# CREDIT RATINGS AND ASSET LIQUIDITY AMONG COMMERCIAL BANKS IN KENYA

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**A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF SCIENCE IN FINANCE, FACULTY OF BUSINESS AND MANAGEMENT SCIENCES, UNIVERSITY OF NAIROBI**

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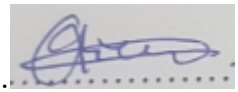
## DECLARATION

It's my declaration that this research project is my own work and has not been submitted for any degree or examination in any other institution.

Signature…  …… Date…10/11/2021…

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# DEDICATION

My project report is dedicated to my beloved partner Josiah Juma and my beloved nephew Benjamin Ochieng for the emotional and moral support they accorded me during the whole period of the study. God bless you abundantly.

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# LIST OF ABBREVIATION

| | | |
|---|---|---|
| CBK | : | "Central Bank of Kenya" |
| S&P | : | Standard and Poor's |
| NPL | : | Non-Performing Loans |
| CR-CS | : | Credit rating-capital structure hypothesis |
| OLS | : | Ordinary least square (OLS) |
| VIF | : | Variance Inflation Factor |
| IMF | : | International Monetary Fund |

# ABSTRACT

Capital structure decisions is an important role for the managers of listed firms, with the liquidity of firm considered as one of the key decisions for firm managers. Credit ratings of a firm has implications on the liquidity of firm, yet the impact and nature of this relationship in the Kenyan financial sector is unknown. The goal of "this study was to establish the relationship between credit ratings and asset liquidity of listed commercial banks in Kenya". This was analyzed through the following sub objectives: "to determine the relationship between investment credit ratings and liquidity of listed commercial banks in Kenya, to assess the relationship between speculative credit ratings and liquidity of listed commercial banks in Kenya and to investigate the relationship between sovereign credit ratings and liquidity of listed commercial banks in Kenya". Credit ratings-Asset liquidity relationship was analyzed based on the theories of signal, pecking order and trade off theory. Correlational study design was employed through the use of data obtained from CBK for 31 commercial banks out of the targeted 42 banks in Kenya. Credit ratings data was collected from 28 banks that utilize Moody's ratings and 3 banks that uses Fitch ratings. Given that the ratings scales have different scores with varying numerical strength, the researcher developed unified rating scores that entailed the following: for the investment ratings scores (highest rating, high-grade, upper-medium grade, medium grade and lowest grade), speculative ratings ("speculative elements with moderate credit risk, speculative with substantial credit risk, speculative and subject to high credit risk, speculative with poor standing, speculative and near default") and sovereign ratings were measured through (high credit worthiness, sufficient credit worthiness, low credit worthiness and very low credit worthiness). Multiple linear regression technique was utilized in the analysis of data. The study results reported that credit ratings explain the variation in asset liquidity by 41.19%. The study found out that investment ratings have "a positive and significant relationship with asset liquidity of commercial banks in Kenya". The study reported that speculative ratings have "a positive and significant relationship with asset liquidity of commercial banks in Kenya". "The study also found out that sovereign ratings have a positive and non-significant relationship with asset liquidity of commercial banks in Kenya". The study concludes that credit ratings influence asset quality of commercial banks through investment and speculative ratings. The study recommends that CBK and Bank directors develop policy regulation that will strengthen the credit ratings of banks as a way to improve asset liquidity of banks.

# CHAPTER ONE

# INTRODUCTION

## 1.1 Introduction

The banking sector is a critical component of the economy because acts as intermediary between surplus and deficit units, respectively; it also plays a vital role balancing the different sides of a company's balance sheet. The financial position statement provides essential information to relevant stakeholders. The significance of credit ratings to interested stakeholders was renewed by the 2007/08 global financial crisis. Credit ratings is seen as essential in providing investors with information on the positions of banks. Making decisions about whether or not to invest in a bank is tied to the credit ratings of a bank (Kumari & Jessica, 2020).

Credit ratings are an essential tool for both lenders and investors to evaluate the default risk of banks. Therefore, the market is influenced by changes in credit ratings. Furthermore, the three main agencies, that is, Fitch, Moody's and S&P, have a great market capitalization and influence in terms of credit ratings. The credit ratings assess the creditworthiness of the borrowers by capturing their default risk. But also, the credit rating agencies might have access to data that is not publicly available which is the reason why they are so highly valuable. A deterioration or improvement in bank's ratings has significant implications to a Bank's Asset position. Credit ratings influence the costs linked to equity and debt financing and this determines the asset liquidity of banks (Alagidede& Manungo, 2017).

Credit rating- asset relationship is largely reliant on the managers' decisions on the capital structures and how the costs and benefits associated with ratings affect such decisions(Murthy &

Al-Muharrami, 2020). Kumari and Jessica (2020) identifies pecking order model, signaling theory and trade-off approach as important in analyzing the supposed connections between credit ratings and banks assets. Potential upgrade, downgrade and good or bad ratings, according to pecking order and trade off theory is a push factor for firms making decisions to pursue debt or equity. Signaling theory, is seen as pull factor that determines investors attraction to provide debt or equity to a bank based on their credit ratings (Ng & Ariff, 2019).

Banks in Kenya have in the past decade relied on ratings to reflect their financial profiles in the operating environment, in different degrees, to their strong liquid assets, deposit-funded profiles and high profitability. Local banks use "credit rating agencies like the Moody's, Fitch and the Standard & Poor's (S&P)" to provide information on credit rating that enables investors to assess the credit worthiness and the financial health of the banks. Moody's credit rating is the most common rating used by the local banks followed by Fitch and S&P rating. The central bank of Kenya requires both listed and non-listed banks in the country to show their credit ratings(CBK, 2019).

### 1.1.1 Credit Ratings

The credit rating sector is one of the industries that primarily focus on providing investors with reliable information. Ratings on credit are given by a credit rating agency, an organization that provides the market with rating opinions through the use of professional risk models to evaluate financial institutions' default risks. Credit ratings are considered as the rating agencies opinions about an organization or individual's ability to fulfil their debt obligations. Each rating agency

assesses the default risk and creditworthiness of firms using its own methodology. Members of the public can obtain these ratings free of charge (Murthy & Al-Muharrami, 2020).

Credit rating is important for investors, businesses and regulators as well as credit rating agencies. In particular, credit ratings are important in facilitating access to debt markets internationally. (Meriläinen & Junttila, 2020). Announcements on credit rating are highly essential to investors that require sufficient information to start investment decisions across borders. Credit ratings measure an entity's creditworthiness. Credit ratings give forward-looking valuations on credit risk and thus indicates the ability to fulfill its monetary obligations (Ng & Ariff, 2019).

Credit rating is calculated by factoring the hard facts or quantitative criteria and the soft facts or quality criteria. The qualitative criterion is calculated using the financial statements of a firm through the application of financial-economic analysis. Therefore, the hard facts offer a reliable statement of a firm's financial health and financial stability. The values of indicators which are attained are combined based on their significance and subsequently moved to the internal rating scale (AlAli et al., 2018). For instance, in ratings methodology, the scale can range from D, the lowest (default), to the highest, A. (Chodnicka, 2021). The study will use the rating methodology of D (lowest) to A (highest score) to measure ratings of banks in Kenya.

### 1.1.2 Asset Liquidity

Just like money, assets, can express liquidity for consumption purposes. Assets are valued by investors because of their basic value that is measured in terms of the liquidity and yield of

dividends. Assets are regarded as liquid in case it can be quickly changed into cash and at the lowest possible cost. This description applies to both the financial as well as real estate assets (Meriläinen & Junttila, 2020). Conversely, De Haan and van den End (2013) define asset liquidity as how easily assets can be disposed in the financial market.

The liquidity of assets is a strategy that allow the borrower to sell assets to meet coupon payments. Asset liquidity ensures that assets are allocated to better use, thus increasing the value of a firm when the organization is solvent. When an entity is in distress, it can use asset liquidity as the cheapest source of funds. Furthermore, the liquidity of assets enables firms to continue financing the operations of their remaining assets without shareholders to inject capital, thus increasing equity value. Therefore, the liquidity of assets increases the value of a firm in liquidation, hence conventional view that debt capacity is increased through liquidity (Lotto & Mwemezi, 2015).

To measure asset liquidity, different approaches exist; the traditional approach largely relies on scoring methodology to determine an organization asset class through scores ranging from zero to one. Based on these scores, a weighted liquidity score is calculated to determine the book or market value of an organization assets. In recent years, modern approach has used cash level in an organization balance sheet to measure liquidity (Abdelaziz et al., 2020). The study will adopt the CBK measurement of asset ratings, ration of deposit liabilities to liquid assets.

### 1.1.3 Credit Ratings and Asset Liquidity

Credit rating is a significant determinant of the asset liquidity of a bank. It has been suggested that the aftermath of the 2007/08 financial crisis necessitates that bank maintain a favourable rating to maintain good liquidity position. However, others have suggested that in emerging economies, credit ratings of banks may not necessarily result to positive liquidity. This is because other macro conditions and firm specific are also major factors that determine liquidity of commercial banks (Lee et al., 2015).

Murthy and Al-Muharrami, (2020) opines that "firms with a large stock of liquid assets are more likely to obtain more favorable credit rating", the reverse is also true with firms having good rating placed in a better position to improve their liquidity. Reddy et al., (2019) also suggests that banks with poor ratings have a negative relationship with liquidity risk. Caporale et al., (2012), on the other hand, suggests that banks with better ratings are positioned to have strong liquidity. Firms with unfavorable credit ratings have less liquid asset portfolios as compared with firms with more favorable credit ratings.

