EFFECTS OF MORTGAGE RISK ON MARKET RETURNS OF LISTED COMMERCIAL BANKS IN KENYA

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Abstract

Purpose: The study is focused to determine the effects of mortgage risk on market returns of listed commercial banks in Kenya

Methodology: This study utilised Systematic review research design to locate, assemble and evaluate relevant studies that address the dependent and independent variables.

Findings: The results indicated that the existing studies had a conceptual framework gap as empirical literature does not offer conclusive results on the applicability of the theories in managing mortgage risk and market returns. Previous studies were majorly conducted at a different time period in other markets presenting a geographical gap.

Unique contribution to theory, practice and policy: The study will be beneficial to listed commercial banks in Kenya to adapt effective mortgage risk management strategies to sustain positive market returns. The models developed from this study will aid the government institutions that regulate listed commercial banks in Kenya to develop policies on sustainable mortgage risk management. The study will add new knowledge on mortgage risk management to maximise market returns for listed commercial banks in Kenya.

Key words: *Mortgage risk, Market returns, market risk, Commercial bank*

INTRODUCTION

The mortgage market in Kenya is mostly funded by listed commercial banks. Wood & Skinner (2018) study in the Barbados identified commercial banking sector as the primary form of financial intermediation, the largest conduit for the mobilisation of domestic savings, main source of external capital. Housing finance – mortgages – sits at the centre of banking, and banking sits at the centre of the financial system. Large-scale mortgage markets only function where the state wraps around the banking system to remove maturity risks and to limit excessive credit creation (Schwartz, 2020).Finance is the bedrock of real estate development: Its availability and accessibility are important for successful investment. In most cases, investors don't have substantial finance to execute a project; instead, they resort to an external source through mortgage financing (Olawumi et al., 2019). This study will investigate mortgage risks and their effect on stock prices of listed commercial banks.

Revenues from mortgages are key to the overall financial performance of listed commercial banks in Kenya. Bank profits are also an imperative source of equity. If banks do not pay out (all of) their profits and keep them as equity, such a strategy should lead to safer banks. Consequently, high profits possibly promote a country's financial stability (Sahyouni & Wang, 2018). Performance of commercial banks influence the growth of the economy. Poor performance in the real estate sector has a spiral effect of declining economic growth.

Mortgage Risk.

According to Barth (2009), mortgage risk encompasses all the risks from the mortgage origination stage to the when the mortgage is fully settled by the mortgagor. Thus, this study seeks to determine the extent to which mortgage default risk influence industry performance (market returns) of mortgage portfolios of listed commercial banks in Kenya. Commercial banks offer mortgage loans to their clients to purchase residential homes. There is significant investment by banks in the mortgage industry through lending to players in the construction industry and also to the final residential houses owners. There is a risk that the home owners may default on mortgage loan repayment or in extreme cases be unable to pay leading to non-performing mortgage loans. When mortgage risk is mitigated, banks perform well and their share price go up.

 According to the CBK Website (2021), Credit risk is the single largest factor affecting the soundness of financial institutions and the financial system as a whole. This is because lending is the principal business for banks. Credit risk according to Basel Committee of Banking Supervision BCBS (2001) is the possibility of losing the outstanding loan partially or totally, due to credit events (default risk). Credit events usually include events such as bankruptcy, failure to pay a due obligation, repudiation /moratorium or credit rating change and restructure (Isanzu, 2019). Mortgage lending is an important component in the performance of listed commercial banks in Kenya. Business lending in many cases anchor on residential mortgages that are pledged as collateral security by directors. Profitability from mortgage products is therefore key to the bottom line of the listed commercial banks.

Mortgage default risk can lead to mismatch risk. Mismatch risk occurs when long-term mortgages are funded using short-term deposits that can be recalled by depositors. Can fixed-

rate, conforming mortgages be funded profitably with retail deposits gathered by an efficient depository institution? Is it possible for very efficient, low-risk, retail deposit-based banks to fund fixed-rate, conforming mortgages profitably? Depositories can increase profits securitizing mortgages by not expanding mortgage lending beyond available retail deposits (Journal & Passmore, 2021). Real estate development is capital intensive and therefore banks in Kenya utilise deposits to fund mortgages. When Banks fund mortgages using customer deposits held on short-term maturities, there is the likelihood that that depositors can recall their money before maturity of the mortgage facility. This mismatch in the maturity of short-term deposits and long-term mortgage loans can lead to financial distress for commercial banks especially when there is default or the mortgages are downgraded to non-performing loans leading to liquidity risk. In comparison, studies by Vickery (2019) in the Danish market indicate that mortgages are funded with bonds whose maturity match the mortgage amortisation: capital market funding has been a mainstay of the Danish mortgage financing system.

The mortgage price may change during the loan tenure affecting the redeemable value of mortgage by the lender. Falling house prices are an indicator that the lender may not fully recover the amount loaned. Su et al (2021) conducted a study in china to examine whether the falling house prices cause credit risk. The results noted that the falling house prices increases the credit risk due to the default of real estate-related loans. According to Mburu, G and Owiti K (2013), Central Bank rate affects the mortgage uptake since mortgage rates are pegged towards the Central Bank rate. Increase in the Central Bank rate leads to a consistent increase in the mortgage rate which tends to slow down mortgage uptake since the Central bank rate act as a signal for commercial banks to tighten their lending .Inflation has an inverse relationship with the mortgage uptake since it directly affects the mortgage rates. The value of a property is determined by a number of different criteria, each of which can influence how much the residential home is currently worth. These criteria range from the square footage and the age of the home, to its location, construction quality and architectural features.

