http://journals.uonbi.ac.ke/index.php/adfj
ISSN 2522-3186

ADFJ ISSN 2522 - 3186.

African Development Finance Journal

VOLUME 5 (4)

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Date Received: May, 09, 2023
Date Published: June, 12, 2023

Mortgage Financing, Housing Investments and Economic Growth among East Africa Community Member Countries

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Abstract
The objectives of the study were to investigate the relationship between mortgage financing and economic growth, and the mediating effect of housing investments on mortgage financing and economic growth of East Africa Community Member Countries. Theories adopted were the theory of financial intermediation, the theory of investment multiplier, new neoclassical economics theory and structural form. Secondary data was gathered through country-specific Central Bank reports, World Bank reports, IMF reports, as well as Africa Development Bank reports between January 2001 and December 2020. Descriptive statistics, correlation analysis, and panel data model estimations were conducted. The mediation effect was tested using Baron and Kenny's (1986) model estimation processes. According to the research, number of mortgage accounts and value of mortgage accounts have a significant positive effect on economic growth among EAC member countries; housing investments have no significant mediating effect on the association between mortgage financing and the economic growth of EAC member countries. Further, mortgage financing and housing investments significantly influence the economic growth of EAC member countries. In conclusion, housing investments does not mediate the relationship between mortgage financing and economic growth of EAC member countries. The study recommends the need to come up with measures that will increase mortgage uptake in the EAC member countries as this will contribute to economic growth.

Keywords: *Economic Growth, Mortgage Financing, Housing Investments*

Introduction

Mortgage financing is a major factor determining the quality and tenure of housing uptake, usefulness of the financial system and stability and the general financial portfolio of the public (Olawumi, Adewusi & Oyetunji, 2019). Large external benefits of housing investments are indications of a well-functioning mortgage market in the domiciled national economy, coupled with improved standards of living and contribute to economic growth. Mortgage financing leads to increased housing investments that act as catalysts for enhanced economic growth (Amidu, Agboola & Musa, 2016). Housing investment is important in an economy as it influences on savings, employment, labor productivity and total investment (Chen & Zhu, 2008).

On a theoretical perspective, the financial intermediation theory was the anchor theory for the current study as it holds that an efficient mortgage market enhances the development of economic growth as well as

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housing finance by catalyzing the penetration of financial institutions that channel funds between deficit and surplus agents in the mortgage sector (Donkor-Hyiaman, 2018). The investment multiplier theory states that mortgage financing is an instrument for enhanced development and economic growth due to its interrelationship with other economic sectors and multiplier effects (Ofor & Alagba, 2019).

Most developing countries face the challenge of access to mortgages, especially in Africa where majority of the population earn low incomes amid inefficient housing finance system's that constrain access by most households and widespread urban poverty (Nwuba & Chukwuma-Nwuba, 2018). "Due to rapid urbanization and lack of urban planning, countries in the East African Community (EAC) region have significant housing deficits, and home ownership remains out of reach for many households in the region. Some factors contributing to this include unaffordable housing finance and high costs of construction. Housing and mortgage markets in the region are only likely to grow if affordability is increased along the housing construction and finance value chain.

Research Problem

Mortgage financing is a critical part of financial systems that contribute to financial markets development and deepening and has potential positive effects on a country's financial and economic growth (Bah, Faye & Geh, 2018). An effective mortgage market guarantees long-term returns since it entices investors. Moreover, borrowers have better access to funds when the market is efficient, and this aids in stimulating economic growth (Johnson, 2014). However, most financial institutions attach myriad of conditions and covenants which impede mortgages access which negatively affects mortgage credit to GDP ratio (Carballo & González, 2009). Mortgage financing leads to increased housing investments that act as catalysts for enhanced economic growth (Amidu, Agboola & Musa, 2016). Housing investment is important in an economy as it influences on savings, employment, labor productivity and total investment (Chen & Zhu, 2008).

Contextually, in 2017, the EAC grew at a rate of 5.9%, far higher than the world (3.6%) and Sub-Saharan African (3.6%) averages. Meanwhile, EAC and Sub-Saharan Africa as a whole remains the poorest region in the world, with 48.5 percent of the population living per day on less than $1.25. The number of adults with outstanding credit is exceptionally low, at around 5% of adults as of 2017. Mortgage lending is still in its infancy. At the end of 2017, the amount of outstanding mortgage loans in the region was less than

5% of GDP (World Bank, 2018). The owner occupancy rate which is a measure of housing investments stood at estimated 2% of the adult population (AfDB, 2019).