Meriläinen and Junttila (2020) documents that bank credit, as measured by bank ratings and sovereign ratings, has a positive impact on bank capital structure and asset liquidity. Wojewodzki et al., (2020) notes that the listed commercial banks with good ratings are better placed to attract foreign investment, and this may resultantly improve their assets liquidity. Sajjad and Zakaria (2018) points out that the effect of credit ratings on liquidity of bank assets is not always linear. Hence, they assert that increasing credit rating may only positively affect asset liquidity up to a certain threshold after which it may level off or decline.

### 1.1.4 Commercial Banks in Kenya

The Kenya's banking industry is governed by four Acts: The Banking Act, the Company's Act, Kenya capital markets authority regulations and the CBK Act. "According to CBK (2019) annual supervisory report, the country's banking sector consists of the CBK, as the regulatory authority, forty-one banking institutions and one mortgage finance firm". Of all the operating banks, nine banks are listed in "Nairobi securities exchange". All the banks in Kenya are required to adhere to CBK liquidity requirements. (CBK, 2019).

The Kenyan banking sector has been affected by liquidity shortfalls in one bank due to the interconnectedness in the banking industry. Shortfall in liquidity causes banks to collapse as witnessed in the case of Chase bank of Kenya. The average liquidity ratio for all banks exceeded the 20% minimum regulatory requirement, with government bonds largely attributed to this because of private sector intermediation inefficiency. In addition the intermediation inefficiency is linked to the rapid growth rates in non-performing Loans (NPL), pointing to a deterioration of banks assets (CBK, 2019).

The rating by Moody is the most popular rating employed by Kenya's commercial banks. Of the country's financial institutions, 34 banks employ Moody's rating. Moody's ratings are widely used amongst listed and non-listed commercial banks in Kenya. Besides, Fitch is the other rating used by banks, with at least five commercial banks using the ratings while S&P is only used by 2 commercial banks. As part of the rating actions of Moody's and Fitch, commercial banks in Kenya have achieved a rating of between BB- to A/A+ (CBK, 2020).

## 1.2 Research Problem

Credit ratings - liquidity relationship is an aspect that has been documented. The implication of credit ratings on other capital structure variables such as liquidity has also been suggested by Meriläinen and Junttila (2020). Mensah et al., (2017) emphasizes that the implication of credit rating on liquidity is facilitated by its role in provision of impartial opinions, this helps in determining costs and benefits of debts or equity in the international market, which affects the liquidity of firms. Despite an acknowledgement by (Mishi & Khumalo, 2019) that the relationship for credit ratings and liquidity holds for both small and large firms, extant literature over the same is not sufficient.

Banks in Kenya continue to rely on credit ratings to provide their outlook on the banks' long-term deposit, capital levels and liquidity profiles. For instance, the Moody's investor ratings for the top 5 banks in terms of assets in 2020, shifted from B1 (high credit risk) to B2 (stable outlook). However, the ratings remain largely negative, with these associated with significant deterioration in asset quality to varying degrees stemming from the pandemic. This highlights the likelihood of asset liquidity suffering due to credit ratings, yet this relationship largely remains unknown in the Kenyan banking industry (CBK, 2019).

The main determinant of the financial stability indicators of banks is liquidity. Liquidity deficit in at least banks can result to systemic crisis due to the interconnectedness of banks operations. CBK (2020) report highlights that liquidity is relatively strong in the Kenyan banking industry, with an overall liquidity ratio in June 2020 at 52.7 above 20%, minimum requirements. This is

against the backdrop of low ratings for four of the banks. This raises concern on potential effect of bank ratings on their liquidity in Kenya.

Globally, determinants of the liquidity, have been studied sufficiently. Bayz (2018) conducted a study on "the determinants of liquidity in US banks and concluded that liquidity is directly affected by Moody's credit ratings". Al Homaidi et al., (2019) on the other hand, examined how liquidity (LQD) affects liquidity of banks in India and reported that Moody's ratings determines liquidity of Indian listed banks. Moreover, Meriläinen and Junttila (2020) in their study on effect of credit ratings (using fitch scores) on asset liquidity of banks in western Europe established significance between the two factors. These studies were only limited to one type of score (fitch) and failed to include all the three major type of credit scores methodologies.

Regionally, study by Mishi and Khumalo (2019) in their South African Study on "Determinant of bank stability revealed that credit rating is an important factor of bank stability". Mugobo and Mutize (2016) also determined the credit ratings effect on foreign direct investment in South Africa. The study revealed a positive significant effect. Mensah et al., (2017) also analyzed the Banks funding cost and sovereign credit ratings as a determinant. The findings revealed sovereign credit rating as a significant determinant of banks funding costs. Extant reviews show that very much of what has been written or is known regionally has ignored credit ratings and asset liquidity relationship.

Locally, Kisaka (2018) analyzed the effect of credit ratings practices of banks on banks performance in Kenya and reported a positive relationship. Mugenyah (2015) also "examined the

impact of credit ratings on liquidity risk of commercial banks in Kenya". Credit ratings were found to be significant determinants of liquidity risk. Furthermore, Ondiro (2018) also analyzed the "impact of macro-economic factors on liquidity of commercial banks in Kenya". Sovereign credit ratings emerged from the study as a significant predictor of liquidity. The vast majority of the work in this area in Kenya has entailed the use of questionnaire method, which comes with its methodological weaknesses linked to response bias. This study attempted to address this limitation by employing secondary data. Hence this study will seek to answer the question how credit rating relates with asset liquidity of listed commercial banks in Kenya.

### 1.3 Research Objective

The study's objective is to "establish the relationship between credit ratings and liquidity of commercial banks in Kenya". Specifically, the study will seek to:

(i) Determine the relationship between investment credit ratings and liquidity of commercial banks in Kenya.

(ii) Assess the relationship between speculative credit ratings and liquidity of commercial banks in Kenya.

(iii) Investigate the relationship between sovereign credit ratings and liquidity of commercial banks in Kenya.

### 1.4 Value of Study

The study is helpful to the central bank of Kenya, bank regulators in Kenya. Through the study findings, Central Bank of Kenya will be able to prioritize the development of credit ratings policy as a valuable tool in determining banks liquidity and building a more stable banking

industry. The central bank of Kenya will also be better placed to develop policies that strengthen the use of bank ratings and sovereign ratings for financial institutions in Kenya.

The study is useful to the bank managers who will be in a better position to utilize credit ratings in strengthening their liquidity. Through the findings of the study, the bank managers will be better placed to understand the importance of considering sovereign ratings. The extent will also be helpful in capital structure decisions albeit indirectly. Since the primary testable capital structure variable of liquidity is part of this study, bank managers will gain sufficient knowledge on credit rating impact on capital structure decisions via liquidity.

Determinants of banks liquidity is still an area that attracts the attention of scholars and academicians, and hence they will find the findings of this study insightful in understanding how credit ratings determine liquidity of banks. The study is also useful in contributing to knowledge on Credit Rating–Capital Structure Hypothesis, given that liquidity is an important variable in the hypothesis. This will be more helpful in developing economies where insufficient knowledge on this hypothesis in the financial sector still exists.

# CHAPTER TWO

# LITERATURE REVIEW

## 2.1 Introduction

This chapter reviews various theories suggested to explain relationship between credit ratings and bank liquidity as well as the related empirical evidence. A synthesis of empirical studies reviews in accordance with study objective and following funnel approach is also provided in this section.

## 2.2 Theoretical Framework

Credit rating has largely been examined through the theories on capital structure, with the theory of Static Trade-off Theory by Modigliani and Miller (1958) being among the first used. However, the theory was largely descriptive and limited due to its limited understanding on all the capital structure variables. This led to the consideration of other signaling and information asymmetry theories. In this group of theories, "signaling, pecking order theory and trade-off theory have dominated credit rating studies", and hence they will anchor the study. A discussion of them is provided below.

### 2.2.1 Signaling Theory

The signaling theory, which was developed by Ross (1977), holds a firm's financial decisions are signals to prospective investors that compensate for information asymmetry. The signals thus enable investors to make informed decisions regarding company investment. The signaling notion was linked by Rose (1977) to the capital structure model, and contends that since information on the appropriate distribution of the returns of a firm is available to the

management and not outsiders, the organization is expected to benefit in case the securities of firms are overvalued and the contrary is true (Yasar et al., 2020).

First, from signaling theory standpoint, in the present complex and unpredictable business environment, banks can choose to mitigate against this through disclosure of information that will provide signals to the market. In particular, the model seeks to lessen asymmetric information between banks and other investors by relaying important information on the abilities and intentions of banks. For example, management signals the ability of their firms through revelations that concerning their performance and acknowledging that such revelation has the potential to improve the company liquidity (Zhang et al., 2020).

In the bank valuation context, the leading assumption of the signaling theory is that external investors, who depend on various signals to make decisions about bank quality, are affected by asymmetric information. Such signals affect a bank's liquidity because higher valuation based on credit ratings may increase the flow of liquidity. Accordingly, the theory argues out that banks with good ratings have higher valuation and hence higher liquidity. Signaling theory proponents suggests that credit ratings is one way through which banks communicate information to prospective investors (Drago & Gallo, 2017). This theory is central in understanding bank liquidity and how it's affected by credit ratings.

### 2.2.2 Pecking Order Theory

Myers (1984) is the pioneer of the pecking order theory. The main argument of this model is that the projects of a firm are first financed through internal resources, then through debts and

ultimately through equity as the final resort. The model proposes that a change in the level of debts occurs once there is an imbalance between internal flow of cash, net dividends and the actual investment opportunities. Under this model, the deficit of a firm is the most critical component (Due Hoang Quan, 2002).

The Pecking order model points out the "existence of a negative association between the financial leverage of a firm and its credit ratings". Based on this supposition, Due Hoang Quan (2002) states that credit ratings is an indicator of firm's value to investor as it minimizes information asymmetry between bank managers and investors. Resultantly, Meriläinen and Junttila (2020) note that by minimizing the information gap, firms that are more highly rated ought to experience leverage in negotiating its debt obligations and acquisition of short-term funds thereby improving its liquidity.