Prepayment refers to the settlement of a loan before the agreed tenure. If the loan was amortised for ten years and the loan is repaid within five years, the bank will need to reinvest the funds elsewhere, probably at a lower rate. The bank does not receive all the interest as earlier agreed in the mortgage contract. According to Owusu-Manu et al. (2018), there are various reasons that influence mortgage prepayments including changes in employment profiles, changes in household income and foreclosures. Most banks charge a fee premium to discourage prepayments. In other cases, banks may offer fixed rate – where the creditor/investor assumes the interest risk while there is typically no prepayment penalty for the borrower. Prepayment risk exists in two scenarios. First, when interest rates fall, borrowers may choose to refinance or call back their mortgages with no financial penalties (like exercising a call option). Second, if the property value declines and the market value of the property falls below the mortgage value, the borrowers may walk away from their mortgages and let banks foreclose the properties (like exercising a put option). In either case, the mortgages are closed before maturity. This study will validate whether prepayment risk factor significantly affect excess returns for bank stocks when mortgages are refinanced.

There are various theories that explain the relationship between performance of banks and stock prices. Existing theories provide contradictory explanations as to how mortgage risk affects performance of listed commercial banks. Credit risk can be managed through the application of the title theory and mortgage securitisation. However, studies by Franklin (2020) indicate that default risk cannot be eliminated by enforcing the lien theory as it allows the title to remain with the mortgagor and the mortgage that is placed on the property is a charge on the title. Price risk can also be adequately managed using derivative instruments as pricing is pegged on movement of macroeconomic variables that determine interest rates. However the mortgages market in Kenya have unpredictable prices and lenders may in some cases not get the money loaned to clients in case of foreclosures.By applying modern portfolio theory, banks can diversify their portfolios to obtain an equilibrium of product risks to enhance their profitability and market returns. Listed commercial banks can enhance their liquidity position by obtaining funds with lower interest rates from sources such as the bond market to increase their profitability through the liquidity preference theory and the loanable funds theory, mitigating mismatch risk. However, there is a theoretical gap to address the relationship between mortgage risk and stock returns of listed commercial banks in Kenya as the industry continues to experience effects of mortgage risk and consequently non-performing mortgage loans. The study seeks to fill this gap by evaluating how mortgage risk factors influence performance of stock prices for listed commercial banks in Kenya.

BANK SUPERVISION ANNUAL REPORTS FROM 2011 TO 2020:

According to the Central bank of Kenya (CBK) supervision report 2011, CBK Website. (2021), a baseline survey on residential mortgages was undertaken in 2010 covering the periods from 2006 to May 2010 that provided an update on the size of mortgage portfolio, mortgage loan characteristics and the obstacles to mortgage market development. CBK undertook another survey based on the same parameters as at 31st December 2011 and included mortgage market outlook for 2012.The CBK annual supervision reports includes a section on residential mortgages since the 2011 report. The value of mortgage loan assets outstanding increased from Ksh. 91.2 billion in December 2011 to Ksh. 219.9 billion in December 2016, representing a growth of Ksh. 128.7 billion. The value of mortgages booked doubled in five years: There were 16,135 mortgage loans in the market in 2011 and this number increased to 24059 in 2016. The growth trajectory continued up to 2016 when the interest rate cap law was introduced on September 14, 2016. The value of non-performing mortgages increased from Ksh. 3.6 billion or 3.9 percent of the total outstanding mortgages in 2011 to 22 billion in 2016.The average interest rates charged on mortgages decreased from 20.7 percent in 2011 to 18.7 percent in 2016.

According to bank supervision annual report 2017, CBK Website. (2021), the market responded to the interest rate cap law with increased demand for mortgage loans due to perceived affordability after the introduction of interest capping law and also more borrowers perceived that they could qualify for higher mortgage loan amounts. However, Commercial banks introduced tighter credit standards and had preference to offer short term loans as compared to long tenure mortgage loans, so the actual mortgage disbursements decreased compared to the increased demand. After the introduction of interest rate cap, the value of mortgage loan assets outstanding in 2017 was Ksh.223.2 billion from Ksh. 219.9 billion in 2016, representing a growth of only Ksh.3.3 billion or 1.5 percent. The loan book had grown by kes 16.6 Billion from

2015 to 2016. Value of non-performing mortgages increased from Ksh.22.0 billion in 2016 to Ksh.27.3 billion in 2017. There were 26,187 mortgage loans in the market in 2017 up from 24,059 in 2016, an increase of 2,128 loan accounts or 8.8 percent. The interest rate charged on mortgages on average was 13.57 percent as compared to 18.7 percent average in 2016. This was mainly due to interest rate capping which became effective on September 14, 2016.

Impact of the implementation of International Financial Reporting Standards 9 (IFRS 9) on residential mortgage Loans were assessed and since mortgages are fully secured, there was no major impact of IFRS 9 on the residential mortgages segment. Residential mortgage facilities advanced are fully secured by the underlying residential property hence the loss when there is default is low. From 2018 to 2019, the growth continued from Ksh.224.9 billion in December 2018 to Ksh.237.7 billion in December 2019, representing a growth of Ksh.12.8 billion or 5.71 percent due to increased appetite for home ownership. Between 2016 and 2019, value of residential mortgages grew by only ksh 17.8 billion while the value of mortgages had doubled between 2011 and 2016 from ksh 91.2 billion to ksh 219.9 billion respectively.

According to bank supervision annual report 2020, there was negative growth in residential mortgages between 2019 and 2020 from ksh 237.7 billion to ksh. 232.7 billion. This represents a decrease of Ksh.5.0 billion or 2.1 percent mainly due to repayments and decreased mortgage facilities advanced by banks due to effects of COVID-19. The outstanding value of non-performing mortgage loans decreased from Ksh.31.0 billion in December 2019 to Ksh.27.8 billion in December 2020 due to repayments. There were 26,971 mortgage loans in the market in December 2020 down from 27,993 in December 2019. The interest rate charged on mortgages on average was 10.9 percent in 2020 as compared to an average of 11.3 percent in 2019.