Empirically, a substantial volume of literature exists on the interaction of mortgage financing and economic growth internationally and locally as well. For example, Carbó-Valverde and Rodriguez-Fernandez (2010) in Spain assessed how mortgage loans affected housing investments and documented that mortgage financing adversely affected housing investments and prices. There exists a contextual gap as this study was conducted in Spain whose economic setting is different from EAC member countries. However, in Nigeria, Nwamara and Aronu (2014) explored how economic development affected land mortgage financing and revealed that variations in land mortgage transaction and interest rates positively affected economic growth.

Locally, Akenga, Olang and Galo (2015) studied how mortgage market risk effect mortgage uptake and revealed that interest rate, credit risk and liquidity risk significantly affected mortgage uptake. The study exhibits a conceptual gap as it did not relate mortgage financing with economic growth. In addition, Owuor, Githii and Mwangi (2018) and Mogaka, Kiweu and Kamau (2015) examined effect of macroeconomic factors on mortgage market growth with both studies concluding that inflation, GDP growth and interest rates affected Kenyan mortgage market growth. From the above reviewed local and global studies, it is evident most studies provide conflict findings with some oscillating from negative to positive and other indicating no relationship at all. The studies also were carried out using different methodologies in varying contexts making it difficult to generalize the findings to a particular context. In addition, no conclusive study has documented the interactions among mortgage financing, housing investments, and economic growth hence an empirical literature gap. It is important to conduct a study in EAC member countries relating these variables as the region have significant housing deficits, and home ownership remains out of reach for many households in the region. This leads to the research question, what is the effect of housing investments on the relationship between mortgage financing and economic growth?

Research Objectives

The main objective of this study is to establish the effect of housing investments on the relationship between mortgage financing and economic growth in EAC member countries.

Literature Review

Theoretical Background

This presents reviewed theories which clarify the relation between mortgage financing and economic growth. Covered theoretical reviews include theory of financial intermediation, the theory of investment multiplier, new neoclassical economics theory and structural form theory.

The financial intermediation theory emanated from Gurley and Shaw (1960) and was developed out of the informational asymmetry and transaction cost theories (Andrieş, 2009). According to the theory, financial intermediaries are structured in a manner to apply corporate control, savings mobilization, diminish the expenses researching probable investments as well as managing risk (Johnson, 2014). In addition, financial intermediaries allocate decisions and influence savings in manner that might change long-run rates of growth and it recommends that through provision of these services to the economy (Levine, Loayza & Beck, 2002). The theory supports that mortgage financing contributes to the GDP growth rate and deepening of the financial sector, enhancing financial access, and encouraging financial inclusion (Bah, Faye & Geh, 2018).

The investment multiplier theory was conceptualized by Kahn (1930) and further advanced by Keynes (1936) and postulates that higher income translates into higher consumption at the increased investment level (Bortis, 2008). A detailed association is provided by the theory between the aggregate income and rate of investment, given the marginal propensity to consume (Gechert, 2012). According to the theory, the investment level is basically the discounted future profits, this is a consequence of capital's marginal efficiency measured against the market interest rate, which balances money demand and supply (Wray & Tymoigne, 2008).

Empirical Review

Abdulrehman and Nyamute (2018) sought to determine the effect of mortgage financing on financial performance of commercial banks in Kenya. All commercial banks in Kenya were used as used as target population. Secondary data collected using a data collection sheet from the financial reports of the commercial banks as well as CBK annual reports was used in the study. Both correlation and regression analysis were conducted. The findings revealed a positive significant effect of amount of mortgage offered on financial performance. The study findings also indicated that interest charged on mortgage has a positive

and significant effect on financial performance of commercial banks. There exists a conceptual gap as this study focused on the influence of mortgage financing on financial performance without considering the effect of mortgage financing on economic growth.

Hongyu, Park and Siqi (2022) examined the impact of mortgage financing, housing investments and non-housing investments on economic growth. The study collected secondary data between 1981 and 2000 where analysis was carried out via the Granger causality and the vector autoregression (VAR) approaches. The study found that on the short run housing investment had stronger effect on economic growth while on the long run both housing and non-housing investments had a positive impact on GDP growth. There exists a methodological gap as the study used VAR which has its limitation as it does not shed any light on the underlying structure of the economy. Further, the study did not investigate the mediating effect of housing investment on economic growth as it was considered an independent variable and therefore a conceptual gap.

