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GDP Growth Rate on the Growth of Mortgage Financing in Kenya

[1*]Elias M. Mungai & [2]Dr. Peter Kariuki

[1]Masters Of Science in Commerce (Finance and Accounting), School of Business and Public Management, KCA University

[2]Lecturer, School of Business and Public Management, KCA University

[*]Corresponding Author's Email: eliasmbau@gmail.com

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Abstract

Purpose: The current study, sought to establish the effect of GDP growth rate on the growth of mortgage financing in Kenya. The study was grounded on the Classical Growth Theory.

Design/ methodology/ approach: The study took a quantitative approach drawn from the positivism research philosophy. Therefore, the study was a time series research design which was used to track the growth of mortgage financing in Kenya for the last 20 years – from the year 2002 to 2021. The study targeted the time-series quarterly data from CBK for the last 20 years. Items to be collected included the following: average quarterly GDP growth rate and quarterly growth of mortgage financing. The study used secondary data which was extracted from CBK quarterly data reports website for the period 2002 to 2021. The quantitative secondary data was analyzed by use of descriptive and inferential statistics. A 95% confidence interval was the statistical error variance used. Data was coded and analyzed using STATA 14 (or EViews 14.0).

Findings: The findings revealed that GDP growth rate and growth of mortgage financing in Kenya are positively and significantly related ($\beta = 0.380$, $p=0.001$). This implies that an increase in GDP growth rate results in an improvement in the growth of mortgage financing by 0.255 units and vice versa.

Unique contribution to theory, policy and practice: CBK should implement the appropriate monetary policy instruments to ensure improvement in the GDP growth rate. This is because its relationship to the growth of mortgage financing in Kenya has been found to be positive and significant. Thus, the growth of GDP ought to be closely monitored for effective generation of wealth for the financing of mortgages in Kenya.

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1.0 INTRODUCTION

1.1 Background to the study

The expansion of mortgage financing plays a vital role in promoting both economic and social development. It provides individuals and families with access to adequate housing while simultaneously driving investment, employment creation, and the growth of the financial sector. In Kenya, as in many other economies, the performance of the mortgage industry is strongly influenced by overall macroeconomic conditions, particularly the growth rate of Gross Domestic Product (GDP). GDP growth serves as a key indicator of a country's economic health and determines the capacity of households and financial institutions to participate effectively in mortgage financing.

GDP growth represents the pace at which a country's total economic output increases over time. When the economy grows, national income, employment levels, and consumer confidence rise—factors that collectively stimulate demand for housing and promote mortgage market expansion. Conversely, sluggish GDP growth reduces disposable income and investment ability, limiting activity on both the demand and supply sides of the housing finance market. Thus, the GDP growth rate acts as an economic barometer that affects mortgage lending volumes, loan affordability, and the overall stability of the housing sector.

Empirical research globally has shown a strong positive connection between GDP growth and mortgage market performance. For instance, Kadochnikova et al. (2020) found a direct linear relationship between GDP growth and the volume of mortgage lending in Russia, noting that economic expansion increased households' borrowing capacity. Similarly, Antonsson (2018) identified GDP growth as one of the most significant macroeconomic factors influencing credit portfolios, confirming that expanding economic output enhances credit availability by improving liquidity among households and businesses.

In developing nations, GDP growth plays a particularly crucial role in broadening access to housing finance. Kamati (2020) found in Namibia that rising GDP significantly affects residential market stability and mortgage uptake. Economic expansion creates multiplier effects across sectors, spurring construction activity, employment, and disposable income—all of which strengthen mortgage demand. In contrast, economic downturns tend to slow property development, limiting the accessibility and affordability of mortgage loans.

Across Sub-Saharan Africa, GDP growth has been recognized as a cornerstone of housing market development. Countries that have experienced consistent economic growth tend to exhibit more active mortgage markets, driven by investor confidence and stronger financial intermediation. According to the African Development Bank (Banking in Africa, 2020), economies with stable GDP growth typically develop deeper financial systems capable of providing long-term credit instruments such as mortgages. Conversely, countries facing economic volatility often lack access to long-term financing, leading to underdeveloped mortgage markets.

In Kenya, the mortgage sector's performance has closely tracked national GDP trends. Periods of robust economic growth, such as between 2010 and 2015, corresponded with increased real estate investment, rising homeownership aspirations, and greater mortgage uptake. The Kenya National Bureau of Statistics (KNBS, 2021) reported that growth in the real estate and construction sectors aligned with GDP expansion, underscoring the positive correlation between economic performance and mortgage financing demand. However, during periods of

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slowed growth—such as the economic disruptions caused by the COVID-19 pandemic—the mortgage sector contracted. The Central Bank of Kenya (CBK, 2020) recorded a decline in the total value of active mortgage loans from Kshs 237.7 billion in 2019 to Kshs 232.7 billion in 2020, illustrating how weakened GDP growth directly suppresses mortgage activity.

