. The bank specific determinants included in the analysis were: net profit to equity, annual growth in loans, natural logarithm of total assets, equity to total assets, loan loss provision to interest, whilst the macroeconomic factors included real GDP growth, inflation, unemployment and lending rate.

Literature has mapped the following liquidity indicators namely liquid assets to total assets, liquid assets to total deposits, loans to total assets and loans to deposits (Vodova,

2011). Therefore the four stated indicators were considered as the dependent variables in analyzing the bank liquidity determinants of commercial banks in Zimbabwe. Data analysis was executed primarily through trend statistics and descriptive statistics before estimation of the liquidity model.

4.2 Descriptive statistics of the data

Table 4.1 below shows the descriptive statistics of the dependent and independent variables. The proxies for bank liquidity were liquid assets to total assets (LATA), liquid assets to total deposits (LATD); loans to total assets (TLTA), loans to deposits (TLTD).

Table 4.1: Descriptive statistics of variables

Variable	Obs	Mean	Std. Dev.	Min	Max
lata	80	25.63119	15.361	0	64.19
latd	80	32.96188	19.15001	0	78.79
tlta	80	56.82025	14.94072	0	86.93
tltd	80	78.72325	30.65209	17.88	184.47
roe	80	6.957625	25.92853	-135	46.6
lg	80	17.86638	32.04632	-48.39	148.36
npltl	80	9.61725	14.83255	-4	112.2
nlta	80	19.19499	.7504924	17.67	21.14
eqta	80	17.66975	7.979155	3.34	51.75
llpnii	80	25.94563	25.84581	0	133.8
gdp	80	8.32	3.71948	3.2	11.9
infl	80	2.5	1.719582	-.2	4.9
unemp	80	6.58	2.375742	5.3	11.3
lr	80	22.62	4.168307	19	30.6

The liquid assets to total assets ratio has a positive mean value of 25.63% and a maximum value of 64.19%,implying that commercial banks in Zimbabwe had the ability to absorb any liquidity shock inherent in the market. The liquid assets to deposits plus short term borrowing, with a standard deviation of 19.15% and a maximum value of 78.79% illustrates banks are indeed sensitive to deposit withdrawals due to the nature if their deposit mix which is tilted in favor of wholesale deposits. The loans to total assets ratio a maximum of 86.93% of total assets being tied up in illiquid loans implying banks are less liquid.

The ratio of loans to deposits reflected a minimum of 17.88% against the maximum of 184.47% implying banks were converting deposits to loans at an average rate of 78.72%. This was triggered by the fact that banks were anticipating the lucrative interest margin by accessing cheap deposits for onward lending at higher rates, since the RBZ had not set any lending rate. In so doing majority of the banks were less liquid.

Among the bank specific factor affecting liquidity of commercial banks was NPL that measures the asset/loan quality of banks. The mean value of the percentage of non-performing loans in the total amount of loans and advances to customers was 10% with the maximum 112% which indicates presence of high credit risk in some of the banks. There was moderate dispersion of NPL among Zimbabwean commercial banks as shown by the standard deviation of 14.8%.

Loan loss provisions at an average of 26% of net interest income indicate that the credit risk banks face is moderate to high since in terms of provisions the rate of 26% would mean the asset is in the sub-standard grade and amounts outstanding are highly unrecoverable. Majority of the banks are sufficiently capitalised as shown by the average capital ratio of 18% against the regulatory requirement of 12%.

The other independent variables were the macroeconomic indicators that can affect commercial banks liquidity position over time. Average inflation at 2.5% was lower than the inflation for the sub-Saharan region at 14% according to the study by Munyambonera (2013). The average growth rate for the GDP was 8.3% against 22% for the sub-Saharan region, Munyambonera, (2013).The GDP growth in Zimbabwe is still very slow indicating that the economy is also growing at a slow rate. This growth implies that corporate customers might face difficulties in servicing bank loans which will in turn cascade down to high impairment charges and low liquidity levels for banks as more liabilities will be locked under illiquid loans.

4.3 Trend analysis

Figure 4.1 stipulates that the liquidity trend of the commercial banks in Zimbabwe is tumbling since the dollarization period. In the year 2010, the liquidity ratios for liquid assets to total assets, liquid assets to total deposits, loans to total assets , loans to deposits were 30.43%, 37.75%, 47.77% and 67.79% respectively signifying that the banking

sector faced low liquidity although considerably better than the other succeeding years. However, the low liquidity is mainly due to absence of lender of last resort such that banks had to rely on retail deposits which were also tied up as illiquid assets in the form of loans. The liquidity, as conveyed again by LATA, LATD, TLTA and TLTD in the Figure 4.1, in the year 2011 considerably worsened to 25.27%, 31.32%, 60.37% and 84.15% respectively. The further decrease in liquidity as is attributed to an upsurge in the disbursement of loans by banks as evidenced by 84.15% of banking sector liquid liabilities being tied up in illiquid loans.