Mbuloh and Oluoch (2019) investigated factors influencing the demand for mortgage financing. A descriptive research design was adopted and secondary data was analyzed using regression models covering the period between 2011 and 2016. The study established there exist a strong relationship between mortgage financing demand and disposable income, price of housing and interest rates. There exists a methodological gap as the study was country specific in nature while the current study will be cross country cutting across the six countries in East Africa.

Apergis and Rezitis (2018) analyzed the dynamic effects of various factors including money supply, housing loan rates, inflation, GDP and employment on the price of newly constructed houses sold in Greece. The study documented that mortgage loan rate was the variable with the main explanatory power over the housing investments variations, followed by GDP growth rate, then inflation and employment, while there was an insignificant effect on money supply, while adopting an error correction vector autoregressive model for data analysis. There exists a conceptual gap as the explained variable in this study was price of newly constructed houses and therefore the influence of mortgage financing, housing investments and macroeconomic volatility on economic growth was not established.

Conceptual Framework

This study conceptual model comprises of mortgage financing and economic growth as the independent and dependent variables while housing investments and macroeconomic volatility were incorporated as the mediating and moderating variables respectively. According to Olawumi et al. (2019), mortgage financing significantly influences economic growth by providing mortgages to individuals and enabling them to be homeowners. Warnock and Warnock (2008) posit that mortgage financing is a critical factor in generating housing investments. Ahiadorme (2016) posits that the prevailing macroeconomic environment is crucial to the ability of nations to deepen the housing finance market and to realize the enormous benefits therein such an effort.

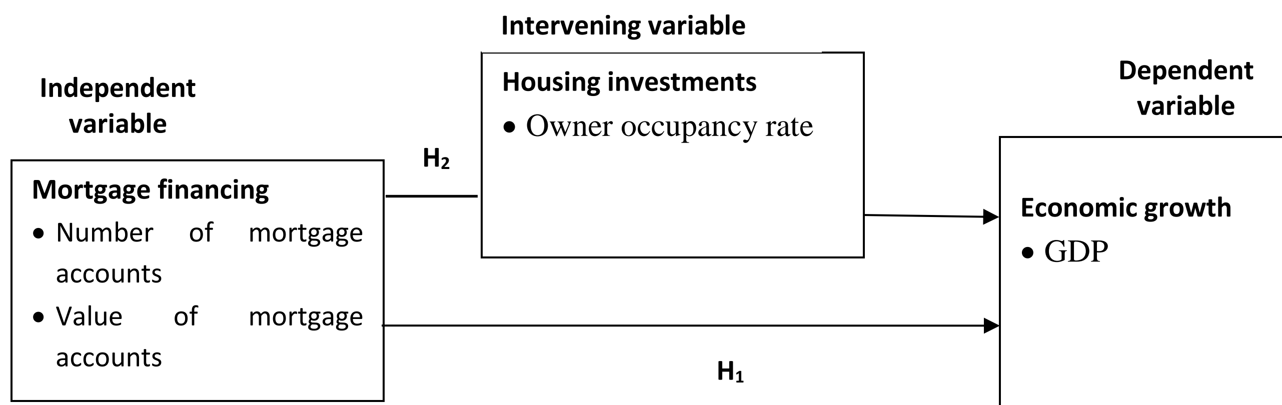

Figure 1: Conceptual Model

Research Hypotheses

H_1: Mortgage financing has no significant effect on economic growth of EAC member countries.

H_{1a}: Number of mortgage accounts has no significant effect on economic growth of EAC member countries

H_{1b}: Value of mortgage accounts has no significant effect economic growth of EAC member countries

H_2: There is no significant intervening effect of housing investments on the relationship between mortgage financing and economic growth of EAC member countries

Research Methodology

The researcher utilized a positivist research philosophy and both a descriptive and explanatory research designs. Secondary data was gathered through country-specific Central Bank reports, World Bank reports, IMF reports, as well as Africa Development Bank (AfDB) reports between January 2001 and December 2020. Descriptive statistics, correlation analysis, and panel data model estimations were conducted. The moderation and mediation effects were tested using Baron and Kenny's (1986) model estimation processes.

Data and Variable Description

The study employed both descriptive and explanatory research designs. Explanatory design was used to establish the effect and interrelationship among the selected study variables. Descriptive design was used to describe the study variables namely mortgage financing, housing investments, and macroeconomic volatility as well as economic growth in terms of their mean and standard deviations.