The interaction between GDP growth and mortgage financing occurs through several key mechanisms. First, rising GDP boosts household income, improving borrowers' creditworthiness and enabling more people to qualify for mortgage loans. Second, strong GDP growth stimulates the construction industry, increasing the supply of housing and expanding financing opportunities. Third, sustained economic expansion enhances the liquidity and profitability of financial institutions, allowing them to extend more long-term credit. Consequently, GDP growth drives both demand and supply-side activity in the mortgage market.

Theoretically, the link between GDP growth and mortgage financing is grounded in classical and Keynesian economic theories. Classical economists such as Smith (1776) and Ricardo (1955) argue that economic growth is driven by investment, productivity, and capital accumulation, while Keynes (1936) emphasizes the role of aggregate demand in stimulating economic activity. Both perspectives highlight that GDP growth fosters investment in housing and infrastructure, which in turn promotes mortgage financing. Higher output levels lead to increased income, savings, and borrowing capacity, thereby supporting the expansion of housing credit.

Empirical studies in Kenya further support this relationship. Wanjiku et al. (2021) and Hlushchenko (2021) observed that GDP growth positively influences mortgage loan volumes and the overall performance of the housing market. As GDP rises, consumer and investor confidence strengthen, leading to higher demand for homeownership financed through mortgages. Conversely, stagnant or negative GDP growth tends to increase loan defaults, reduce credit supply, and constrain mortgage lending. Thus, GDP growth can be considered both a predictor and an enabler of mortgage market expansion.

According to the Central Bank of Kenya (2021), positive GDP performance enhances banking sector liquidity, encouraging institutions to offer more mortgage products. The creation of the Kenya Mortgage Refinance Company (KMRC) has further capitalized on national growth momentum to increase the availability of affordable housing finance. As the economy expands, organizations like KMRC benefit from improved fiscal stability and investor confidence, which strengthen the refinancing of mortgage portfolios and promote financial inclusion.

Moreover, GDP growth indirectly influences the housing sector through its effect on construction activity and property values. During periods of economic expansion, Kenya's construction industry—one of the major contributors to GDP—experiences significant growth, resulting in increased housing supply, greater real estate investment, and innovation in mortgage products. In contrast, economic slowdowns reduce construction activity and limit access to long-term financing, ultimately restraining mortgage market growth.

Kenya's Vision 2030 and related national development blueprints emphasize the importance of housing and financial sector deepening as drivers of sustainable GDP growth. As Kenya aspires to attain upper-middle-income status, the expansion of mortgage financing will be essential to support urbanization, job creation, and infrastructure development. A stable and

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growing GDP provides the fiscal and monetary foundation required for these objectives, positioning GDP growth as a strategic catalyst for mortgage sector advancement.

From a policy standpoint, understanding the interplay between GDP growth and mortgage financing is critical for fostering inclusive and sustainable economic progress. Policies that promote GDP growth—such as infrastructure investment, fiscal stability, and industrial expansion—enhance the mortgage market's capacity by improving household incomes and strengthening the credit environment. On the other hand, economic mismanagement or political instability can undermine GDP growth, weaken investor confidence, and suppress mortgage market development.

In conclusion, the GDP growth rate is a decisive factor shaping the trajectory of mortgage financing in Kenya. It reflects the nation's economic health and determines both the demand for housing finance and the ability of financial institutions to supply credit. Sustained economic growth translates to higher household incomes, improved investor confidence, and greater access to mortgage products—factors that collectively expand the housing finance sector. Conversely, economic downturns reduce mortgage availability, elevate default risks, and dampen real estate development. Strengthening Kenya's GDP growth through prudent macroeconomic management is therefore vital for accelerating mortgage market growth and achieving national housing and development goals.

1.2 Statement of the problem

The growth of mortgage financing in a perfectly sustained economy is expected to improve mortgage financing (Bulatovaet al., 2019; Kadochnikova et al., 2020; Mwankemwa & Ndanshau, 2021). To that effect, the Kenyan government has launched a number of programs to offer inexpensive housing and expand house custody through mortgages, including the establishment of the KMRC to administer low-cost liquidity for mortgage loans (Central Bank of Kenya, 2021).