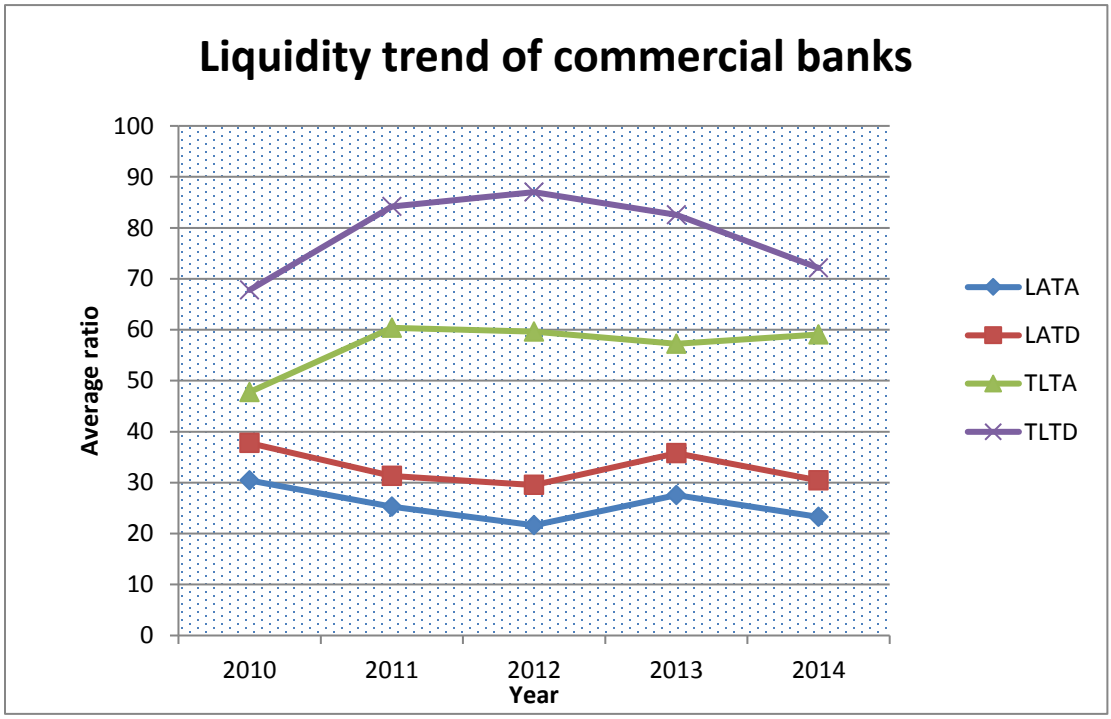

Figure 4.1: Trend analysis of commercial bank liquidity

In the year 2012, the downward trend in liquidity as highlighted in Figure 4.2 continued particularly for liquid assets to total deposits, loans to total assets, loans to deposit at 29.52%, 59.64% and 87.01% respectively. Similar liquidity levels were experienced for the year 2013, however for the year 2014 loans to deposit ratio decreased to 72.13% from 82.53% in the prior year. This drop entails that loans and advances are growing at a slower rate than deposits as a result of increased lending conservatism by the banks in Zimbabwe.

Liquidity levels of banks seems to be changing over time and in order to statistically test whether there were significant changes in bank liquidity, a repeated ANOVA test was used on all the four proxies of bank liquidity.

The results, from the repeated ANOVA (see appendix A), indicate that there was no significant change for the liquid assets to total deposits(LATD) and loans to deposits(TLTD) variables over the period under review as indicated by the probability at 0.1949 and 0.0908 respectively from the ANOVA table which was above the significance value of 0.05. Further studies are therefore required to analyse the reasons why liquidity has not changed over time as expected for LATD and TLTD. Liquid assets to total assets (LATA) and total loans to total assets (TLTA) are the only liquidity indicators that presented significant changes during the period under review with a probability of 0.0398 and 0.0089 respectively which were below the significance value of 0.05. This indicates

that banks were more vulnerable to the dwindling sources of funding and a greater percentage of the assets were tied up as illiquid loans resulting in banks' ability to meet its funding obligations being compromised and increased sensitivity related to deposit withdrawals. This could possibly be attributed to the economic environment which has been characterized by deflation where economic development has been proven to be very impending but at a very slow pace as well as liquidity challenges as evidenced by industry closures coupled with retrenchments underway. Changes in LATA and TLTA are in support of the statistics of increase in banks loans during the period under review and some banks holding more liquid assets which yield lower income in the absence of the lender of last resort. This is also a reflection by the market of its increase in appetite for advance products albeit low deposit base and liquidity constraints.

It is important to establish the liquidity trends between locally-owned and foreign-owned commercial banks operating in Zimbabwe because in the event of liquidity challenges, foreign-owned banks in addition to the interbank market, they can easily get external assistance from their international counterparties operating in more stable economies unlike the locally-owned banks, who ideally have to resort to the interbank market and lender of last resort. However, since dollarization the central bank has been incapacitated to perform its role as lender of last resort , implying local bank have to rely on the interbank market which is also sluggish. Hence the need to assess trend of liquidity between the indigenous-owned and foreign-owned banks using the liquidity ratios that

were proved to have significantly changed over the period 2010-2014 and the liquidity proxies are liquid assets to total assets ratio and total loans to total assets.