Table 1: Operationalization of the Study Variables

Variable	Indicator	Measurement	Measurement Scale	Source of Data	Supporting literature
Mortgage financing	Annual value of mortgage lending	Natural logarithm of the annual value of mortgage loans in each of the EAC member countries	Ratio	Annual reports	Hanişoğlu and Azer (2017)
	Annual number of mortgage accounts	The annual number of mortgage accounts in each of the EAC member countries	Ratio	Annual reports	Zhou (2015)
Housing investments	Owner occupancy rate	The annual owner occupancy rate in each of the EAC member countries	Ratio	Annual reports	Ofor and Alagba (2019)
Economic Growth	GDP growth rate	The annual GDP growth rate in each of the EAC member countries	Ratio	Annual reports	Asabere et al. (2016)

Results and Discussions

The data obtained on mortgage financing, housing investments, macroeconomic volatility and economic growth was analyzed using descriptive statistics (mean, standard deviation, skewness and kurtosis). Regression analysis (simple regression analysis, multiple regression analysis and stepwise regression analysis) were used to establish the nature and magnitude of the relationships between the variables of the study and to test the hypothesized relationships. Descriptive statistics such as frequencies and percentages were computed. Data was presented in form of tables. Pearson's correlation analysis was used to measure the degree of linear relationship between the variables of the study.

Table 2: Reliability Test, Descriptive Statistics, Correlation Analysis and Diagnostic Tests

	N	Minimum	Maximum	Mean	Std. Deviation
GDP growth rate	109	-46.1	13.2	4.334	6.1979
Number of mortgage accounts	109	110.0	27993.3	5919.100	6661.0551
Log no. of mortgage accounts	109	2.0	4.4	3.525	.4948
Value of mortgage loans	109	562.8	237715.0	53644.359	57212.3800
Log value of mortgage accounts	109	2.8	5.4	4.463	.5597
Owner occupancy rate	109	17.7	61.3	38.155	9.5498
Interest rate	109	10.1	26.2	16.687	2.9271
Valid N (listwise)	108				

These results presented in Table 2 display that economic growth as measured by GDP growth rate had a mean of 4.334 and standard deviation of 6.198 as well as a minimum and maximum values of -46.1 and 13.2, in the order given. The outcomes indicated that the GDP growth rate averaged 4.334. The results are coherent in line with study conducted by Mogaka et al. (2015); UNCTAD (2017) and World Bank (2017) who all said that EAC growth rate averages between 3% and 5%. This indicated that EAC member countries economic growth have been consistent with slight increase over the years. The variation in the results of the research can be traced backed to the market situation when the study was conducted.

The study also sought to establish the descriptive statistics of mortgage financing over the last 20 years (2001 to 2020). The measures of mortgage financing were the number of mortgage accounts and the value

of mortgage accounts in each EAC country. The results revealed that the number of mortgage accounts had a mean of 5919.1 and a standard deviation of 6661.1 while the value of mortgage finance had a mean of 53,644 million dollars and a standard deviation of 57,212. This finding is in line with AfDB (2019) and Centre for Affordable Housing Finance in Africa (2020) who found that mortgage financing is scarce in EAC member countries owing to restricted access to capital markets and strict collateral requirements.

The findings relating to GDP growth rate and mortgage financing in EAC member countries could be based on the nature of the data and the macroeconomic situation that prevailed in the country. The interest rate in EAC member countries over the last 20 years had a mean of 16.68 and a standard deviation of 2.93 and minimum and maximum of 10.1 and 26.2 respectively. The results also revealed that exchange rates between EAC member countries currency and the dollar over the last 20 years had a mean of 1139.02 and a standard deviation of 948.12 and minimum and maximum of 67.3 and 3729.3 respectively. The results bestowed in Table 4.1 added that the inflation rate had a mean of 14.713% a standard deviation of 41.298 and min and max of -2.8 and 380 respectively. This is an indication that the country has been experiencing relatively high interest rates compared to other countries around the globe and that the inflation rate has fluctuated from double digits to negative in the last 20 years. These findings are similar to those outcomes from research studies conducted by World Bank (2018); UNCTAD (2017); and Mogaka et al. (2015).

The study also focused on housing investments that can act as mediators in this study. Housing investments were measured using owner occupancy rate. The results revealed that owner occupancy rate in EAC for the last 20 years (2001 to 2020) had a mean of 38.155% and a standard deviation of 9.55, and a min and max of 17.7% and 61.3% as indicated. This confirms the study conducted by Ofor and Alagba (2019) which concluded that African countries have a low level of housing investments compared to other economies. The findings are also in line with Kieti and K'Akumu (2018) who examined factors influencing investments in the mortgage-housing segment in Kenya and concluded that owner occupancy rate in Kenya is still low. The current study has extended the findings of this study to cover other East African Community member countries.