Notwithstanding various government initiatives to increase homeownership in Kenya, the mortgage industry has seen a case of urban housing being unaffordable. This stems from the high cost of mortgages/high cost of properties (World Bank, 2019). Evidence suggests that the residential mortgage demand represented a 3.7 percent decline in the total count of residential mortgage accounts, to 26,971 in 2020 from 27,993 in 2019. The total value of active mortgage loans fell 2.1 percent, from Kshs 237.7 billion in 2019 to Kshs 232.7 billion in 2020 (Central Bank of Kenya, 2021; KMRC, 2021). The foregoing has been combined with Kenya's lack of accessibility to cheap home finance, as indicated by fewer than 25,000 mortgage loans outstanding. Similarly, banks have restricted lengthy financing options, and few banks have used capital markets to finance mortgage loans. It is worth noting that mortgage loans account for less than 10 per cent of overall housing debt; the balance is provided through SACCOs and housing cooperative systems (KMRC, 2021; World Bank, 2017). This leaves a huge housing demand versus supply gap where the high cost of mortgages leaves the poor people stuck in unaffordable houses.

Despite the cited issues affecting growth of mortgage financing in Kenya, there is little evidence of empirical studies conducted in Kenya. Methodological gaps have been presented by Omondi (2017) studied mortgage financing between 2011 and 2015, with a sample size of 22 institutions, Wanjiku Bosire and Matanda (2021) looked at 13 Kenyan REITs businesses while Luyali et al. (2021) focused on 35 mortgage lending financial institutions between 1985 and 2019. The current study only focuses on a population of 1 mortgage financing business

(KMRC). The above studies have presented methodological and contextual gaps since they have not presented findings up to the year 2022 on how mortgage financing has been performing. Contextual gaps were presented by La Cava (2016) and Sutton, Mihaljek, and Subelyte (2017) whose case were based in the United States. Shi et al. (2021) and Xu (2017) also investigated mortgage financing in China's financial institutions. From the above studies, there is need to fill the presented gaps and look into how GDP growth rate affects the growth of mortgage financing in Kenya. The current study sought to extrapolate the findings to shed light on the issues of growth of mortgage financing up to the year 2021.

1.3 Study Purpose

i. The study sought to determine the effect of GDP growth rate on the growth of mortgage financing in Kenya

1.4 Research Hypothesis

i. **H_{03}**: GDP growth rate does not have a significant effect on the growth of mortgage financing in Kenya.

2.0 LITERATURE REVIEW

2.1 The Classical Growth Theory

The theory was coined by Ricardo in (1955) and supported by Smith (1776) describes the growth of the economy as the buildup of assets and the reinvesting of profit generated from expertise, division of labour, and the quest for competitiveness (Ricardo, 1955; Smith, 1776). The understanding of the dynamics driving the acquisition stage was viewed as the crux of the economic expansion challenge. Technological change, as manifested in the division of labour and modifications in output processes, is linked to aggregation. Smith, in particular, put a high value on the process of extending the division of labour; however, there is no structured discussion of the relationship between capitalist development and technological development in the work of the mainstream economists (Rangongo & Ngwakwe, 2018).

Thus, the market is free from government intervention and is thus controlled by the invisible hand. John Maynard Keynes also comes in as another developer with the General Theory of Employment, Interest, and Money in 1936 (Keynes, 1937; Keynes, 2018). And as such progressively, the theory came into economic sense in the late 1970s after being influenced by economists such as Margaret Thatcher in the United Kingdom and Ronald Reagan in the United States. In addition, in 1980, the World Bank moved from its Basic Needs strategy to a classical methodology (Harris, 2007; Paun et al., 2019).

Keynes thought that industry would spontaneously adjust to produce full employment even when in equilibrium and that the unpredictable and uncontrollable nature of marketplaces would result in cyclical peaks and busts (Keynes, 1937). The primary argument of Keynes' theory is that the level of employment is determined by the rate of consumer spending rather than the cost of labour, as in neoclassical theory. Given that at full employment, total demand for products is less than total output, the economy will have to decrease until a level of equilibrium is attained (Keynes, 2018). Solow (1956) adds to the argument by claiming that because the economy can regulate itself to a natural real GDP, supply is thus the producer of value. Solow (1956) likewise, adds to the argument by stating that since the economy can regulate itself to a natural real GDP (grounded on Say's Law), the supply thus is the creator of its demand (Zhang, 2020).

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The theory is very instrumental in the current study since it offers a ground upon which the policymakers and economists of the country can trace the economic development of the country. This enables them to appreciate the importance of creating an enabling environment for developmental opportunities in the country. Therefore, the classical growth theory has been found instrumental in the current study to inform the link between GDP growth rate and growth of mortgage financing in Kenya.