Market returns

Market returns refers to the earnings from investments. According to Jung & Park (2017) profitability in commercial banks lead to an increase in the stock prices. Mortgage returns are crucial in the movement of stock prices of commercial banks. Isanzu (2017) notes that significant loss of earnings can lead to stakeholders losing confidence in the bank's operations, it also reduces credit available for prospective loan applicants, compromises the bank's liquidity and causes failure to meet its obligations and subsequent loss of the strategic bank position in the industry. Mortgage loans provide consistent revenue stream for banks and therefore contributes to the financial performance reported at the end of financial year. By mitigating mortgage risk, banks are able to project increase in revenue. When banks perform well, there is a ripple effect in positive rise in the stock prices.

From the Central Bank of Kenya bank supervision annual reports between 2011 and 2020, about 76.4 percent of lending to the mortgage market was by less than ten institutions. From the sampled five leading institutions in term of market share, there was sustained growth in market returns from 2011 to 2016.Thereafter there is marked decrease in market returns from 2016 to 2020. The market returns from the sampled five listed commercial banks are in the below table.

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Bank	Year	market return
Barclays Bank of Kenya	2011	4.886363636
Barclays Bank of Kenya	2012	0.825
Barclays Bank of Kenya	2013	0.898876404
Barclays Bank of Kenya	2014	1.062686567
Barclays Bank of Kenya	2015	1.231617647
Barclays Bank of Kenya	2016	1.402061856
Barclays Bank of Kenya	2017	1.005181347
Barclays Bank of Kenya	2018	0.885321101
Barclays Bank of Kenya	2019	0.819548872
Barclays Bank of Kenya	2020	1.254716981
Equity Group Holdings	2011	1.671732523
Equity Group Holdings	2012	0.692631579
Equity Group Holdings	2013	0.772357724
Equity Group Holdings	2014	0.615
Equity Group Holdings	2015	1.25
Equity Group Holdings	2016	1.32231405
Equity Group Holdings	2017	0.75625
Equity Group Holdings	2018	1.151079137
Equity Group Holdings	2019	0.681372549
Equity Group Holdings	2020	1.307692308
HF Group Limited	2011	2.25
HF Group Limited	2012	0.774193548
HF Group Limited	2013	0.484375
HF Group Limited	2014	0.680851064
HF Group Limited	2015	2.112359551
HF Group Limited	2016	1.63003663
HF Group Limited	2017	1.365
HF Group Limited	2018	1.811594203
HF Group Limited	2019	0.93559322
HF Group Limited	2020	1.512820513
KCB Group Limited	2011	1.327433628
KCB Group Limited	2012	0.560330579
KCB Group Limited	2013	0.636842105
KCB Group Limited	2014	0.840707965
KCB Group Limited	2015	1.37804878
KCB Group Limited	2016	1.413793103
KCB Group Limited	2017	0.674418605
KCB Group Limited	2018	1.142098274

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KCB Group Limited	2019	0.707042254
KCB Group Limited	2020	1.42
Standard Chartered Bank Kenya Limited	2011	1.625
Standard Chartered Bank Kenya Limited	2012	0.680851064
Standard Chartered Bank Kenya Limited	2013	0.767973856
Standard Chartered Bank Kenya Limited	2014	0.910714286
Standard Chartered Bank Kenya Limited	2015	1.663366337
Standard Chartered Bank Kenya Limited	2016	1.063157895
Standard Chartered Bank Kenya Limited	2017	0.913461538
Standard Chartered Bank Kenya Limited	2018	1.068035944
Standard Chartered Bank Kenya Limited	2019	0.983585859
Standard Chartered Bank Kenya Limited	2020	1.058823529

Table 1: Market returns of five listed commercial banks in Kenya, adapted from the NSE

This study will explore the relationship between mortgage risk and market returns of commercial banks listed in the Nairobi stock exchange (NSE) in Kenya. The study seeks to investigate the linkage between market returns from stock prices of listed commercial banks and mortgage risk (default rate) of the residential mortgages in their portfolio.

Statement of the problem

All firms aim at creating and sustaining competitive advantage and maintaining high performance (Porter, 1998; Pavlou, 2011). Firm's financial performance further plays the role of increasing the market value of a firm in addition to leading towards the growth of the whole industry and ultimately towards the overall prosperity of the economy (Paulo, 2019). Listed commercial banks offer a portfolio of products for sustained income revenues and mortgages are a key product that determines their performance. In the last decade, the market return for listed commercial banks in Kenya has been uncertain. Omondi (2016) conducted a study in 2015 whose findings revealed that six of the eleven listed banks at the NSE had experienced a decline in their earnings per share (EPS). The study attributed this to a restrictive macroeconomic environment and a surge in non-performing loans. Ngugi (2018) argues that banks listed at the NSE experienced a decline of one percent in EPS in the year 2017 and attributed this to interest rate capping. It is therefore necessary to conduct a study which seeks to understand the current inconsistency in market returns of financial institutions in Kenya.

According to bank supervision annual reports from 2011 to 2020, the growth of residential mortgage has stagnated since the introduction of interest rate cap law: The value of mortgage loan assets outstanding increased from Ksh. 91.2 billion in December 2011 to Ksh. 219.9 billion in December 2016, representing a growth of Ksh. 128.7 billion. However after the introduction of interest rate cap loan in 2016, value of residential mortgages grew from ksh 219.9 billion in 2016 to ksh.237.7 in 2019, an increase of only ksh.17.8 billion. This dismal performance in residential mortgage loans has affected the performance of listed commercial banks. The mortgage returns of listed commercial banks has been on decreasing trend from 2016 to 2020.

This study will examine the effects of default rate on the market returns of listed commercial banks in Kenya.