Figure 4.2 below shows that foreign-owned banks had higher liquid assets to total assets ratio than locally-owned banks over the period 2010 to 2014, implying foreign-owned banks had higher capacity to absorb liquidity shock than the local-owned banks. However high value of this ratio may also be interpreted as inefficiency on part of the bank, since liquid assets yield lower income, hence liquidity bears high opportunity costs for the bank.

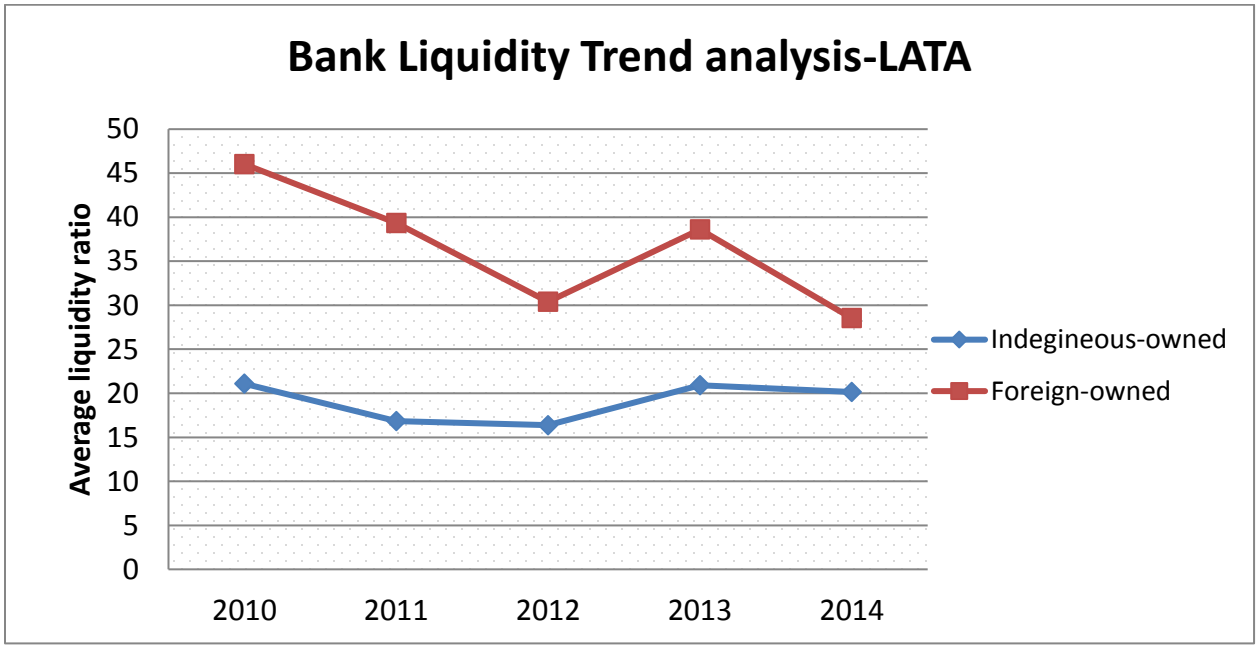

Figure 4.2: Liquid assets to total assets ratio trend analysis

Figure 4.3 below shows the total loans to total assets ratio for both indigenous-owned and foreign-owned banks, therefore the higher the ratio, the less liquid the bank is (Vodova, 2011).The indigenous banks had higher total loans to total assets ratio than foreign-owned bank, implying that indigenous-owned banks were less liquid because majority of the loans were being granted by locally-owned banks especially in 2011 and 2013.