The pecking order theory plays an important role in the capital structures decision making. Firms usually prefer not to issue equity because it is a costly source of funding, and instead search either for internal source of financing or debt. Companies with high liquidity have large internal funds, or can easily tap into the debt market when need be Kisgen (2009). According to the pecking theory, firms nearing a credit rating upgrade might find it easy to tap on debt as opposed to equity due to expected favorable ratings. This results to increased liquidity of such firms (Mensah et al., 2017).The usefulness of the theory to the study will be in accounting how credit ratings can enhance the asset liquidity of listed banks in Kenya. This is because the theory provides information that can be employed by bank managers in determining whether to go for equity or debt financing, and this as a consequence affects banks liquidity.

### 2.2.3 Trade off Theory

The trade-off theory holds "that the optimal leverage expected is one of the determinants of a firm's capital structure. This realization comes about through balancing the debt financing benefits and costs. On the other hand, corporate tax can be reduced through leverage. Moreover, increased leverage incurs the financial distress costs, both direct as well as indirect agency costs. The tradeoff theory of capital structure contends that to determine the optimum level of a firm, firms must balance different factors relating to debt financing (Abeywardhana, 2017).

Trade off theory in the study of credit ratings has been analyzed through the "credit rating capital structure hypothesis (CR-CS)". The ratings of credit introduce discrete costs that management need to take into account when making managerial decision for capital structure. Moreover, the hypothesis points out such decision need to be treated as not only important but a must when factoring credit rating in capital structure decisions. This is because cost of capital involves the trade-off between discrete benefits and costs (Kisgen, 2009).

One of theory's implications is that firms tend to move their optimal leverage backwards based on the level that they depart from their optimum. The CR-CS hypothesis holds those different levels of credit ratings are linked to discrete costs (benefits) to the firm. Trade off in choosing liquidity position of firms involves balancing the "discrete costs and benefits that credit rating brings to a firm". For instance, those "firms near a potential downgrade may prefer to issue less debt relative to equity as opposed to firms with higher grade that may prefer more debt and less equity", and this resultantly affect the liquidity position of firms (Sajjad & Zakaria, 2018a). This

theory thus suits the study in providing a framework to analyze how credit ratings affect the asset liquidity of banks.

### 2.3 Determinants of Asset Liquidity in Banks

Recently, several scholars have explained some of banks' liquidity determinants. These determinants have been classified into macroeconomic and microeconomic (banks specific) factors. Given the focus of the study is on credit ratings, which are generally development from bank specific variables, a discussion of bank specific factors and credit ratings factors is discussed below.

#### 2.3.1 Bank-Specific Factors

This section discusses some of these factors by focusing on size of the bank, capital adequacy and loan growth. These factors are selected due to the prominence given to them as factors that not only affect liquidity greatly but also because of their role in developing and emerging financial markets.

##### 2.3.1.1 Size of Bank and Bank Liquidity

Bank size, according to Wójcik-Mazur and Szajt (2015) is the general capacity of a bank to undertake its intermediary role. Choon et al. (2013) state that bank size, is in fact, the measure of its aggregate asset base. The banking sector the term, 'too big to fail' is often linked with mega banks involved activities with high risks, with the hope that they will be bailed out by regulators, resulting in creation of liquidity varying from one bank to another, based on their size, which shows the "negative and positive association between the size of a bank and liquidity".

Bank size affects the commercial banks' ability to mobilize funds and the cost that comes along. Banks that are relatively large have fewer liquid assets due their dependency on lender of last resort, and their ability to tap into capital markets when they need to raise their liquidity position. Liquidity, according to Kashyap et al., (2020) is likely to be more noticeable in small banks than big banks due to their challenges in accessing financial markets, a situation that suggests that size of banks and liquidity is negatively related.

#### 2.3.1.2 Capital Adequacy Ratio and Bank Liquidity

Capital refers to the common stock, surplus fund, undivided profits as well as contingencies reserves and other types of capital reserves. The capital of a bank can also include its loan loss reserve, which acts as a cushion for absorbing losses (Basel, 2011). Banks mainly hold capital so as to absorb risk such as protecting the financial institution from bank runs, liquidity crunches among other risks. Bank capital, according to Ezirim (2005) plays an "important role in terms of maintaining the safety and solidarity of banks together with the general security of their systems". This is because it operates as the cushion gate that averts the unforeseen losses that banks are likely to encounter and which might reach the funds of depositors because banks operate in an uncertain and unpredictable environment.

Capital refers to personal funds of a bank and comprises of the capital provided by shareholders and the retained earnings. Conversely, capital is the direct funds of a bank, instead of borrowed money including deposits (Al-Homaidi et al., 2019). Another perspective is that capital adequacy ratio indicates the ability of banks to tolerate losses, which also shows the resilience to

withstand hostile events. Essentially, banks that have high capital ratio than the minimum requirement by regulators are able to create liquidity (Ghadi, 2017).

#### 2.3.1.3 Loan growth and bank liquidity

Bank loan growth according to Murthy and Al-Muharrami (2020) is the contraction or expansion of a bank's loan portfolio. Loans are the main investment of banks and they play a vital role in terms of determining the future cash flows of the banks. Hasanov et al. (2018) points out that the growth of the loans that banks offer indicates a new set of investments that the banks have made, which in turn implies a rise in liquid assets. Growth of loans offered by banks is sign of either bad or good news. Some new loans are offered banks have established new opportunities for investment and thus convey positive signals to the capital markets. Loans are also granted by banks as cover up for their losses in the present loan portfolios. The new loan is given to recoup a present loan that has gone bad; as such, loan growth is an indicator of bad news (Lotto & Mwemezi, 2015).

Banks with large illiquid asset portfolios tend to decrease their lending, which shows a positive association between bank liquidity and the growth of loans (Ghadi, 2017). Banks that possess undrawn loan commitments increase their lending capacity as borrowers are able to draw from loans that were previously approved in large quantities, thus creating an inverse association between bank liquidity and loan growth (Umar; & Sun, 2016).

Various regulations covering the financial institution field as well as investment intermediaries are directly associated to credit ratings. Consequently, reliance on credit rating has increased

drastically, which in turn affects several parties including banks, financial regulators, mutual funds, insurance firms, security companies, pension funds, as well as other capital agencies in the market. For instance, credit ratings determine the capital requirements for investments. Furthermore, credit ratings influence borrowing costs; thus, by extension affects liquidity of firms(Meriläinen & Junttila, 2020).

### 2.3.2 Credit Ratings Factors

Credit ratings play two vital roles to listed firms. “The first role involves publishing information and the significance of this information is linked to speculative, investment and sovereign ratings”. The timeliness and accuracy of these ratings have a bearing on investment decision in a bank or on capital decisions of a bank. Sovereign credit ratings given its association with a country rating largely impacts on speculative and investment rating of banks. “Banks with higher sovereign ratings are more likely to have good investment ratings that may improve its liquidity position” (Sajjad & Zakaria, 2018b). De Haan and van den End (2013) found that speculative ratings may not necessarily lead to positive liquidity as investment and sovereign rating.

Wojewodzki et al., (2020) contend that credit ratings on investment can create a direct cost on organizations. This is because of the ability of credit ratings to influence a “company’s access to the financial market, its contracts, operations, counterparties it transacts with, the type of investors that can invest in the company and disclosure requirement”. At times, ratings are not favorable to high performing companies that grouped with firms that are performing poorly and share the same credit rating (e.g. AA+, AA and AA−). Hence credit ratings have mixed effect on liquidity of banks depending on other control, moderating and mediating factors.

Credit rating also theoretically affects liquidity (liquidity risk) through credit risk. Credit risk is linked to liquidity risk through borrower defaults and fund withdrawals. Banks' mix of liquid (short-term) liabilities and illiquid (long maturity) assets may create a panic among depositors, which may be shown through fund withdrawals and borrower defaults. Banks' liability and asset structures are closely linked, particularly in terms of deposit outflows and borrower defaults. Banks are high susceptible to liquidity risks and by extension liquidity problems, particularly because of their maturity transformational role (Abdelaziz et al., 2020).

### 2.4 Empirical Studies

This section discusses various studies that have been conducted on credit rating and its impacts on firms. Given that credit rating impacts is an area that is attracting attention in recent times with scant literature on its relationship with liquidity, various studies on its relationship with firm outcomes has been included in this section. This section uses a funnel approach in documenting studies.

#### 2.4.1 Global Studies

Globally, credit ratings effects have been documented by different scholars. For instance, Meriläinen and Junttila (2020) examines the credit ratings effects on asset liquidity. The study focused on a group of commercial banks in US and western Canadian banks from 1997 to 2009, using an econometric framework through which the dependent variable, asset liquidity, was regressed against credit ratings measures through Moody's ratings. The results showed that bank

liquidity is affected by credit ratings. The study suggested that banks can tap on credit ratings to improve their liquidity position.

Wojewodzki et al., (2020) also tested the relationship between credit ratings and capital structure using the data of 391 banks from over 70 countries. The study was conducted over a 10-year period, 2008-2018. The authors used a multivariate dynamic panel regression framework. Over a ten years study period, the study found out that an increase in good credit ratings results to increase in capital to assets ratio. The study concluded that credit ratings and capital structure are positively related. The study recommended that banks should employ credit ratings in improving their capital structure.

Sajjad and Zakaria (2018) conducted a study on how debt maturity choice is affected by credit rating scales of banks in Asia. This study considered only Moody's and fitch credit scales over the period 2007 to 2016, "utilizing pooled ordinary least square (OLS) in testing hypothesis". Results pointed that bank with good rating are more likely to have high liquidity as opposed to banks with poor ratings. Hence the study concluded that high liquidity is dependent on good credit ratings. The study recommended that credit ratings offer banks a strategy through which they can improve their liquidity position.