However, non-performing loans have been on a constant increase from ksh.3.6 Billion to ksh.11.7 billion in 2015. From 2011 to 2016 the non –performing residential mortgage loans doubled to ksh.22 billion in 2016, up from ksh.3.6 billion in 2011 and almost doubled again in 2018 at ksh.38.1 billion. This study will examine the effect of non-performing mortgages on the market return of listed commercial banks in Kenya. Below is a table tracking the performance of residential mortgages by sampled listed commercial banks leading in market share, the data was extracted from Central bank of Kenya bank supervision report.

Year	Total residential mortgage loans (billions)	increase/ decrease in mortgage value from preceding year (billions)	Non-Performing loans (billions)	% NPL to mortgage loan ratio (billions)	Interest rates (%)	no. of loans
2020	232.7	-5	27.8	12	10.9	26971
2019	237.7	12.8	31	13	11.3	27993
2018	224.9	1.7	38.1	16.9	12.4	26504
2017	223.2	3.3	27.3	12.2	13.57	26187
2016	219.9	16.6	22	10	18.7	24059
2015	203.3	39 .3	11.7	5.8	17.1	24458
2014	164	25.9	10.8	6.5	15.8	22013
2013	138.1	18.16	8.5	6.15	16.37	19879
2012	122	18.5	6.9	5.68	18	19177
2011	91.2	28.9	3.6	5.68	20.7	16135

Table 2: Residential mortgages data from 2011 to 2020

Source: authors own adaptation from CBK bank supervision annual reports

The annual central bank of Kenya survey reports includes a section on Obstacles to Mortgage Market Development and a consistent themes in the sampled decade include low level of income, high incidental cost and difficulties with property registration, Limited access to affordable long term finance and high interest rates. Low levels of income can lead to prepayment risk when prices rise and mortgages are prepaid either due to foreclosure or disposal by owners who are unable to service the mortgage instalments. High interest rates were a common theme before the implementation of interest cap law in 2016.Limited access to long-term funds can lead to mismatch risk when customers recall short-term deposits before mortgage loans maturity.

Revenues from mortgages significantly contribute to the financial performance of listed commercial banks and therefore are key determinants of stock prices. Empirical studies in the Kenyan market have attempted to examine how mortgage risk factors individually affect banks profitability. Mogaka (2015) reviewed the Influence of Macro Economic Factors on Mortgage Market Growth and found no evidence of significant influence of inflation, average GDP growth rate, Treasury bill rate and national savings rate on total real estate loan portfolio. In other

markets, Syafii et al. (2020) examined the effect of the financial performance on share prices of banking sector companies on the Indonesian Stock Exchange and found a positive and significant effect on share prices. According to the results of previous research (Utami, 2019; Mudjijah et al., 2019; Hermi & Kurniawan, 2011; Marcella et al., 2019; Hanafi & Syam, 2019), financial performance has a significant positive effect on share prices. Meanwhile, according to Pramono & Widiarto (2019), financial performance does not have a significant effect on increasing share prices. These conflicting results on the effects of financial performance on the stock prices presents an empirical gap which will be addressed in this study. The study seeks to fill the gap by evaluating how mortgage risk influence performance of stock prices for listed commercial banks in Kenya

Research objectives

General Objective.

The overall objective of the study is to determine the effect of mortgage risk on market returns of listed commercial banks in Kenya

Specific Objectives.

The specific objectives of the study are:
1. To determine the effect of mortgage default rate on market returns of publicly listed commercial banks in Kenya.
2. To examine the effect of prepayment risk on market returns of listed commercial banks in Kenya
3. To examine moderating effect of market risk and the influence on market returns of publicly listed commercial banks in Kenya.

Research Hypothesis

H_1: Mortgage default rate has no significant effect on market returns of listed commercial banks in Kenya.

H_2: Prepayment risk has no significant effect on market returns of listed commercial banks in Kenya.

H_3: There is no significant moderating effect of market risk on the effect of mortgage risk on market returns of listed commercial banks in Kenya.

Significance of the Study

Industry implications:

The study will be beneficial to listed commercial banks in Kenya to adapt effective mortgage risk management strategies to sustain market returns. Further, sustainable firms will provide more stable employment. Profitable firms are able to pay taxes leading to sustained economic growth.

Policy Implications:

The models developed on mortgage risk will aid in developing policies on sustainable mortgage risk management for listed commercial banks in Kenya

Theoretical Implications:

The study will add new knowledge on mortgage risk management to maximise market returns for listed commercial banks in Kenya.

Scope of the study

Target population for this study consists of the eleven listed commercial banks in Kenya. Secondary data will be sourced from the published financial statements of the listed commercial banks. Further, the research will obtain information and data from Central Bank of Kenya (CBK) website, Kenya National Bureau of Statistics, Capital Markets Authority and Nairobi Securities Exchange. Listed commercial banks are required by law to publish their financial statements therefore the data will be accessible for review during the research.

The study will be undertaken using data from 2011 to 2020 to accommodate the pre-and post-interest rate cap law implementation and also COVID 19 pandemic. The selected period is adequate to analyse the movement of stock prices for listed commercial banks in Kenya.

Kenyan mortgage market has a huge potential for future growth. One of the current key focus for the government is to grow the housing sector and mortgage uptake will be a key driver of this agenda. Identifying mortgage risk factors that influence mortgage returns is an important area in the mortgage lending industry in Kenya.

Limitation of the study

The study will be limited to listed commercial banks in Kenya .Listed firms are required by law to publish their financial statements. Non-listed banks will be ignored for this study though they offer mortgages to their clients and may give valuable information on the effects of mortgage risks on mortgage returns. Future studies can explore how to incorporate non-listed commercial banks. The study examined the moderating effect of market risk. However, there are other factors that influence the mortgage risks and market returns such as market capitalization, revenues and equity capital. Future studies can explore these factors.