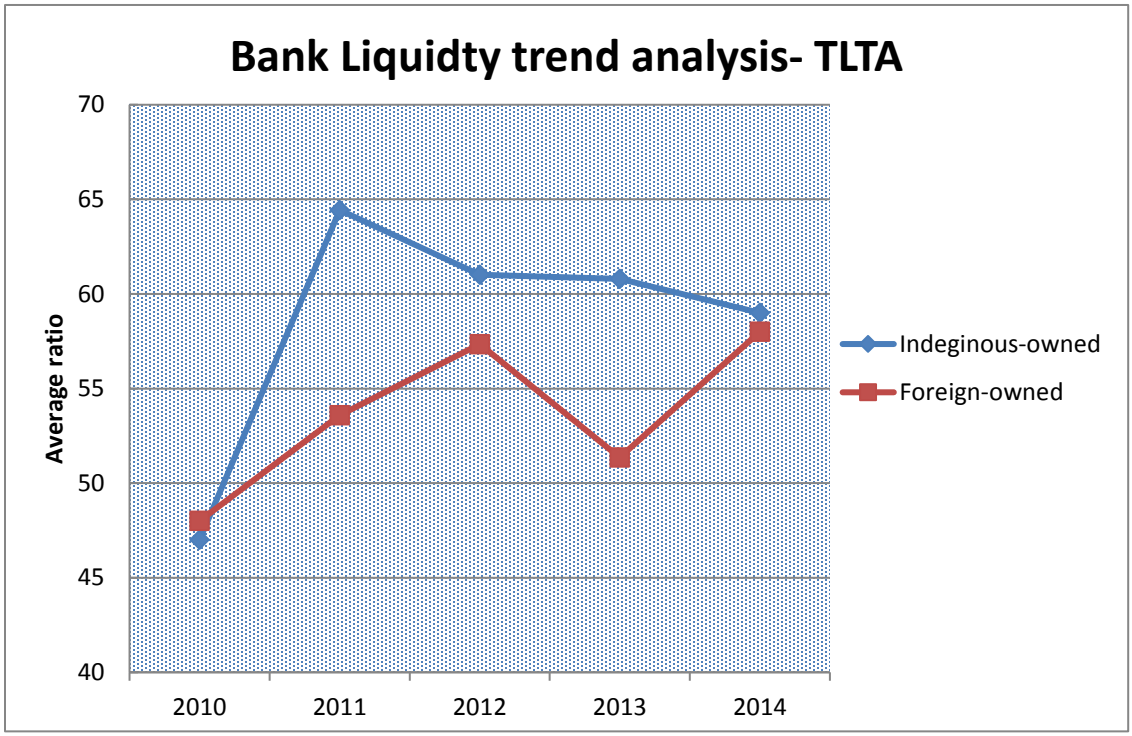

Figure 4.3: Total loans to total assets ratio trend analysis

However in 2014 the ratios were almost similar to the extent that all banks were striving to meet the market demand of loans hence foreign-owned banks increased their advances

book. It is often believed that the more banks offer loans the more it does generate revenue (Bentum, 2012).

4.4 Test for Correlation

Correlation is a way to index the degree to which two or more variables are associated with or related to each other (Tesfaye, 2012).It helps to test the existence of recurring patterns in the dependent and independent variables and in identifying missing fundamental frequency in a signal implied by its harmonic frequencies. The assessment is done to determine level of independence among residuals of variables. Collinearity strength exceeding 0.8 is assumed to be almost perfect collinear and must be corrected through adding or removing another model variable (Iloska, 2014). This criterion was used to reject the null hypothesis for those matrix values whose collinearity strength was found to be more than 0.8. The results as shown in Table 4.2 below reveal that there is no autocorrelation among variables as their values were less than 0.8 with the exception of liquid assets to total assets and liquid assets to total deposits which are both measures of liquidity and independent variables; hence they were retained in the model.

Table 4.2: Correlation Matrix

	LATA	LATD	TLTA	TLTD	ROE	Loan growth	NPL	Bank Size	Capital Adequacy	Asset quality	GDP	Inflation	Unemployment	Lending rate
LATA	1													
LATD	0.9798	1												
TLTA	-0.4472	-0.4829	1											
TLTD	-0.6311	-0.6224	0.6153	1										
ROE	0.3135	0.2758	-0.0793	-0.3059	1									
Loan growth	-0.1607	-0.1393	0.2355	0.1457	0.1396	1								
NPL	-0.3509	-0.3471	0.0612	0.0398	-0.2515	-0.1509	1							
Bank size	-0.2650	0.2108	0.0539	-0.1934	0.4468	0.0355	-0.0838	1						
Capital adequacy	-0.2395	-0.1187	-0.0931	0.2681	-0.2054	-0.0117	0.0773	-0.3144	1					
Asset quality	-0.2228	-0.1294	0.2091	0.2364	0.4302	0.0088	0.2721	-0.1235	0.4720	1				
GDP	0.0322	0.0091	-0.0800	0.0423	0.1116	0.2363	-0.3918	-0.2571	-0.2092	-0.3549	1			
Inflation	0.0392	0.0120	-0.0228	0.0917	0.0760	0.2231	-0.3842	-0.2230	-0.2429	-0.2935	0.7231	1		
Unemployment	-0.0720	-0.0622	0.0692	-0.1135	-0.0858	-0.1475	0.3038	0.1664	0.1324	0.1760	-0.6905	-0.7888	1	
Lending rate	0.1298	0.1116	-0.2963	-0.1616	0.0697	-0.2088	-0.2138	-0.2591	0.0590	-0.2949	0.3958	0.1263	-0.2392	1

Source: Author`s estimates

4.5 Heteroscedasticity Test

The Breusch-Pagan /Cook –Weisberg test was applied to the regression to check for the presence of heteroscedasticity. The null hypothesis is that the error variances are constant against the alternative that the variances are not constant Park (2011). The results as shown in **Annexure A** show that there is no heteroscedasticity, therefore it is appropriate to use panel data models because the individual or time effects are significant.