### 2.4.2 Regional Studies

Mishi and Khumalo, (2019) studied determinants influencing the bank stability in South African banks over the period 2007 to 2016, fixed-effect model. Based on quantitative methods, hypotheses were tested and conclusions reached. The results confirmed that "the bank-specific factors of bank capital, bank size, non-performing loans, and bank ratings have significant effects

on the bank stability in South Africa". The study concluded that credit ratings significantly influence bank stability. The study recommended that South African central bank can employ credit ratings in improving bank stability.

Mensah et al., (2017) studied how banks funding is affected by sovereign credit ratings in Africa. The authors analyzed 25 banks in Africa over the period 2006 to 2015, with specific emphasis on the post financial crisis period. The authors used sovereign credit ratios from Moody's and Fitch. In addition, time series was employed as the methodology. The "findings of the study showed the relationship between funding costs and sovereign ratings upgrades is inverse and statistically significant". The study concluded that banks with good ratings have low funding cost. A key recommendation from the study is that banks need to employ credit ratings as a strategy in reducing funding costs in financial markets.

In 2016, Mugobo and Mutize (2016) conducted a study to analyze how foreign direct investment (FDI) is impacted by sovereign credit ratings amongst South African Banks in South Africa, covering the period 2005 to 2014. Using dynamic panel data, the results confirmed that positive and favorable ratings is positively associated with increased FDI in South Africa. The study "concluded that foreign direct investment is positively associated with sovereign credit ratings". The study recommended that credit ratings can be adopted as a tool by banks in attracting foreign direct investment.

### 2.4.3 Local Studies

Kisaka (2018) investigated how credit ratings practices affects “loan book performance of commercial banks in Kenya by including credit rating as one of the independent variables”. Using, exploratory survey research for the reason that the study was pioneer on credit risk locally, the authors demonstrated that credit rating practices are “significant predictors of loan book performance of commercial banks in Kenya”. The study concluded that banks with good credit ratings have better loan performance. The study recommended that credit rating strategy can be used in loan book performance in banks.

Gakuu (2019) studied the “effect of credit risk on lending performance of banks, by including credit rating as one of the independent variables”. The author used cross-sectional descriptive design that involved the use of OLS regression model to analyze the data. The results show that lending performance of banks is affected positively by the credit rating of bank customers. The study concluded that lending performance of banks is dependent on credit ratings. Credit ratings was suggested as an important strategy in improving the lending performance of banks.

Ondiro (2018) studied the “macro-economic determinants of Kenyan commercial banks liquidity, in the period 2000 to 2013”. The author used longitudinal data model, which involved the pooling of observations over several periods. The fixed-effect panel data model following Hausman tests and was used for hypothesis testing. Sovereign credit ratings as a proxy for macro-economic environment was demonstrated to be is a significant predictor of commercial banks liquidity in Kenya. The study concluded that liquidity of banks is dependent on credit

ratings of banks. The study recommended that banks can use credit ratings to improve their liquidity position.

## 2.5 Conceptual Framework

Credit ratings via investment ratings and speculative ratings largely provide investors with positive or negative information about banks. This, resultantly affects the liquidity of banks. The ratings of a country where banks are located (sovereignty ratings) also can indicate positive or negative economic outlook of countries where banks are located. This also has the potential to improve/reduce investor outlook in countries where banks are located. As a consequence, liquidity of banks can be affected positively or negatively as illustrated below in figure 2.1.

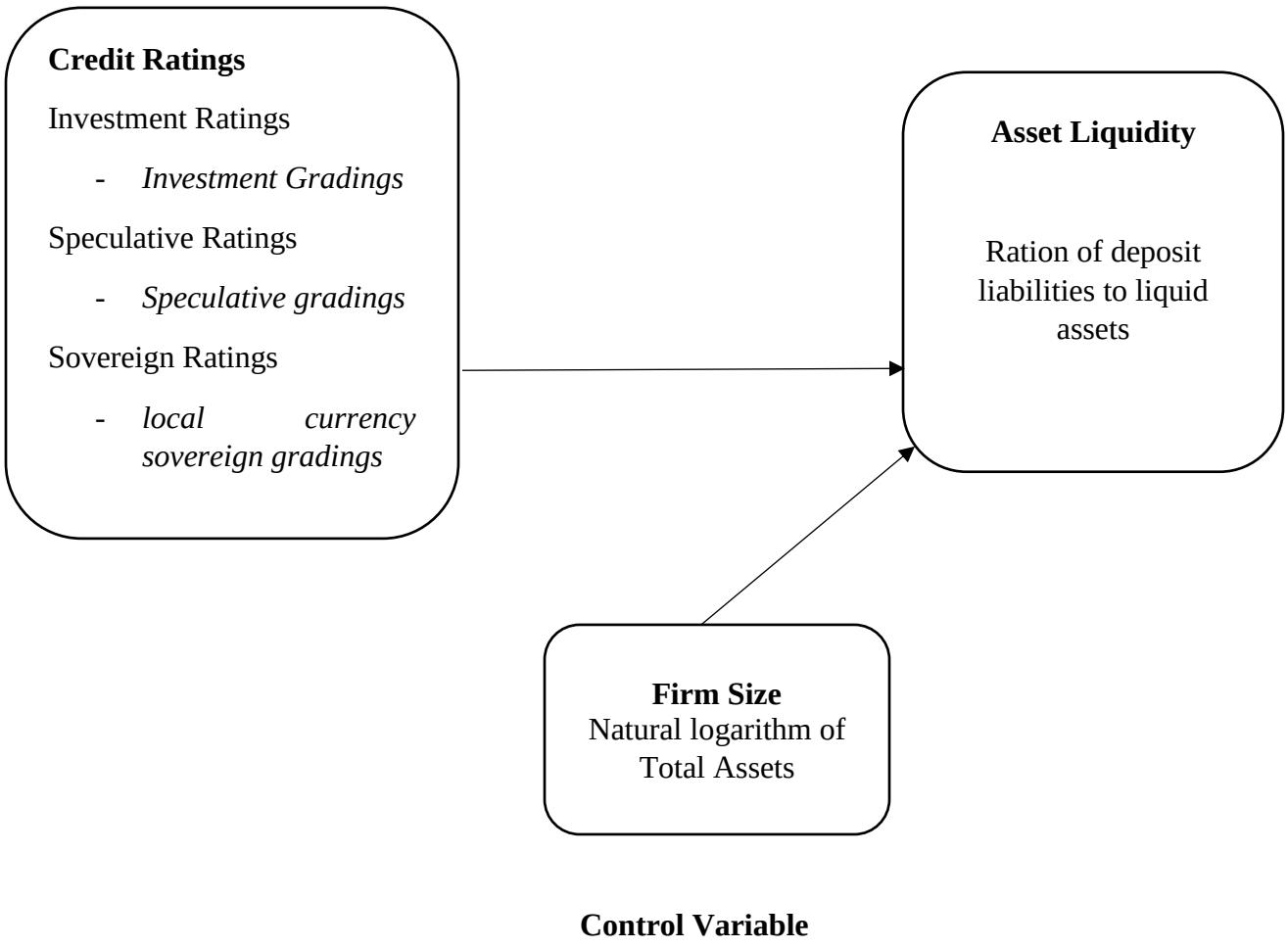


**Figure 2. 1: Conceptual Framework**

### 2.6 Summary of the literature

This section highlights the key findings in previous empirical studies and the gap the study intends to fill.

| Author of study | Focus of Study | Methodology | Findings | Knowledge Gaps | Focus of current study |
|---|---|---|---|---|---|
| Mugenyah (2015) | "Liquidity risk determinants of commercial banks in Kenya" | "Panel study design" | Capital adequacy relates positive effect with liquidity risk | The study didn't examine credit ratings | Credit ratings and how it affects banks liquidity in Kenya |
| Ondiro (2018) | "Macro-economic determinants of commercial banks liquidity in Kenya" | "Panel Study design" | Ownership type and size of banks were reported as significant factors | The study didn't focus on credit ratings | It will analyze credit rating effect on bank liquidity in Kenya |
| Meriläinen &Junttila (2020) | "Credit ratings and asset liquidity relationship in Western Europe" | "Panel study design" | The study revealed that favourable credit ratings is associated with stronger liquidity in banks | The study only focused fitch credit rating, commonly used in Europe and excluded ratings such as Moody's that is popular | The study will combine all the three types of ratings that are used in Kenya |
| Sajjad &Zakaria (2018) | Effect of "credit rating scales on debt maturity choices" | "Panel study design" | The study reported that high rating is linked to low liquidity risk | The study was limited to liquidity risk | This study will analyze how credit ratings affects bank's liquidity |
| Aktan et al., (2019) | capital structure and credit ratings as its deteminants. | "Panel study design" | The results demonstrate that firm's debt levels is negatively related to credit ratings | The study didn't focus on liquidity | Credit ratings effects on liquidity will be analyzed in this study |

# CHAPTER THREE

# RESEARCH METHODOLOGY

## 3.1 Introduction

This chapter contains the design which was used. The “targeted population, data collection methods, data preparation and methods of analyzing data”. Test of significance for the study in terms of selected significance has also been discussed in this section. Research methodology has been defined as the methodological strategies that are “used in collection and analysis of data to test the study objectives”.

## 3.2 Research Design

Selection of appropriate study design is an important step in research, and this is guided by the variables, research objectives, methods of data collection, data analysis stage and sampling methodology. In consideration of the above factors, the study utilized correlational study design. Correlational study design is suitable in testing hypothesis and analyzing the relationships between two or more variables (Adams et al., 2017). Hence this design was helpful in analyzing the relationships between credit ratings and asset liquidity of “commercial banks in Kenya”.