LITERATURE REVIEW

Theoretical Review

There are various theories that govern mortgage securities. In the Lien theory, the bank holds a lien against the property registered under the borrower. The lien theory, which is adopted by majority of the countries, was developed by Hester (1975) and it allows the title to remain with the mortgagor and the mortgage that is placed on the property is a charge on the title (Franklin, 2020). The Lien ends when the loan is fully paid. Lien theory matters are handled in a judicial process. In intermediary theory, the borrower retains the title and the lender can take back the title upon default without judicial proceedings.

The basic concept of the Title theory as stated by Gilbert (1968) is that upon making the mortgage, the mortgagor passes title of the property, the subject of the mortgage, to the mortgagee, subject to a condition subsequent. This condition subsequent is the payment of the debt (Franklin, 2020). The Title theory argues that the mortgagee is given the title to a property and acts as a custodian until it has been repaid fully by the mortgagor. The commercial banks, in

this case, hold the title until the property has been fully paid for by the mortgagee. In short, the mortgagee has alien interest to the property (Buckley and Kalarickal, 2004). This regulation-driven view of security design suggests that securitisation is simply a vehicle for creating highly rated securities out of relatively illiquid mortgage loans to serve some regulated segments of investors. In contrast, information-based theories of security design suggest that securitization also can be used as a tool to mitigate informational frictions pervasive in these markets (Begley & Purnanandam, 2017).According to Central Bank of Kenya (CBK) bank supervision annual report 2020 (CBK Website, 2021), Kenya Mortgage Refinance Company (KMRC) has been operationalised to avail affordable long-term funds in the mortgage sector.

Mortgage value theory argues that commercial banks should only advance mortgage loans in order to maximise profits. This theory was propagated by Greenblatt (1989) who proposed that among the primary objectives of financial institutions is the maximization of profits. This theory is applicable in this study that seeks to establish the contribution of mortgages to profitability of listed commercial banks in Kenya.

Commercial banks evaluate their product lines to determine the most profitable portfolios. Modern portfolio theory (MPT) was developed by Harry Markowitz in the 1950s and argues on the importance of portfolios, risk diversification and the connections between different kinds of securities: an investor maximises on returns while taking optimal risks. Stocks face both systematic risk—market risks such as interest rates and recessions—as well as unsystematic risk—issues that are specific to each stock, such as management changes or poor sales. Mortgage portfolios in commercial banks' books when profitable leads to improved stock prices.

Every theory has special considerations on who holds the title, and how foreclosure proceedings take place. The conflicting positions in the theories have not been resolved through empirical studies in the Kenyan market: this presents an empirical gap. This conflicting position in theories present a need to investigate mortgage risk factors and their effect on market returns.

Empirical Review

Commercial banks mitigate mortgage credit risks in order to make returns on their investment from mortgage loans. Mortgage lending strengthens countries' economies, contributing to their development and economic growth. For this to occur, a financial commitment is required between credit institutions that transfer credit and the individuals who request it. This relationship is usually supported by risk analysis and assessment tools that seek to anticipate the success or failure of credit lending and thereby protect both parties. (Pereira et al., 2019).

Global studies on mortgage risk and market returns.

Empirical studies have sought to investigate the relationship between credit events that lead to default and market returns of commercial banks that originate residential mortgages. Commercial banks secure the mortgage loans with the purchased property as collateral. Though the credit process is rigorous, there has been an increase in non-performing loans, a great portion being mortgage loans. Credit risk according to Basel Committee of Banking Supervision BCBS (2001) is the possibility of losing the outstanding loan partially or totally, due to credit events (default risk). Credit events usually include events such as bankruptcy, failure to pay a due obligation, repudiation/moratorium or credit rating change and restructure (Isanzu, 2019). Breig & Elsas

(2014) conducted a study on bank-based financial system and examined the equity returns in Germany over the period 1990-2006 .The study found evidence consistent with default risk being a systematic factor priced in capital markets. Further, estimates indicated that a higher sensitivity to systematic default risk leads to lower returns. To understand what drives default risk sensitivity, they related firms' default risk betas to their individual default risk and other control variables like the industry affiliation. The empirical mortgage literature identifies a number of variables that help predict mortgage credit and prepayment risk, including borrower credit score and income, loan-to-value (LTV) ratio, loan age, interest rates, and housing prices (Sadhwani et al., 2021). Lux & Tsolacos (2021) examined the role of loan characteristics in mortgage default probability for different mortgage lenders in the UK using a unique dataset of defaulted commercial loan portfolios provided by sixty-six financial institutions and established that the attributes of the underlying real estate asset and the lender are significant factors in determining default probability for commercial mortgages. In addition to traditional risk factors such as loan-to-value and debt servicing coverage ratio lenders, regulators should consider loan characteristics to assess more accurately probabilities of default. Ajayi et al. (2020) examined the impact of credit risk management on the profitability of commercial banks in Nigeria and found that credit risk parameters are related to the expected performance of commercial banks.

Zhang et al. (2018) evaluated the significant lending in real estate in china and found a close connection between the growth of investment in real estate and the non-performing loans (NPLs) among regional commercial banks. Their study used the size and the percentage of real estate-related loans relative to total loans and concluded that real estate-related loans account for a significant share of those banks' total loans. Studies by Jung & Park (2017) tested for the validity of the general prediction that the financial regulations in the form of the loan-to-value (LTV) and debt-to-income (DTI) restrictions would have adverse impacts on the value of the firms operating in the mortgage-lending industry. The events studies results indicated that government restrictions adversely affected those banks that possessed a relatively large number of mortgage loans in their asset portfolio. Default in the real estate loans greatly affect the performance of banks, translating into lower stock prices. Relationship between default risk and market returns is a debatable issue and contradictory results are found in the literature.