4.6 Haussmann Test

The Haussmann test was done to test which model either fixed effect model or random effects model produced consistent estimates. The null hypothesis states that the coefficients estimated by the random effects estimator are similar to the ones estimated by the consistent fixed effects estimator. If the p-value, Prob> chi2 value is larger than 0.05 then it is safe to use random effects and otherwise the fixed effects should be used, (Stock J et al. 2003). Basing on Haussmann specification test results in Table 4.4 below, a random effect model is preferred to the fixed effect model.

Table 4.3: Haussmann test results

Liquidity models	**p-value**
Model 1	0.8840
Model 2	0.9724
Model 3	0.9931

Model 4	0.74

According to Brooks (2008) the random effects model is more appropriate when the entities in the sample can be thought of as having been randomly selected from the population, but a fixed effect model is more plausible when the entities in the sample effectively constitute the entire population/sample frame. Hence, the sample for this study was selected randomly, therefore random effects is appropriate.

4.7 Regression Model Results

In order to identify determinants of liquidity of Zimbabwean commercial banks, data for the period 2010-2014 was used and the explanatory variables utilized were calculated from data collected for analysis in the bank annual financial statements.

Table 4.3 below shows results from the regression model for the dependent variable liquidity as measured by liquid assets to total assets(LATA), liquid assets to total deposits(LATD), loans to total assets(TLTA) and loans to deposits ratio(TLTD).

Table 4.4 Summary of the regression results for LATA, LATD, TLTA and TLTD

Variable	LATA	LATD	TLTA	TLTD
Constant	-173.8	-105.5	33.57	88.15
	(-2.60)	(-1.29)	(0.45)	(0.57)
Loan growth	-0.0846	-0.141	-	-
	(-2.28)	(-3.01)		
Non-performing loans	-0.232	-0.382	-0.110	-
	(-2.64)	(-3.27)	(-0.98)	-
Bank Size	9.830	8.099	2.883	2.078
	(3.00)	(1.96)	(0.80)	(0.30)
Capital adequacy	-0.255	-0.158	-0.326	1.424
	(-1.46)	(-0.65)	(-1.47)	(2.88)
GDP	-1.697	0.572	1.253	3.950

	(-1.71)	(0.63)	(1.04)	(1.26)
Inflation	3.664	-2.259	-2.761	-7.404
	(1.82)	(-1.01)	(-1.09)	(-0.93)
Lending rate	1.062	-	-1.273	-2.797
	(2.76)	-	(-2.75)	(-2.29)
Unemployment	-	-1.084	-	-3.343
		(-1.29)		(-1.51)
Profitability	-	-	-	-0.18
				(-1.17)
Asset quality	-	-	-	-0.0875
				(-0.55)
N	80	80	80	80

Notes:
In parentheses are absolute t-statistic values

Loan growth

The coefficient on loan growth has the expected negative sign and the relationship between loan growth and liquidity as measured by LATA and LATD was proved to be significant. Tesfaye (2012) had similar findings on the coefficient; however the relationship was insignificant between loan growth and LATA. According to the argument of treating loans as illiquid assets of banks, when the amount of loans provided by banks increase, the amount of illiquid assets in the bank's total assets portfolio also increases and this leads to a decline in liquid assets held by banks. Therefore, this finding reveals that larger amount of loans were provided from periodic deposits whilst affecting the amount of liquid assets held by the commercial banks in Zimbabwe.

Non-performing loans

The research produced a negative relationship between non-performing loans and liquidity as measured by the proxies LATA, LATD and TLTA. This result is consistent with the hypothesis and results identified by Munteanu (2012) in the study of Romania banks and Subedi et al. (2013) in Nepalese commercial banks.The results were significant for LATA and LATD whilst insignificant for TLTA. Studies by Vodova (2011) on Czech Republic, Choon et al. (2013) and Tesfaye (2012) on Ethiopia are in contradiction to the findings as they suggest a positive relationship between non-performing loans and

liquidity which could be a sign of prudent policy of banks as they offset the higher credit risk with cautious liquidity risk management.

Bank size

The size variable as indicated by the natural logarithm on assets had a positive effect on all the liquidity equations with significant effect on the proxies for liquidity that is liquid assets to total assets and liquid assets to total deposits. The results were in concordance with hypothesis and the findings by (Tesfaye, 2012 and Sebedi et al. 2013). Contrary to the findings of this study were studies by Moussa et al. (2015), Vodova (2013), Choon et al. (2013) and Rauch et al. (2010) who found the relationship to have a negative effect on liquidity which corresponds to the "too big to fail" hypothesis.

Capital adequacy

The positive and statistically significant impact of capital adequacy on liquidity as measured by total loans to total deposits is in line with the hypothesis and findings of Czech commercial banks analysis (Vodova, 2011). Based on the argument of risk absorption, the higher equity to total assets ratio of banks the higher the capacity of the bank to absorb risks and create higher level of liquidity to the external public through deposits and loans. In other words, higher capital ratio of banks create positive signal to the external public and attract more deposits. In turn this enable banks to hold more liquid

assets that create better potential to liquidity creation to the external public (Tesfaye ,2012).