## 3.3 Population

Praja et al., (2018) defines a “population as all the elements in an area of inquiry”. For this study, the target population was drawn banking firms operating in Kenya. In this research, the target population was the banking sector in Kenya. Specifically, the 42 commercial banks in Kenya. According to CBK (2020), Kenya has “a total of 42 commercial banks and 1 mortgage finance

institutions". Hence all the 42 commercial banks will form the study population qualifying the study to be census.

### 3.4 Data collection

The study utilized secondary data. This involved collecting credit ratings scores data from Bankscope, credit rating agencies websites and IMF website. Data on deposit liabilities and liquid assets were "collected from Central Bank of Kenya annual supervisory report". This study "employed panel data from 42 commercial banks in Kenya over the period of 2016-2020 to conduct a regression analysis that estimates the effect of credit ratings on liquidity of commercial banks in Kenya".

Data collected from deposit liabilities and liquid assets from central bank of Kenya were used to calculate asset liquidity ratios for the dependent variables. In line with the previous literature, the study collected data on bank ratings at the level of speculative ratings and investment rating. In addition, sovereign ratings data was also gathered. The data on bank ratings were collected in form of scores (for example A+, BB+, BB-) and this was utilized in the study as categorical data.

### 3.5 Data Analysis

The study employed a multiple regression model to analyze the results. Thus, "the model that was be used to analyze the relationship between credit ratings and asset liquidity of listed commercial banks in Kenya is":

$LIQit=\beta_0 it+\beta_1 IRit+\beta_2 SRit+\beta_3 SVRit+\mu it$……. (1) without control variable

$LIQit=\beta_0 it+\beta_1 IRit+\beta_2 SRit+\beta_3 SVRit+ \beta_3 FSit+ \mu it$……. (1) with control variable

Where:

LIQit: “is liquidity ratio of ith bank on year t”

IRit: “is investment ratings of ith bank on the year t”

SRit: “is the speculative ratings of ith bank on the year t”.

SVRit: “is the sovereign rating of Kenya as a country for ith bank on the year t”.

FSit: “is the firm size of the ith bank on the year t”.

μit: “is a random error term”

**Table 3.1: Operationalization of Study Variable**

| Variable | Measurement |
|---|---|
| Investment Ratings | Calculated as the investment rating scores of a bank |
| Speculative Ratings | Calculated as the speculative rating scores of a bank |
| Sovereign Ratings | Calculated as the sovereign rating scores of a bank |
| Asset Liquidity | deposit liabilities and liquid assets |
| Firm Size | Log 10 of total assets of a bank |

### 3.5.1 Data Preparation

Data collected was checked for completeness and accuracy where any errors found in the data was cleaned out. Once the data is ready for analysis, data was transformed for analysis. The credit ratings categories were transformed into dummy variables categories for the scores and thereafter ready for data analysis. Data from deposit liabilities and liquid assets was used to calculate ratio that represented asset liquidity ratio for all the banks.

### 3.5.2 Diagnostic Tests and Tests of Significance

The study used OLS to estimate regression models. The use of OLS is based on certain assumptions that include normality, heteroscedasticity, autocorrelation and Multicollinearity

tests. Normality tests was conducted through Shapiro wilk test, Heteroscedasticity was checked through white tests, Dublin Watson tests were used to check for autocorrelation and VIF tests were used to test for multicollinearity.

### 3.5.3 Test of Significance

The “level of confidence” is normally translated into a “level of significance”. Since 95% confidence interval level will be used in the study, a 0.05 test of significance was employed. This significance is chosen for the reason that it is normally the acceptable test of significance in banking and finance studies.

# CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND INTERPRETATION

## 4.1 Introduction

This section considered credit ratings data analyzed from Bankscope, credit rating agencies websites, IMF website, Banks website and "central bank reports" of Kenya. Through these data collected and analyzed, this section reports the effect of credit ratings on asset liquidity of banks in Kenya. A combination of descriptive, correlation analysis and regression techniques were employed in the analysis that are presented herein.

## 4.2 Response Rate

All the 42 commercial banks registered and operating in Kenya as at 31st December 2020 were included in data collection. A response rate of 73.80% was obtained from 31 commercial banks that participated in the study. Secondary collected from various reports included investment ratings of banks, sovereign ratings, speculative ratings, asset liquidity and firm size of banks in Kenya.

## 4.3 Data Preparation

This section illustrates the process that was employed in the making of credit rating data tidy for analysis. Banks in Kenya utilize the Moody's rating, Fitch and S&P banks. The study collected data from 28 banks that utilize Moody's and 3 banks that uses Fitch ratings. The ratings scales have different scores with varying numerical strength, fitch rating score ranges from 1-21 while Moody's score ranges from 1-20. Hence the researcher developed a unified rating score that entailed the following for the: investment ratings scores (highest rating, high-grade, upper-

medium grade, medium grade and lowest grade), speculative ratings ("Speculative elements with moderate credit risk, speculative with substantial credit risk, speculative and subject to high credit risk, speculative with poor standing, speculative and near default") and sovereign ratings were measure through (Highest level of credit worthiness, high credit worthiness, sufficient credit worthiness, low credit worthiness and very low credit worthiness). The broad credit ratings code used in data analysis ranged from 1 to 5. The measurement of firm size and asset liquidity was not a challenge given the standard application of measurement used.

### 4.4 Diagnostic Tests

Verification of assumptions was conducted at 5% error allowable rate. The study conducted assumptions tests that included normality, autocorrelation and Multicollinearity tests. Although heteroscedasticity tests were to be conducted it was not tested because Schmidt & Finan (2018) suggests that normal and linear data always meet heteroscedasticity assumption. Hence it can be concluded that the test was established under the normality tests.

"Tolerance of the variable and the VIF value were used to test multicollinearity where the former was deemed as meeting the assumption if more than 0.2 while the latter was deemed as fulfilling if less than 10". This shows that there is no multicollinearity for all the study variables and hence suitability of the variables for regression analysis. From the findings in table 4.1 all the assumption of multicollinearity for tolerance levels and VIF were met.

**Table 4.1: "Multicollinearity Test for Tolerance and VIF"**

| Variable | Tolerance | VIF |
|---|---|---|
| Investment ratings | 0.284 | 1.390 |
| Speculative Ratings | 0.337 | 1.436 |
| Sovereign Ratings | 0.612 | 1.517 |
| Firm size | 0.453 | 1.932 |

**Source: Research Findings (2021)**

Table 4.2 presents the results "from two well-known tests of normality, namely the Kolmogorov-Smirnov Test and the Shapiro-Wilk Test". Of the two tests, the former is recommended for larger samples while the latter is recommended for smaller samples, and hence the use of the latter in the normality checks. (Yap & Sim, 2011). Normality assumption is met when the significant value for the two tests is less than 0.05. The p-values for Shapiro wilk tests are greater than 0.05 and hence the data forms a normal distribution.

**Table 4.2: Normality Tests**

| Asset Liquidity | Kolmogorov-Smirnova | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|
| | Statistic | Df | Sig. | Statistic | Df | Sig. |
| Investment ratings | 0.144 | 30 | 0.267 | 0.778 | 30 | 0.296 |
| Speculative Ratings | 0.152 | 30 | 0.301 | 0.906 | 30 | 0.091 |
| Sovereign Ratings | 0.168 | 30 | 0.389 | 0.789 | 30 | 0.284 |
| Firm size | 0.166 | 30 | 0.432 | 0.881 | 30 | 0.103 |

a. Lilliefors Significance Correction

**Source: Research Findings (2021)**

"Autocorrelation tests were executed to check for correlation of error terms across time periods. Autocorrelation was conducted using the Durbin Watson test". "The results indicated a Durbin-

Watson statistic of 1.7231 that shows that the variable residuals were not serially correlated". This is because the statistic is within the acceptable range of between 1.5 and 2.5.

**Table 4.3: Autocorrelation Tests**

| Model | R | R Square | Adjusted R Square | Std. Error of Estimate | Durbin-Watson |
|---|---|---|---|---|---|
| Credit ratings, Firm Size and Asset Liquidity Model | .634a | 0.4019 | 0.3373 | 0.18452 | 1.9234 |

a. Predictors: (Constant), firm size, investment ratings, speculative ratings, sovereign ratings

**Source: Research Findings (2021)**

### 4.5 Descriptive Statistics

Descriptive statistics provides a picture of the study factors through different measures of central tendency. Table 4.3 shows the results of mean, minimum and maximum as the measures of central tendency applicable to the study. An analysis of all the variables was made for the period 2016-2020 through SPSS software for the 31 commercial banks.

**Table 4. 4: Descriptive Analysis**

| **Variable** | **N** | **Minimum** | **Maximum** | **Mean** | **Std.** |
|---|---|---|---|---|---|
| Investment Ratings | 31 | 2 | 5 | 2.7655 | 0.2134 |
| Sovereign Ratings | 31 | 1 | 4 | 2.2142 | 0.11543 |
| Speculative Ratings | 31 | 2 | 4 | 2.5346 | 0.2457 |
| Asset Liquidity | 31 | 0.087 | 0.6123 | 0.3116 | 0.1044 |
| Firm Size | 31 | 1.2457 | 12.3476 | 9.7234 | 1.3453 |

**Source: Research Findings (2021)**

Results indicate that for investment ratings, the mean for banks was 2.76 and "standard deviation" of 0. 2134 which shows that on average the banks have an upper-medium grade for investment ratings. average compliance with Basel 3 requirements. In contrast, the banks had a "mean of 2.2142 and standard deviation of 0.11543" for sovereign ratings indicating a low credit worthiness in terms of sovereign ratings. For speculative ratings, banks had a "mean of 2.5346 and standard deviation of 0.2457 for speculative ratings" indicating that on average banks have speculative elements that is subject to high credit. As for the firm characteristics, firm size had a "mean value 9.7234 and standard deviation of 1.3453" which signifies that on average banks have a strong asset capitalization base. It was discovered that Asset liquidity for banks had an average of 0.3116 and standard deviation of 0.1044. This suggests that assets are less liquid in banks.