Singh (2021) examined the relationship between default risk and stock returns in India and found that Altman's Z-score can be used as a measure of default risk and results indicated the existence of positive relationship between Z-score and stock return and hence a negative relationship between default risk and stock return. Relationship between default risk and stock returns is very important from investor's point of view because it has important implication for risk and return trade off. Default risk assessment helps the investors and lenders to accurately assess the risks to which the investors or lenders are exposed. Million, G., Matewos, K., & Sujata, S. (2015) empirically examine the impact of credit risk on profitability of commercial banks in Ethiopia using secondary data from eight commercial banks and found that credit risk measures: non-performing loan, loan loss provisions and capital adequacy have a significant impact on the profitability of commercial banks in Ethiopia. Kanas (2014) study on the default risk in the U.S. banking sector found that it exercises a significant effect on the banking equity price index during the regime of high default risk. This effect was found to be related to dividends, echoing the signalling effect and the information content of dividends literature. In the

absence of a strict capital adequacy regulatory framework in the 1980s, an increase in dividends sent a positive signal to markets, reducing default risk and increasing equity prices. This presents a knowledge gap in the Kenyan market and this research will undertake to establish the contribution of mortgage default risk on market returns of listed commercial banks in Kenya.

Fayman & He (2011) studied the effects of prepayment risk on performance of commercial banks in the USA and found that prepayment risk may significantly impact return on loans, return on equity and real estate loans to total loans ratios of various commercial banks. The results indicated that addition of prepayment risk variable to regression models can generally increase their ability to explain bank performance metrics and that prepayment risk is an important risk factor in mortgage lending business for commercial banks. Caspari (2018) studied the Dutch market to assess mortgage refinancing risk in the absence of prepayment penalties and examined how the interest rate risk can be priced into the mortgage contract rate directly instead of charging the penalty in the event of refinancing. The option value was measured in terms of a risk premium that the lender charges on top of the annual rate of a regular mortgage with prepayment penalties.

Su et al (2021) conducted a study in china to examine whether the falling house price causes credit risk. The results noted that the falling house price increases the credit risk due to the default of real estate-related loans. Mburu L.G & Ko'kumu (2013) examined how Central Bank rate affects the mortgage uptake since mortgage rates are pegged towards the Central Bank rate. Increase in the Central Bank rate leads to a consistent increase in the mortgage rate which tends to slow down mortgage uptake since the Central bank rate act as a signal for commercial banks to tighten their lending. Inflation has an inverse relationship with the mortgage uptake since it directly affects the mortgage rates. Further, the study of residential housing prices has been a popular topic in the real estate literature, especially since the 2007–2008 financial crisis. Holmes, Otero and Panagiotidis (2011) found long-run housing price convergence across U.S. states and that the speed of adjustment towards long-run equilibrium was inversely related to distance.

Favara and Imbs (2015) found that an exogenous expansion in mortgage credit had significant effects on housing prices. More recently, Christidou and Fountas (2017) found that uncertainty tends to increase housing investment growth and decrease house price inflation, and that cross-state result differences may be due to variation in the degree of speculation in housing markets (Zheng & Osmer, 2021). Hofmann (2001) found that in sixteen (16) industrialized countries, the annual rate of change in real credit is closely related to that of real GDP. Suljoti and Hashorva (2011) studied the impact of mortgage loans on the residential prices, GDP per capita and interest rate in the demand for mortgage loans. GDP per capita and residential prices were positively correlated with the demand of housing loans from individuals. Martins et al. (2016) examined fifteen European markets and concluded that changes in the value of real estate can have a potentially significant impact on the default risk of banks and on their profitability as a result of high exposure to the real estate sector especially during real estate crises, when bank losses tend to increase dramatically, placing the entire financial system at risk of collapse, as it was the case of the subprime crisis.

Mismatch risk occurs when long-term mortgages are funded using short-term deposits that can be recalled by depositors. Can fixed-rate, conforming mortgages be funded profitably with retail

deposits gathered by an efficient depository institution? Is it possible for very efficient, low-risk, retail deposit-based banks to fund fixed-rate, conforming mortgages profitably? Depositories can increase profits securitizing mortgages by not expanding mortgage lending beyond available retail deposits (Journal & Passmore, 2021). Vickery (2019) examined the Danish model and found that mortgages are financed through the issuance of "covered bonds" (bonds collateralized by a cover pool of mortgages or other debt) by a small number of specialized mortgage banks. The system relies on the "balance principle"—the covered bonds match the maturity and cash flows of the underlying pool of mortgages funded by the bond, and payments by mortgage borrowers are passed directly through to covered bond investors. Thus, interest rate risk and prepayment risk are borne by investors rather than by the mortgage bank that issues the covered bond. Young et al. (2014) study in the USA used the sensitivity of bank holding company equity returns to market interest rates as an indicator of perceived maturity mismatch. Based on data from 1990 to 2009, there was weak evidence that market participants perceived banks to be effectively short-funded. However, looking at 1990–1996 and 1997–2009 subsamples separately, they found that U.S. commercial banks were perceived as short-funded during the earlier time period but not the later. During this time of changing perceptions of maturity mismatch, banks were increasing their holdings of real estate loans as a share of total assets. Therefore prior to 1996, market participants perceived real estate loans as short-term. There were major financial events in the mid-1990s that could be have led to the change of perceptions: The Asian financial crisis which occurred in 1997 and the 1998 Federal Reserve's organized bailout of Long-Term Capital Management. Bai et al. (2016) examined two thousand, eight hundred and eighty two (2882) bank holding companies during 2002-2014 and investigated the time-series and cross-sectional patterns of banks' liquidity and liquidity risk. Aggregate banking sector liquidity worsened from +$4 trillion before the crisis to -$6 trillion in 2008, and reversed back to the pre-crisis level in 2009. In the cross section study, they found that banks with more liquidity mismatch had a higher stock-market crash probability and were more likely to borrow from the government during the financial crisis.