On the other hand, capital adequacy had negative but statistically insignificant impact on banks liquidity measured by liquid assets to total assets, liquid assets to total deposits and total loans to total assets. The result for total loans to total assets is in line with the findings of Munteanu (2012) study of bank liquidity in Romania. Studies done by Hovath et.al (2012) and Choon et al. (2013) in Malaysia revealed a negative relationship between the creation of liquidity and bank capital. The coefficient sign of capital adequacy in these equations was opposite to the expected result. The idea of liquidity creation by banks predicts that the increase in capital improves the ability of the bank to create liquidity but the hypothesis of financial fragility predicted that the increase of capital reduces liquidity creation (Diamond and Rajan 2000). But since the coefficient was statistically insignificant we could not say capital adequacy had negative impact on banks liquidity. Hence, our conclusion for the impact of capital adequacy is positive on bank liquidity based on the fourth model/Total loans to total deposits.

Asset quality

The loan loss provision to interest income ratio was used as proxy to measure credit risk and its coefficient has the expected negative sign for total loans to total deposits. Non-performing loans are a result of poor credit quality assets which turn out to be illiquid

loans. The findings in the study were consistent with the hypotheses as the loan loss provision to interest income ratio was found to have a negative effect on bank liquidity. Raeisi et al. (2014) also support the findings of this study whilst findings by Munteanu (2012) were in contradiction to the hypotheses as it was found to have a positive effect on liquidity for banks in Romania.

Profitability

For this study the proxy for profitability was return on equity and the expected sign was negative as supported by the standard economic theory which emphasizes the negative correlation of liquidity and profitability. A negative relationship between profitability and liquidity was identified under this study and similar results were identified by Rauch et al. (2010) and Vodova (2012) in the study of Slovakian banks. Contradictory findings were revealed in the studies done by Choon et al. (2013) and Vodova (2013) on Hungary banks which found a positive relationship between profitability and liquidity.

GDP

GDP growth is a good proxy for the business cycle because the up and downswings influence the demand for borrowing (Schipper, 2013). For instance, during a downturn the demand for credit is low whereas when the economy is thriving the demand for credit is high. The estimated GDP coefficient on liquid assets and total assets is negative and insignificant. Subedi et al. (2013) had similar findings for Nepalese commercial banks.

Alper et al. (2012) demonstrated that during economic growth banks would issue more loans and run down their liquidity buffers, however during economic slump lending prospects are not so good so banks hold greater share of liquid assets.

The results from this study for the equations liquid assets to total deposits, total loans to total assets and Total loans and total deposits were in support of the hypothesis as they indicated a positive effect of GDP on liquidity .Vodova (2013) had similar results for banks in Hungary. The positive sign signals that cyclical dip should lower banks anticipated transactions demand for money and therefore lead to decreased liquidity (Vodova, 2013).

Inflation

The positive impact of inflation on liquidity in the case of liquid assets and total assets model was in line with hypothesis that is based on the information asymmetry theory, which states that in the inflationary economy commercial banks refrain from long term investments due to the decline in the real value of their investments that exacerbate the credit market rationing and prefer to hold liquid assets.

However for the remaining liquidity measures LATD, TLTA and TLTD, the inflation rate proved to have a negative and insignificant effect on liquidity. These results were not in line with the hypothesis. It seems that inflation deteriorates the overall macroeconomic environment and thus lowers bank liquidity. For total loans and total assets, this is a

contrary result found by Raesi et al. (2014) but similar a result found by Moussa et al. (2015).

Lending rate

In line with the hypothesis, lending rate has a negative and significant impact on liquidity as indicated by liquidity proxies for total loans to total assets and total loans and total deposits. Vodova (2010) on Czech banks had similar results.

Positive sign of the lending rate on liquid assets to total assets proxy for liquidity correspond neither to the hypothesis nor to the standard economic theory. Vodova (2013) had similar results for banks in Hungary. The results highlight that banks are not driven to lend more by higher lending rates, which is consistent with the problem of credit crisis and rationing, however this could be a sign of prudent policy of banks: they offset the higher credit risk with cautious liquidity risk management.

Unemployment rate

According to Rauch et al. (2010), the level of unemployment should be connected with demand for loans. The negative sign of the coefficient for equations liquid assets to total deposits and total loans to total deposits is in line with expected hypothesis. An increase in unemployment rate should improve the bank liquidity since credit risk increases in

periods of high employment; as such banks reduce the volume of loans provided for in unemployment periods, thus increasing their liquidity. The results are similar to Raesi et al. (2014) and Vodova (2012) studies in Iran and Slovakia respectively. However, Munteanu (2012) had contrasting results for banks in Romania.

4.8 Summary and Conclusion of the chapter

In this chapter secondary data associated to determinants of commercial bank liquidity was collected and processed into essential information, which was then analysed using Stata and interpreted. Four models were analysed using four different liquidity ratios namely liquid assets to total assets, liquid assets to total deposits, total loans to total assets and total loans to total deposits. An analysis on significant change in liquidity was done using repeated Anova and the results showed that there was significant change in liquidity for the period 2010-2014.For the same period, foreign-owned banks were more liquid than indigenous-owned banks who more illiquid assets as loans. The models' results were processed through regression and determinants that were discovered to have an impact on liquidity were loan growth, non-performing loans, bank size, capital adequacy, asset quality, profitability, lending rate, GDP growth, inflation rate and unemployment.