### 4.6 Correlation Analysis

"The association between any two or more variables used in a study can be analyzed through correlation". The measure of association can range from -0.99 to +0.99 with the former associated study (-) strong negative correlation while the latter is associated with strong perfect positive correlation.

**Table 4.5: Correlation Analysis on Credit Ratings, Firm Size and Asset Liquidity of Banks**

| | Investment Ratings | Sovereign Ratings | Speculative Ratings | Firm size | Asset Liquidity |
|---|---|---|---|---|---|
| Investment Ratings | 1 | | | | |
| Sovereign Ratings | -0.016 | 1 | | | |
| Speculative Ratings | .487** | -0.018 | 1 | | |
| Firm Size | 0.026 | .109* | 0.044 | 1 | |
| Asset Liquidity | 0.503 | 0.077 | .215* | 0.114* | 1 |

** “Correlation is significant at the 0.01 level (2-tailed)”.

* “Correlation is significant at the 0.05 level (2-tailed)”.

**Source: Research Findings (2021)**

Results in table 4.5 above present the correlation statistics for the study variables. A moderate statistically significant positive association is noted between investment ratings and asset liquidity (r = 0.503). Weak statistically significant association is reported between speculative ratings (0.215), firm size (0.114) and asset liquidity while weak non-significant positive association is reported between sovereign ratings (0.077) and asset liquidity. The study findings also showed that none of the independent variable had a strong association with other independent variables which demonstrates absence of multi-collinearity.

### 4.7 Regression Analysis with and without Control Variable

Asset liquidity was regressed against the three predictor variables of speculative ratings, investment ratings and sovereign ratings in the first model. In the second variable asset liquidity was regressed with the independent variables and the control variable (firm size). The regression analysis was all executed at 95% confidence interval. %.

**Table 4.6: Model Summary on Regression of Credit Ratings, Firm Size and Liquidity Model**

| Model | R | R Square | Adjusted R Square | Std. Error of Estimate | Durbin-Watson |
|---|---|---|---|---|---|
| Credit ratings, Firm Size and Asset Liquidity Model | .634a | 0.4019 | 0.3373 | 0.18452 | 1.9234 |

a. Predictors: (Constant), firm size, investment ratings, speculative ratings, sovereign ratings

b. Dependent Variable: Asset liquidity

Table 4.6 and 4.7 showed that "R squared, being the coefficient of determination shows the deviations in the outcome variable due to changes in predictor and control variables from the outcome in table 4.6 above", the value of R square with control variable was 0.277, demonstrating that approximately 27.7% of the change in outcome variables is occasioned by the predictor variable in the absence of control variable. In the presence of control variables, results in table 4.7 indicates that the outcome variable changes by approximately 40.19%.

**Table 4.7: ANOVA Model Fit on Regression Analysis of Credit Ratings, Firm Size and Asset Liquidity of Commercial Banks in Kenya**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Strategy-Performance Model | Regression | 0.413 | 2 | 0.2065 | 4.393 | .000b |
| | Residual | 1.368 | 29 | 0.047 | | |
| | Total | 1.781 | 31 | | | |

a. Predictors: (Constant), firm size, investment ratings, speculative ratings, sovereign ratings

b. Dependent Variable: Asset liquidity

The suitability of the model in analyzing the credit ratings-asset liquidity relationship was checked through a model fit. The findings in table 4.7 for regression model with or without the control variable indicated a p-value of less than 0.05. This suggests that the regression model is appropriate for analyzing the relationship between credit ratings and asset liquidity.

**Table 4.8: Parameter Estimates of Regression of Credit Ratings, Firm size and Asset Quality of Commercial banks**

| | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|
| Model | B | Std. Error | Beta | | |
| (Constant) | 1.248 | 0.143 | | 4.345 | 0.000 |
| Investment Ratings | 0.434 | 0.115 | 0.399 | 3.823 | 0.000 |
| Speculative Ratings | 0.248 | 0.056 | 0.038 | 2.339 | 0.013 |
| Sovereign Ratings | 0.059 | 0.011 | 0.018 | 0.256 | 0.723 |
| Firm Size | 0.094 | 0.017 | 0.023 | 2.115 | 0.026 |

a Dependent Variable: Asset Quality

In Table 4.8, the findings showed that at 95% confidence interval all the three predictor variables: Investment ratings, speculative ratings, sovereign ratings and firm size had positive association with asset quality. However, only Investment ratings, speculative ratings and firm size was established as significantly associated with asset quality.

The results show that investment ratings (t = 0.434, p= 0.000) contributes the highest to changes in asset quality. This was followed by speculative ratings (t = 0.248, p= 0.013). Sovereign rating had the lowest positive and non-significant change on asset quality (t = 0.059, p= 0.723). Firm size had the positive significant relationship on asset quality (t = 0.094, p= 0.026).

The equation for the regression model one is expressed as: $Y = 1.248 + 0.434_{X1} + 0.2487_{X2} + 0.059_{X3 + 0.094X4}$

Where: Y = asset liquidity (the dependent variable) $X_1$- investment ratings, $X_2$- speculative ratings $X_3$- sovereign ratings, $X_4$- Firm size. Constant = 1.248 shows that in the absence of credit

ratings, the asset liquidity would be 1.248. “A unit increase in speculative ratings would result to an increase in asset liquidity by 0.2487”. “A unit increase in sovereign ratings would result to an increase in asset liquidity by 0.059”. “A unit increase in firm size would result to an increase in asset liquidity by 0.094”.

### 4.8 Interpretation of Findings

The study explored the association between credit ratings and liquidity of commercial banks in Kenya. Credit ratings as the predictor variable is measured through variables namely: investment ratings, sovereign ratings and speculative ratings. The control variable was “firm size as measured by natural logarithm of total assets”. “Asset liquidity was the dependent variable that the study intended to explain, and it was measured using the deposit liabilities and liquid assets”.

The “Pearson correlation coefficients between the variables revealed that investment ratings, speculative ratings and firm size” have a significant and positive correlation with asset liquidity while sovereign ratings exhibited a non-significant and positive correlation with asset liquidity of commercial banks in Kenya.

The model summary revealed that the independent variables: investment ratings, speculative sovereign ratings and firm size explains 40.19% of the variation in asset liquidity of banks as shown by the $R^2$ value. This means that factors not included in the model account for the majority of variation in banks asset liquidity as 59.81%. At 95% level of confidence, the model

was fit as shown by an F-value of 23.717. This shows that the model was statistically significant in accounting for the relationship between credit ratings and asset liquidity.

The results of this study concur with Meriläinen and Junttila (2020) who studied on credit ratings effects and asset liquidity of commercial banks in western Canadian and American Banks between 1997 and 2009. The results showed that bank liquidity is affected by investment and speculative ratings. The "findings of the study are consistent" with the result found out by Mishi and Khumalo, (2019) who studied determinants influencing the bank stability in South African banks over the period 2007 to 2016. The "results confirmed that the bank-specific factors of bank capital, bank size, non-performing loans, and bank ratings have significant effects on the bank stability in South Africa". The findings also concur with Kisaka (2018) who investigated how credit ratings practices affects loan book performance of commercial banks in Kenya. The findings demonstrated that credit rating practices are significant predictors of loan book performance of commercial banks in Kenya.

The study is also in disagreement with Mugobo and Mutize (2016) who conducted a study to analyze how foreign direct investment is impacted by sovereign credit ratings amongst South African Banks in South Africa, covering the period 2005 to 2014. Unlike the current study, the study demonstrated that sovereign ratings are positively and significant associated with increased foreign direct investment in South African Banks.

# CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

## 5.1 Introduction

This section gives a summary of the findings, conclusions, recommendations and study's limitations. This section also highlights policy implications that bank managers and policy makers can undertake to implement strong asset liquidity in banks. Lastly the weaknesses of the current study are presented with a view to bringing out the potential areas of further research.

## 5.2 Summary of Findings

The study sought to analyze the credit ratings-asset liquidity relationship of commercial banks in Kenya. The predictor variables for the study were investment ratings, speculative ratings, sovereign ratings and firm size. Descriptive cross-sectional research through the use data for 31 banks obtained from sources such as Bankscope, credit rating agencies websites, IMF website, Banks website and the CBK was employed.

The "co-efficient of determination R-square value was 0.634 which means that about 41.19 percent of the variation in asset liquidity of commercial banks can be explained by the investment ratings, speculative ratings, sovereign ratings and firm size variables" while 58.81 percent in the variation of asset liquidity is due to factors not included in the study. ANOVA mode fit was significant at 5% demonstrating that the model was suitable. From the results of regression analysis, credit ratings have a statistically significant positive relationship with asset liquidity of commercial banks. The results show that investment ratings contribute the highest to positive changes in asset quality. This was followed by speculative ratings while Sovereign

rating had non-significant and lowest positive association with asset quality of commercial banks.

The regression results show when banks don't make use of any of the existing credit ratings tools the value of asset liquidity of commercial banks listed firm's will be 1.248. A one-unit upgrade in investment ratings would improve asset liquidity by 0.434. A one-unit upgrade in speculative ratings would improve asset liquidity by 0.2487. A one-unit upgrade in sovereign ratings would improve asset liquidity by 0.059.

### 5.3 Conclusion

Asset liquidity of commercial banks in Kenya it can be concluded is greatly influenced by credit ratings of the banks. The study findings it can also be concluded that credit ratings contribute moderately to improvement in asset liquidity of banks. In particular the study concludes that speculative ratings and investment ratings of banks significantly influence the asset liquidity position of the banks.

The study therefore concludes that an upgrade in investment ratings result to the greatest increase in asset liquidity of banks closely followed by speculative ratings. The findings also conclude that sovereign ratings have the lowest influence on the asset liquidity position of commercial banks in Kenya. The study concludes that banks with an upgrade of investment ratings and speculative ratings are more likely to have improved asset liquidity position.