Looking at the moderating effect of market risk on listed banks returns, studies by Sukcharoensin (2013) examined banking industry in Thailand and found that market risk is the major component of the sensitivity of bank stock returns, with large banks being more sensitive to changes in market conditions than medium and small banks. Banks with high market power can take advantage of interest rate changes, leading to higher profitability, indicating a positive interest rate sensitivity, while banks with low market power and less efficient banks may not efficiently manage their risk exposures, resulting in negative effects of the interest rate risk from the maturity mismatching of their assets and liabilities. The exchange rate risk is relevant for small banks, whereas large and medium banks may have adequately hedged their foreign exchange rate exposure. In contrast ,in a study in the Kenyan market by Miregi et al. (2014) where Property prices was the dependent variable while stock prices, interest rate, building cost and inflation are the independent variables, the results show that property price that is reliant on its lagged values. Inflation and interest rate had insignificant lagged positive and negative effects on property prices while neither stock prices nor building cost can explain the prevailing property prices. The findings are consistent with the theories that property investment is a hedge against inflation, property prices are inversely related to interest rates and inefficiency of the property market as evident in the time lapse required for adjustments

Market return refers to the earnings from investments. Mortgage returns are crucial in the movement of stock prices of commercial banks. Lin & Lin (2011) examined one source of growth patterns in asset prices by analysing the integration relationship between stock markets and real estate markets in six economies in Asian: China, Hong Kong, Japan, Singapore, South Korea, and Taiwan and found the real estate market leading the stock market in some countries, and the stock market leading the real estate market in others. They concluded that stock and real estate markets show a variety of inter-relationships depending on economic and political policy environments. Antonakakis et al. (2016) examined dynamic spillovers among the housing market, stock market, and economic policy uncertainty (EPU) in the United States in a unified empirical framework and found large spillovers from EPU, as well as stock market and housing returns to other variables, in particular inflation, industrial production and the federal funds rate. These results illustrate the contagion from the housing and financial crisis to the real economy and the strong policy reaction to stabilise the economy.

There is a contextual gap as these studies were done in other markets and it will be interesting to investigate the performance of stock prices for commercial banks listed in Kenya. This study seeks to determine the relationship between rate of return from stocks and mortgage risk for listed commercial banks in Kenya.

Kenyan mortgage market

The mortgage market in Kenya has great potential for growth. According to central bank supervision report 2020, CBK Website (2021), the value of mortgage loans outstanding was Ksh.232.7 billion in December 2020.Since the implementation of the residential mortgage survey in the Central bank of Kenya annual supervision report in 2011, there has been a steady growth in the residential mortgage portfolio from ksh.91.2 in 2011 to ksh.219.9 billion in 2016. After the implementation of the interest rate cap law in September 2016, there was a slowdown in the growth of residential mortgage portfolio, growing only ksh.17.8 billion from 219.9 in 2016 to ksh.237.7 billion in 2019. In 2020, there was negative growth of ksh.5 billion from ksh.237.6 billion to ksh.232.7 billion mainly attributed to the effects COVID 19 pandemic. To grow the mortgage portfolio in listed commercial banks to full potential, it is important to investigate the mortgage risk factors that affect their financial performance.

Evaluating the influence of mortgage default risk on the performance of commercial banks necessitates analysis of macroeconomic factors. Mogaka (2015) studies indicated that Kenya's mortgage to GDP ratio of 3.1% in 2016 is low compared to more developed economies in Africa. From the Central bank supervision report 2020, CBK Website (2021), about 74.5 percent of lending to the mortgage market was by 6 institutions, that is one medium sized bank (11.2 percent) and five banks from the large peer group (63.3 percent) in December 2020. The outstanding value of non-performing mortgage loans was Ksh.27.8 billion in December 2020. There were 26,971 mortgage loans in the Kenyan market in December 2020 down from 27,993 in December 2019, a decrease of 1,022 mortgages or 3.7 percent mainly due to repayments and fewer mortgage loans advanced due to the effects of the COVID-19 pandemic. Provision of housing is a major concern not restricted to Kenyan market: challenges of the Nigerian economy is that of developing a sustainable housing and Housing finance system which befits a dynamic, competitive economic & financial system (Franklin, 2020). By enhancing the market share of

mortgages, commercial banks can improve their profitability therefore improve their market return and eventually generate a spiral effect to spur economic growth.

Using short-term customer deposits to fund mortgages present mismatch risks to be hedged by listed commercial banks in Kenya since the deposits mature earlier than the long-term mortgage loans: the banks in this case may face a liquidity crisis. In comparison, Vickery (2019) study on the Danish market revealed that mortgages are funded using covered bonds, the homeowner's quarterly mortgage payment equals the cash flow on the bonds issued to fund the loan plus a fixed margin to the mortgage bank. Thus, there is little market risk to the mortgage bank. However, the mortgage bank lender is exposed to credit risk, since the loan remains on its balance sheet until maturity. If the borrower becomes delinquent, the mortgage bank will use its capital buffers to repay the holders of covered bonds and will start foreclosure proceedings against the homeowner.