CHAPTER 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter outlines the factors that determine bank liquidity in Zimbabwe during the dollarization period. Research findings were used to provide insight on some recommendations, to commercial banks and related stakeholders like credit managers, the government ministries and Central Bank on capitalising on bank liquidity. Conclusions of the study and suggestions for future research were also highlighted.

5.2 Summary of Findings

The main aim of the research was on identifying the determinants of liquidity for commercial banks operating in Zimbabwe for the period 2010 -2014 by considering bank-specific and macro-economic indicators. The study was motivated by the inconsistencies in bank liquidity for the banking sector as some banks were facing chronic liquidity challenges whilst some had acceptable liquidity levels and yet operating in the same environment. On average it was noted that the TLTD ratio had dropped for the year 2014, however it was higher than the 2010 ratio, indicating that banks were less

liquid since the ratio was higher. Economic challenges faced by banks since pre and post dollarization were highlighted in the study as well as statistics on the banks that had lower liquidity levels, the best and the worst cases as at December 2014.

Studies on the determinants of bank liquidity for the Zimbabwean banking sector were limited therefore reference was made to prior studies of bank liquidity for developing and developed countries. Common determinants of bank liquidity amongst the empirical studies were considered for the Zimbabwean banking sector study. These were profitability, loan growth, non-performing loans, bank size, capital adequacy, asset quality, GDP, inflation, unemployment and lending rate. Theories that were in support of or against some of the determinants were also reviewed. The anticipated income theory emphasises the earning potential and credit worthiness of a borrower as the ultimate guarantee for ensuring adequate liquidity. The bad management hypothesis, suggest that poor credit quality asset impacts on non-performing loans which in turn affects liquidity because of illiquid loans.

An explanatory research design was used to identify the determinants of bank liquidity for commercial banks in Zimbabwe. Secondary data for the period 2010-2014 was used for the research since the nature of the study required secondary data in the form of audited bank financial statements and economic data for the macro-economic variables. Repeated Anova was used to test for significant change in bank liquidity over the period

2010-2014 using data on liquidity proxies. The results revealed that the bank liquidity changed over the period and worsened in 2014 when compared to 2010 and foreign-owned banks had better liquidity levels when compared to indigenous-owned banks

Research findings from the study proposed that the main determinants of bank liquidity in Zimbabwe were loan growth, non-performing loans, bank size, capital adequacy, lending rate, profitability, asset quality, GDP, inflation and unemployment. Bank liquidity had positive significant relationship with bank size and capital adequacy whilst it was not significant for GDP and inflation whilst loan growth, non-performing loans and lending rate had negative significant effects on bank liquidity except for profitability, asset quality and unemployment which were not significant.

The impact of bank size on its liquidity is positive, implying that liquidity is increasing with the size of the bank. This finding is in contradiction with the "too big to fail" hypothesis because even big banks in Zimbabwe have a greater motivation to hold liquid assets in the absence of Lender of last resort for liquidity assistance. The positive influence of capital on liquidity is consistent with the assumption that a bank with sufficient capital adequacy should be liquid too.

Although most researchers assumed a negative link between GDP growth and bank liquidity, the positive results show that the approach by Moore (2010) can be applied on

Zimbabwean banking industry. The positive sign of the coefficient indicates that cyclical downturn should lower banks expected demand for money and therefore lead to decreased liquidity in terms of funding liabilities.

Inflation increases bank`s exposure to principal values of loans granted to clients so during periods of inflation banks hold more liquid assets. This study asserts a positive but insignificant impact of inflation on liquidity mainly attributed to the decline in the inflation rate into the deflation zone during the year 2014; implying banks might not necessarily be holding more liquid assets as anticipated.

Results of the anlysis show a significant negative influence of lending rates and loan growth on liquidity,implying higher lending rates encourage banks to provide more loans resultantly decreasing the bank`s liquid assets.asset quality had a negative but insignigicant effect on liquidity.Non-perfoming loans proved to have a negative and significant effect on liquidity,this could be a sign of imprudent credit risk policy of banks and inadequate supervision by the Central Bank as highlighted by IMF(2012) that the Central Bank of Zimbabwe was creating fertile ground for indiscipline through weak monitoring of commercial banks. This was evidenced by non-adherene to lending rules by banks and continued lending to inseders and related parties, poor corporate

governance practices and violation of prudential limits, which triggered a surge in NPLs and resultantly closure of commercial banks due to liquidity challenges.

The negative impact of profitability measured by return on equity is consistent with the standard finance theory which underscores the negative relationship of profitability and liquidity.