The study found that firm size are statistically insignificant determinants of asset liquidity of banks and therefore this study concludes that firm size only influences asset liquidity to a moderate extent. The study concludes that jointly firm size and credit ratings results to a moderate extent improvement in asset liquidity position of banks.

### 5.4 Policy Recommendations

This study found that a positive and statistically significant effect of investment ratings on asset liquidity exists. This implies that an upgrade in investment ratings of the banks is likely to result to positive effect on their asset quality. This study recommends that policy makers should work towards having improvement in their assessed creditworthiness of the investment ratings to improve their asset liquidity. Therefore, the new credit ratings regulation may strengthen the role of credit ratings on asset liquidity of banks in Kenya.

Asset liquidity it was established to be moderately influenced by speculative ratings. This implies that an upgrade in bank's speculative ratings will lead to significant increase in asset quality. This study recommends that policy makers such as the central bank of Kenya should improve existing regulation as well as develop new regulations that will improve banks speculative ratings.

This study found that sovereign ratings has a positive and non-significant effect on asset liquidity among commercial banks in Kenya. This implies that an upgrade in bank's sovereign ratings may not necessarily lead to significant increase in asset quality. This study recommends that policy makers such as the central bank of Kenya and directors of commercial banks should

prioritize regulation that strengthen the investment and speculative ratings of banks as opposed to sovereign ratings, develop regulations that will improve banks speculative ratings.

### 5.5 Limitations of the Study

The scope of this research was for five years 2016-2020. This raises questions if the results may be true for a longer duration. The study recommends that further research should be conducted with much longer duration to improve the reliability of the findings. The study managed to get data from 31 banks out of the targeted 42 banks. However, over 80% of the banks that didn't participate were small banks in Kenya. As a result, the study findings are more applicable to large and medium banks in Kenya.

The researcher applied a "multiple linear regression model due to the categorical nature of data collected to represent credit ratings". This created shortcoming due to the inability of linear regression model to account for time and cross-sectional effect of the firms involved in the study. If time series data is utilized in the study the supposed relationship may not hold.

The standardization of the credit ratings by creating categorical scores may have affected the validity of the findings. This is because through standardization, the ratings are transformed into a unified pattern of scores that may end up giving a false picture. If the data was analyzed through numerical scoring method different results may have been realized.

## 5.6 Suggestions for Further Research

This study investigated the relationship between credit ratings and asset liquidity of banks in Kenya by relying on secondary data. This calls for more studies that incorporate primary data through mixed study design.

The study was not exhaustive of the control variables that affect the relationship between credit ratings and asset liquidity and this study recommends that further studies be conducted to incorporate other control variables such as bank specific factors.

The study concentrated on the five years period of 2016-2020 due to availability of most data for this period. There is need for future studies to be conducted for at least 10-year data periods.

The study utilized standardized measures of credit ratings and hence the study recommends that future studies should incorporate non-standardised measures (numerical scores) of credit ratings.

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# APPENDIX 1: DATA COLLECTION FORM

| Banks | Investment Gradings | Speculative Grading | Sovereign Grading | Deposit Liabilities | Liquidity Assets | Asset Liquidity ration | Total Assets |
|---|---|---|---|---|---|---|---|
| 1 | | | | | | | |
| 2 | | | | | | | |
| 3 | | | | | | | |
| 4 | | | | | | | |
| 5 | | | | | | | |
| 6 | | | | | | | |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | | | | | | |
| 11 | | | | | | | |
| 12 | | | | | | | |

# APPENDIX 2: LIST OF BANKS IN KENYA

| **Operating Banks in Kenya** | **Listed Banks in Kenya** |
|---|---|
| Access Bank (Kenya) Plc | Absa Bank Kenya Plc |
| African Banking Corporation Limited | Standard Chartered Bank Ltd |
| Bank of Africa Kenya Limited (BoA) | Co-operative Bank of Kenya Limited |
| Bank of Baroda (Kenya) Ltd (BoB) | Diamond Trust Bank (K) Ltd. |
| Absa Bank Kenya Plc | Equity Bank Kenya Limited |
| Bank of India | National Bank of Kenya |
| Charterhouse Bank Ltd | NCBA Bank Limited |
| Chase Bank (K) Limited | I&M Bank Ltd |
| Citibank N.A Kenya | Stanbic Bank Kenya Limited |
| Consolidated Bank of Kenya Ltd | |
| Co-operative Bank of Kenya Limited | |
| Credit Bank Limited | |
| Development Bank of Kenya Ltd | |
| DIB Bank Kenya Limited | |
| Diamond Trust Bank (K) Ltd. (DTB) | |
| Ecobank Kenya Limited | |
| Equity Bank Kenya Limited | |
| Family Bank Limited | |
| First Community Bank Ltd | |
| Guaranty Trust Bank (Kenya) Limited | |
| Guardian Bank Limited | |
| Gulf African Bank Limited | |
| Habib Bank AG Zurich | |
| Imperial Bank Ltd | |

| | |
|---|---|
| I&M Bank Ltd | |
| Kingdom Bank Kenya Ltd | |
| KCB Bank Kenya Limited | |
| Mayfair CIB Bank Limited | |
| Middle East Bank Kenya Limited (MEB) | |
| M Oriental Bank Limited | |
| National Bank of Kenya Ltd | |
| NCBA Bank Plc | |
| Paramount Bank Limited | |
| Prime Bank Ltd | |
| SBM Bank (Kenya) Ltd | |
| Sidian Bank Limited | |
| Spire Bank Ltd | |
| Stanbic Bank Kenya Limited | |
| Standard Chartered Bank Kenya Limited (Stanchart) | |
| UBA Kenya Bank Limited | |
| Victoria Commercial Bank Limited | |

# APPENDIX 3: RESEARCH DATA

| Bank | Year | Asset Liquidity | Investment Rating | Speculative Rating | Sovereign Rating | Firm Size |
|---|---|---|---|---|---|---|
| ABC | 2016 | 0.067 | 3 | 3 | 2 | 0.973 |
| ABC | 2017 | 0.13 | 4 | 3 | 3 | 1.001 |
| ABC | 2018 | 0.061 | 3 | 4 | 3 | 1.018 |
| ABC | 2019 | 0.045 | 4 | 4 | 4 | 1.119 |
| ABC | 2020 | 0.032 | 4 | 4 | 5 | 1.211 |
| Barclays | 2016 | 0.38 | 3 | 3 | 2 | 12.128 |
| Barclays | 2017 | 0.46 | 4 | 3 | 3 | 12.346 |
| Barclays | 2018 | 0.53 | 4 | 4 | 3 | 12.176 |
| Barclays | 2019 | 0.48 | 5 | 4 | 4 | 12.212 |
| Barclays | 2020 | 0.51 | 4 | 5 | 4 | 12.693 |
| BoA | 2016 | 0.096 | 3 | 2 | 2 | 5.038 |
| BoA | 2017 | 0.134 | 3 | 3 | 2 | 5.146 |
| BoA | 2018 | 0.09 | 4 | 3 | 3 | 5.933 |
| BoA | 2019 | 0.091 | 4 | 3 | 3 | 5.129 |
| BoA | 2020 | 0.138 | 3 | 3 | 3 | 5.801 |
| BoB | 2016 | 0.096 | 2 | 3 | 3 | 4.034 |
| BoB | 2017 | 0.117 | 3 | 3 | 3 | 4.13 |
| BoB | 2018 | 0.214 | 4 | 3 | 3 | 4.325 |
| BoB | 2019 | 0.123 | 3 | 3 | 3 | 4.473 |
| BoB | 2020 | 0.118 | 3 | 2 | 3 | 4.72 |
| NCBA | 2016 | 0.236 | 3 | 3 | 3 | 12.077 |
| NCBA | 2017 | 0.346 | 3 | 4 | 3 | 12.198 |
| NCBA | 2018 | 0.345 | 4 | 4 | 3 | 12.11 |
| NCBA | 2019 | 0.479 | 4 | 4 | 3 | 12.144 |
| NCBA | 2020 | 0.446 | 4 | 4 | 3 | 12.04 |
| Stanbic | 2016 | 0.112 | 3 | 2 | 3 | 10.051 |
| Stanbic | 2017 | 0.142 | 3 | 3 | 3 | 10.199 |
| Stanbic | 2018 | 0.126 | 2 | 2 | 3 | 10.23 |
| Stanbic | 2019 | 0.14 | 3 | 3 | 3 | 10.126 |
| Stanbic | 2020 | 0.165 | 3 | 3 | 3 | 10.146 |
| Chase | 2016 | 0.917 | 3 | 3 | 2 | 8.582 |
| Chase | 2017 | 0.108 | 3 | 3 | 3 | 8.092 |
| Chase | 2018 | 0.164 | 4 | 2 | 3 | 7.674 |
| Chase | 2019 | 0.154 | 3 | 3 | 3 | 7.722 |
| Chase | 2020 | 0.119 | 4 | 3 | 3 | 7.808 |
| Citi | 2016 | 0.126 | 3 | 2 | 3 | 11.282 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Citi | 2017 | 0.118 | 3 | 3 | 3 | 11.387 |
| Citi | 2018 | 0.256 | 4 | 3 | 3 | 11.546 |
| Citi | 2019 | 0.267 | 4 | 4 | 3 | 11.495 |
| Citi | 2020 | 0.317 | 4 | 3 | 3 | 11.358 |
| Consolidated | 2016 | 0.297 | 3 | 3 | 2 | 3.621 |
| Consolidated | 2017 | 0.28 | 3 | 3 | 2 | 3.556 |
| Consolidated | 2018 | 0.61 | 3 | 3 | 3 | 3.541 |
| Consolidated | 2019 | 0.52 | 2 | 3 | 2 | 3.507 |
| Consolidated | 2020 | 0.61 | 3 | 3 | 3 | 3.464 |
| Co-operative | 2016 | 0.31 | 3 | 3 | 3 | 12.152 |
| Co-operative | 2017 | 0.55 | 3 | 4 | 4 | 12.035 |
| Co-operative | 2018 | 0.46 | 4 | 3 | 4 | 12.166 |
| Co-operative | 2019 | 0.39 | 4 | 4 | 3 | 12.055 |
| Co-operative | 2020 | 0.46 | 4 | 4 | 3 | 12.92 |
| DTB | 2016 | 0.46 | 3 | 2 | 2 | 11.858 |
| DTB | 2017 | 0.47 | 4 | 3 | 3 | 12.16 |
| DTB | 2018 | 0.51 | 4 | 3 | 3 | 12.005 |
| DTB | 2019 | 0.37 | 4 | 2 | 2 | 12.126 |
| DTB | 2020 | 0.46 | 4 | 3 | 3 | 12.248 |
| DIB | 2016 | 0.105 | 3 | 2 | 2 | 8.161 |
| DIB | 2017 | 0.09 | 3 | 3 | 2 | 1.224 |
| DIB | 2018 | 0.122 | 4 | 2 | 3 | 0 |
| DIB | 2019 | 0.132 | 4 | 3 | 3 | 9.239 |
| DIB | 2020 | 0.156 | 3 | 2 | 2 | 8.566 |
| Ecobank | 2016 | 0.29 | 3 | 2 | 2 | 10.735 |
| Ecobank | 2017 | 0.36 | 3 | 3 | 3 | 10.867 |
| Ecobank | 2018 | 0.34 | 4 | 2 | 2 | 10.761 |
| Ecobank | 2019 | 0.28 | 4 | 3 | 2 | 10.887 |
| Ecobank | 2020 | 0.43 | 3 | 3 | 3 | 10.905 |
| Equity | 2016 | 0.512 | 4 | 3 | 3 | 12.232 |
| Equity | 2017 | 0.567 | 4 | 3 | 4 | 12.241 |
| Equity | 2018 | 0.499 | 4 | 4 | 4 | 12.047 |
| Equity | 2019 | 0.603 | 5 | 3 | 3 | 12.115 |
| Equity | 2020 | 0.589 | 5 | 3 | 3 | 12.291 |
| Family | 2016 | 0.273 | 3 | 3 | 2 | 11.032 |
| Family | 2017 | 0.158 | 4 | 3 | 3 | 11.305 |
| Family | 2018 | 0.363 | 3 | 3 | 3 | 11.148 |
| Family | 2019 | 0.278 | 4 | 2 | 3 | 11.143 |
| Family | 2020 | 0.378 | 4 | 3 | 2 | 11.111 |
| First CB | 2016 | 0.126 | 3 | 3 | 3 | 1.634 |