House prices in Kenya have been on a decline due to slow economic growth. This can be attributed to slowed economic growth and changing employment environment leaving borrowers finances constrained.
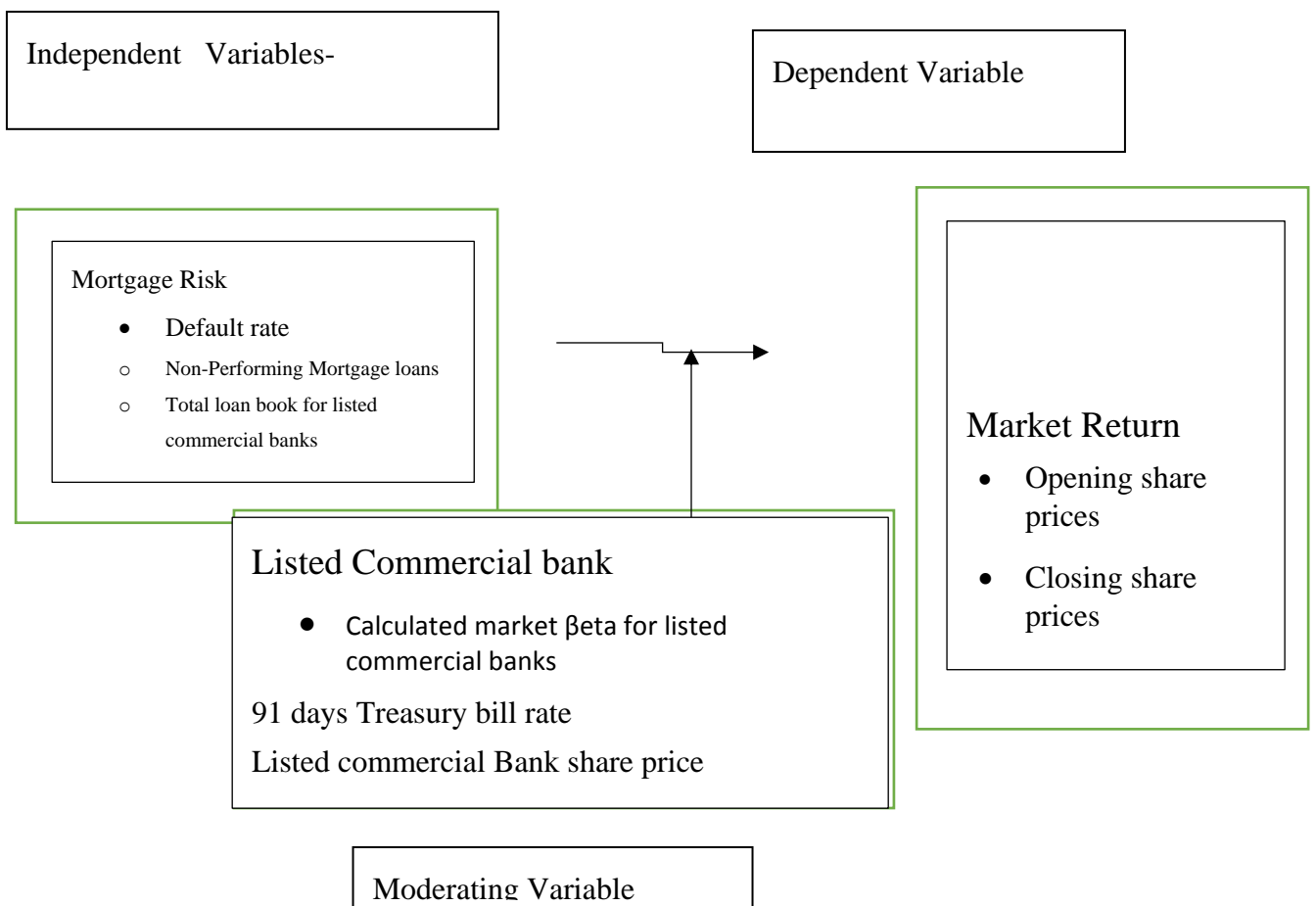
Conceptual Framework.

Figure 1: Conceptual Framework

METHODOLOGY

Utilising Systematic review research design provided the opportunity to locate and evaluate relevant studies that address the dependent and independent variables using specific criteria (mortgage risk and Market returns).This involved literature review of various studies relevant to this study. Secondary data was derived from published studies, reports and statistics available in the online journals and library. Survey method was utilised to collect quantitative data from Kenya National Bureau of statistics, Nairobi Stock Exchange, Central Bank website among other government departments.

RESULTS

Conceptual gap

Empirical literature does not offer conclusive results on the applicability of these theories in managing mortgage risk. This presents a gap in empirical literature. According to (Utami, 2019; Mudjijah et al., 2019; Hermi & Kurniawan, 2011; Marcella et al., 2019; Hanafi & Syam, 2019) , financial performance has a significant positive effect on share prices but according to Pramono & Widiarto (2019), financial performance does not have a significant effect on increasing share prices. These conflicting results on the effects of financial performance on the stock prices presents an empirical gap on the mortgage risk factors and their effect on the stock prices. The current study will address the conceptual gap.

Contextual gap

Studies by Su et al (2021), Holmes, Otero, and Panagiotidis (2011) , Favara and Imbs (2015) , Christidou and Fountas (2017) , (Zheng & Osmer, 2021) , Lux & Tsolacos (2021), Ajayi et al. (2020) , Caspari (2018) , Jung & Park (2017) were done in other markets and not in Kenya. Kenyan mortgage market performance has a huge potential yet the actual performance is low. This presents a geographical and contextual gap. Examining the Kenyan market will provide conclusive results.

CONCLUSION AND RECOMMENDATION

The study will be beneficial to listed commercial banks in Kenya to adapt effective mortgage risk management strategies to sustain market returns. Sustained growth will lead to better profit margin meaning the firms can sustainably repay the credit facilities. Further, sustainable firms will provide more stable employment. Profitable firms are able to pay taxes leading to sustained economic growth. The models developed on mortgage risk will aid the government institutions that regulate listed commercial banks in Kenya in developing policies on sustainable mortgage risk management. The study will add new knowledge on mortgage risk management to maximise market returns for listed commercial banks in Kenya.

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