The level of unemployment should be associated with the demand for loans and act as an indicator of the health of the economy (Rauch et al., 2010). Credit risk rises in periods of high unemployment; hence banks reduce the volume of loans to be provided, consequently increasing their liquidity. The results show the negative link between unemployment and bank liquidity, implying that an increase in unemployment rate increases liquidity which is in line with the impact of recession on bank liquidity. However, from a point of view where the bank has already granted loans to existing borrowers, if the business environment is unfavorable, it can worsen the borrower's ability to repay the loans which leads to a decline in bank liquidity as evidenced in Zimbabwe where employees are being retrenched and companies shutting down owing to liquidity constraints.

5.3 Conclusion

The challenges of non-performing loans remain crucial to bank liquidity as it speeds up the deterioration of the advances book thereby increasing illiquid assets. The results from the regression models specify that loan growth, non-performing loans, bank size, capital adequacy, lending rate, asset quality, ROE, GDP, inflation and unemployment are the explanatory variables to bank liquidity in the Zimbabwean economy. Banks that want to improve their liquidity may take into consideration these variables.

5.4 Recommendations

The empirical findings of this research lead to the formulation of recommendations outlined below. These recommendations were interweaved to the prevailing business environment, so as to help commercial banks and related stakeholders on enhanced strategies of improving bank liquidity so as to enhance the continued existence of Zimbabwean commercial banks.

5.4.1 Recommendations to Commercial banks

Recommendations to commercial banks were motivated by the bank-specific variables that were found to have a significant influence on bank liquidity. Therefore the following recommendations were proposed for implementation by commercial banks:

i. Enhancing credit risk management

The increase in non-performing loans has made it necessary for banks to be more prudent in their lending practices because ensuring a quality loan book minimizes pressure on funding liquidity. Banks in Zimbabwe should adopt enhanced ways of managing credit risk such as minimizing adverse selection during the time of credit approval, improving credit administration procedures, ensuring high debt recovery through strict follow up of borrowers to minimize the problem of moral hazards after provision of credit.

ii. Improving on operational efficiency

Commercial banks need to grow capital through adopting cost cutting measures and improvement in asset quality so as to improve retained earnings. This can be done by motivating customers to use mobile and internet banking facilities rather than the conventional banking methods which are expensive to run.

iii. Strengthening of local banks

Foreign banks are generally larger in size and are adequately capitalized than local banks. Such attributes create a competitive advantage for foreign banks which enables them to capture the large market share and possibly enjoy the economies of scale which enables them to have higher capacity to absorb liquidity shock. Hence, local banks should

increase the financial flexibility through adequate capitalization to enable them to compete effectively with the foreign owned banks.

5.4.2 Recommendations to the Central Bank and the Government

The study findings were used to deduce the following recommendation for adoption by the RBZ and the government.

a. Encourage bank capitalization

The Central Bank should encourage banks to be adequately capitalized through mergers and acquisitions of financial institutions in order to build strong banks that effectively play their intermediary role in the economy. This ensures that bank balance sheets will be strong enough to maintain the required liquidity ratio thus enhancing confidence in the industry.

b. Adoption of partial dollarization

The economy continues to be characterized by chronic liquidity challenges as a result of using full dollarization; a substitute for the RBZ will be to embrace partial dollarization. Under this system the domestic currency will be used alongside a chosen foreign currency. This will restore RBZ`s control over money supply and will boost stability in the economy. Subsequently, the use of a bi-currency system will improve liquidity in the

economy which will lower the costs of funds and lending rates as well as reducing the unemployment rate through job creations.

c. Enhanced bank supervision

The Central bank should enhance its check and control oversight techniques on banks' lending activities. The laidback approach on bank supervision by the regulator creates a safe haven for non-compliance to prudential regulations, poor corporate governance practices, insider and related party lending by banks. The RBZ ought to improve its on-site and off-site monitoring techniques, so that enhanced due diligence is done before the advances book goes beyond the retrieval levels.

d. Reduced government intervention in the banking operations

Banks should be given the flexibility to operate within their set risk appetite when dealing with the government. Excessive government interference in the banking business through dedicated lending creates high concentration risk, which is linked to high default rates. Government intervention may result in regulatory forbearance and creation of bad loans which will have an adverse effect on bank liquidity.

e. Formation of a Credit Reference System in Zimbabwe

The Central bank should actively facilitate the creation of a Credit Referencing system in Zimbabwe. The system will mitigate the information asymmetry that prevailed by

facilitating credit information sharing amongst financial institutions in an effort to reduce non-performing loans so as to boost bank liquidity. The borrower`s data will be easily accessed to provide better and more accurate borrower`s credit history so that banks make a better informed decision basing on the debtor`s integrity.

5.5 Suggestions for Future Research

The prime focus of this research was on finding the determinants of bank liquidity in Zimbabwe. However, future researchers may examine determinants of liquidity for other financial institutions like microfinance companies, custodial companies and insurance companies. Future studies can be comprehensive by exploring qualitative factors such as management efficiency, changes in regulation or political incidences, salary and wages levels as probable determinants in addition to the financial ratios.

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