| | | | | | | |
|---|---|---|---|---|---|---|
| First CB | 2017 | 0.172 | 3 | 3 | 3 | 1.590 |
| First CB | 2018 | 0.183 | 4 | 4 | 3 | 1.613 |
| First CB | 2019 | 0.188 | 3 | 3 | 3 | 1.762 |
| First CB | 2020 | 0.181 | 3 | 4 | 3 | 1.791 |
| GT Bank | 2016 | 0.097 | 3 | 2 | 2 | 6.404 |
| GT Bank | 2017 | 0.067 | 2 | 2 | 3 | 6.288 |
| GT Bank | 2018 | 0.078 | 3 | 3 | 3 | 7.296 |
| GT Bank | 2019 | 0.082 | 3 | 2 | 2 | 7.227 |
| GT Bank | 2020 | 0.097 | 3 | 3 | 1 | 7.139 |
| Guardian | 2016 | 0.38 | 2 | 2 | 2 | 9.587 |
| Guardian | 2017 | 0.37 | 3 | 3 | 3 | 9.589 |
| Guardian | 2018 | 0.56 | 3 | 2 | 3 | 9.596 |
| Guardian | 2019 | 0.103 | 3 | 3 | 2 | 9.668 |
| Guardian | 2020 | 0.101 | 3 | 3 | 1 | 9.692 |
| Gulf | 2016 | 0.093 | 3 | 3 | 2 | 9.891 |
| Gulf | 2017 | 0.098 | 3 | 3 | 2 | 1.115 |
| Gulf | 2018 | 0.097 | 2 | 3 | 2 | 1.209 |
| Gulf | 2019 | 0.092 | 3 | 3 | 3 | 1.352 |
| Gulf | 2020 | 0.086 | 3 | 2 | 3 | 1.414 |
| HFC | 2016 | 0.179 | 3 | 2 | 2 | 0 |
| HFC | 2017 | 0.171 | 3 | 3 | 2 | 11.139 |
| HFC | 2018 | 0.111 | 4 | 3 | 3 | 11.129 |
| HFC | 2019 | 0.186 | 3 | 3 | 3 | 11.037 |
| HFC | 2020 | 0.185 | 4 | 3 | 3 | 10.952 |
| I&M | 2016 | 0.136 | 3 | 2 | 2 | 1.83 |
| I&M | 2017 | 0.133 | 3 | 3 | 3 | 1.904 |
| I&M | 2018 | 0.133 | 2 | 3 | 3 | 2.008 |
| I&M | 2019 | 0.129 | 3 | 3 | 3 | 2.122 |
| I&M | 2020 | 0.026 | 3 | 2 | 3 | 2.342 |
| Jamii | 2016 | 0.163 | 3 | 2 | 2 | 1.482 |
| Jamii | 2017 | 0.17 | 3 | 3 | 3 | 1.728 |
| Jamii | 2018 | 0.128 | 3 | 3 | 3 | 1.663 |
| Jamii | 2019 | 0.121 | 3 | 3 | 2 | 1.461 |
| Jamii | 2020 | 0.231 | 3 | 3 | 2 | 1.211 |
| KCB | 2016 | 0.461 | 3 | 3 | 1 | 12.84 |
| KCB | 2017 | 0.547 | 4 | 3 | 3 | 11.056 |
| KCB | 2018 | 0.546 | 4 | 3 | 4 | 11.132 |
| KCB | 2019 | 0.459 | 5 | 3 | 4 | 11.228 |
| KCB | 2020 | 0.548 | 5 | 2 | 3 | 11.34 |
| MEB | 2016 | 0.08 | 3 | 2 | 2 | 8.689 |

| | | | | | | |
|---|---|---|---|---|---|---|
| MEB | 2017 | 0.07 | 2 | 0 | 1 | 8.644 |
| MEB | 2018 | 0.073 | 3 | 2 | 2 | 8.563 |
| MEB | 2019 | 0.187 | 3 | 2 | 1 | 8.541 |
| MEB | 2020 | 0.132 | 3 | 0 | 3 | 8.587 |
| NBK | 2016 | 0.134 | 3 | 2 | 1 | 1.719 |
| NBK | 2017 | 0.132 | 3 | 2 | 2 | 1.738 |
| NBK | 2018 | 0.134 | 3 | 2 | 2 | 1.654 |
| NBK | 2019 | 0.125 | 3 | 3 | 3 | 1.608 |
| NBK | 2020 | 0.13 | 2 | 2 | 2 | 1.654 |
| Oriental | 2016 | 0.091 | 2 | 3 | 1 | 1.969 |
| Oriental | 2017 | 0.096 | 3 | 3 | 2 | 1.047 |
| Oriental | 2018 | 0.095 | 3 | 3 | 3 | 1.202 |
| Oriental | 2019 | 0.089 | 3 | 3 | 3 | 1.266 |
| Oriental | 2020 | 0.108 | 2 | 3 | 2 | 1.261 |
| SBM | 2016 | 0.101 | 3 | 2 | 2 | 9.712 |
| SBM | 2017 | 0.235 | 3 | 3 | 2 | 9.617 |
| SBM | 2018 | 0.224 | 4 | 3 | 3 | 0 |
| SBM | 2019 | 0.312 | 4 | 3 | 2 | 0 |
| SBM | 2020 | 0.12 | 3 | 3 | 2 | 1.165 |
| Sidian | 2016 | 0.087 | 2 | 2 | 2 | 0 |
| Sidian | 2017 | 0.098 | 3 | 2 | 2 | 9.858 |
| Sidian | 2018 | 0.087 | 2 | 3 | 1 | 9.946 |
| Sidian | 2019 | 0.116 | 3 | 3 | 2 | 9.868 |
| Sidian | 2020 | 0.117 | 3 | 3 | 2 | 10.14 |
| Spire | 2016 | 0.084 | 3 | 2 | 1 | 0 |
| Spire | 2017 | 0.096 | 3 | 2 | 1 | 3.834 |
| Spire | 2018 | 0.088 | 2 | 3 | 2 | 9.533 |
| Spire | 2019 | 0.107 | 3 | 3 | 3 | 9.319 |
| Spire | 2020 | 0.1 | 3 | 2 | 2 | 9.129 |
| Stanchart | 2016 | 0.105 | 4 | 3 | 3 | 12.113 |
| Stanchart | 2017 | 0.541 | 4 | 4 | 3 | 12.14 |
| Stanchart | 2018 | 0.573 | 4 | 4 | 4 | 12.43 |
| Stanchart | 2019 | 0.548 | 4 | 3 | 4 | 12.14 |
| Stanchart | 2020 | 0.595 | 5 | 4 | 3 | 11.89 |
| UBA | 2016 | 0.081 | 2 | 2 | 1 | 2.467 |
| UBA | 2017 | 0.776 | 3 | 3 | 2 | 2.959 |
| UBA | 2018 | 0.097 | 3 | 2 | 2 | 2.631 |
| UBA | 2019 | 0.079 | 3 | 2 | 3 | 2.078 |
| UBA | 2020 | 0.086 | 3 | 3 | 2 | 2.638 |