Following the execution of panel data diagnostic tests and the completion of the required corrective processes to remedy any detected violations of the cardinal OLS requirement, the study moved on to hypotheses tests. This research investigated two specific objectives. Firstly, the study sought to establish

the influence of mortgage financing on economic growth among EAC member countries. Secondly, the study assessed the influence of housing investments on the relationship between mortgage financing and GDP growth rate among EAC member countries.

The study examined the effect of mortgage financing measured by number of mortgage accounts and value of mortgage accounts on the economic growth of EAC member countries. Hausman specification test indicated that the FE model was suitable. The results are as shown in Table 3.

Table 3: Effect of Mortgage Financing on Economic Growth

Economic growth	Coef.	Std. Err.	P>t
Number of mortgage accounts	1.003*	0.023	0.004
Value of mortgage accounts	1.646*	0.234	0.000
_cons	1.232*	0.461	0.000
Model Summary			
R-squared	0.159		
F(2, 106)	11.23		
Prob > F	0.0000		
Observations	109		
ID	6		

p<0.05*

The overall model was statistically significant because the F-test statistic was statistically significant ($F(2, 106) = 11.23$, $p<0.05$). The study findings show that the number of mortgage accounts (= 1.003, $p<0.05$) of EAC member countries significantly predicts economic growth of EAC member countries, suggesting that for every unit rise in number of mortgage accounts, the economic growth improves by 1.003 units. The findings further showed that value of mortgage accounts ($\beta = 1.646$, $p<0.05$) is also a significant predictor of economic growth. This suggests that for every unit rise in value of mortgage accounts, the economic growth improves by 1.646 units. The second objective of the study looked into the intervening impact of housing investments on the relation between mortgage financing and the economic growth of the EAC member countries.

Table 4: Number of Mortgage Accounts, Housing Investments and Economic Growth

Economic growth	Coef.	Std. Err.	P>t
No. of mortgage accounts	1.426**	0.511	0.004
Housing investments	0.053	0.038	0.165
_cons	1.851**	0.256	0.000
R-squared	0.041		
F(2, 106)	5.1		
Prob > F	0.0062		

** p<0.05

According to the outcomes, there was statistically not significant association between economic growth and housing investments (p>0.05). There was no statistically significant relationship between economic growth, number of mortgage accounts, and housing investments (p>0.05). Because the independent variable and the mediator had no significant relationship and the mediator variable (housing investments) is not a significant predictor of economic growth, the relationship between number of mortgage accounts and economic growth is not mediated by housing investments.

Table 5.3: Value of Mortgage Accounts, Housing Investments and Economic Growth

Economic growth	Coef.	Std. Err.	P>t
Value of mortgage financing	1.322*	0.379	0.001
Housing investments	0.049	0.211	0.175
_cons	4.061*	0.162	0.000
R-squared	0.061		
F(2, 106)	7.33		
Prob > F	0.0006		

* p<0.05

According to the study's findings, there was no statistically significant relationship between economic growth and housing investments (p>0.05). There was a statistically significant relationship between economic growth, value of mortgage accounts, and housing investments (p<0.05). Because the independent variable and the mediator have no significant relationship, and the mediator variable predicts economic growth insignificantly, housing investments has an insignificant mediating impact on the association between value of mortgage accounts and the economic growth.

Conclusions and Recommendations

The study's first goal looked at the correlation between mortgage financing and economic growth of EAC member countries. According to the findings, hypothesis one (H1) was rejected, implying that mortgage financing and the economic growth of EAC member countries have a substantial link. The number of mortgage accounts and the value of mortgage loans are the two measures of mortgage financing that significantly influenced economic growth. Increased number of mortgage accounts and value of mortgage accounts would result in better economic growth among EAC member countries. Failure to reject hypothesis two (H2) implies that housing investments does not mediate the relationship between mortgage financing and economic growth among EAC member countries.

This study only considered quantitative data and did not capture the qualitative data on mortgage financing and the economic growth of EAC member countries. Future research in related areas could consider triangulating methods to fill this methodological gap. In addition, this study was narrowed to EAC member countries. However, further research can be undertaken in a wider context such as West African countries, Sub-Saharan Africa countries or the entire African countries.

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