2.2 GDP Growth Rate and Growth of Mortgage Financing.

Shi et al. (2021) investigated the effectiveness of China's financial institutions, between 2012 and 2018. This is the effect of the GDP on the funding and capital effectiveness of China's financial institutions. The study adopted the dynamic slacks-based measure in combination with the Kernel density curve on state-owned commercial banks, joint-stock commercial banks, and urban commercial banks in China from 2012 to 2018. According to the findings, equity financial institutions have the best overall productivity. State-owned financial institutions and urban financial institutions have higher funding productivity gains than joint-stock financial institutions, showing that the latter phase reduces overall effectiveness. As a result, all financial institutions must prioritize the effectiveness of NPLs and profit margin. Ultimately, state-owned financial institutions must enhance internal procedures, minimize NPLs, and increase profit margins.

Xu (2017) investigated the link between Economic growth and Chinese housing prices. The study used 120 months of data from July 2005 to June 2015 to study the relationship between housing prices and the macro-economy in the first-, second- and third-tier cities: Beijing, Shanghai, Guangzhou and Shenzhen are well recognized as the first-tier cities. The vector auto-regression model (VAR) model was used to analyze the data. According to the study, China's elastic GDP ratio for credit facilities in 2017 was 1.048, and in the long run, when GDP expanded by 100 million RMB, bank loans climbed by 104.8 million RMB. Bank loans increase consumer expenditure and contribute to GDP. As a result, GDP will have a beneficial influence on property prices, which represent housing prosperity. Property investment is a type of essential mortgaged property; as home prices rise, so does the value of the mortgaged property. That is, the expansion of the real estate business and GDP growth are inextricably linked; they interplay with one another.

2.3 Conceptual Framework

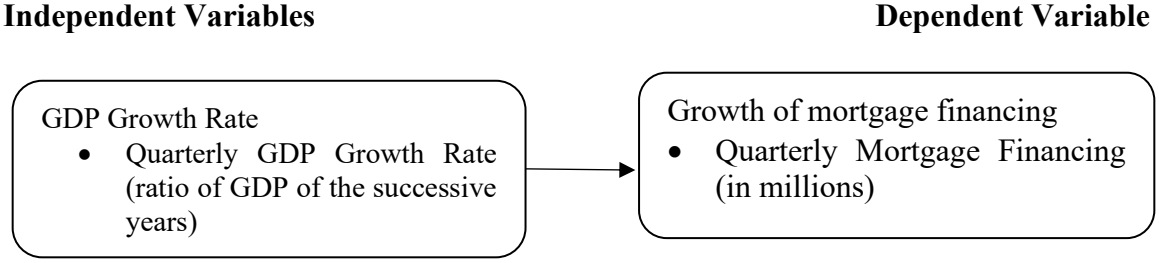

FIGURE 1: Conceptual framework

Source: (Author, 2025).

3.0 RESEARCH METHODOLOGY

The study adopted a descriptive research design, which provided a systematic framework for data collection, analysis, and interpretation of statistical information related to the growth of

mortgage financing in Kenya between 2002 and 2021. This design enabled the researcher to analyze the trend and relationship between mortgage financing and key macroeconomic variables such as GDP growth rate.

The target population comprised quarterly time-series data from the Central Bank of Kenya (CBK) for the 20-year period. Data collected included quarterly records of mortgage financing, and average GDP growth rate. Since the unit of analysis was Kenya as a whole, no sampling was conducted; instead, a census survey was applied to include all available data points within the study period. The research relied entirely on secondary data, collected through a structured time-series data template. The data were extracted directly from CBK's quarterly statistical reports and verified for completeness and consistency before analysis. Data analysis involved multiple time-series regression analysis using STATA version 14.0. The general model used was:

$$Y_t = \alpha + \beta t X_t + \mu_t$$

Where:

Y_t = Mortgage Financing

X_t = GDP Growth Rate

μt = Error Term.

To ensure reliability, several diagnostic and econometric tests were performed:

i. Unit Root Test: The Augmented Dickey-Fuller (ADF) test was conducted to determine the stationarity of the data series. Stationarity ensures that the statistical properties such as mean and variance remain constant over time, preventing misleading results. The null hypothesis assumed that each series had a unit root (non-stationary).

ii. Lag Length Selection: The optimal lag length was determined using the Akaike Information Criterion (AIC) to minimize errors in model specification. A lag length of two was generally preferred for Granger causality analysis to capture short-term dynamics between variables.

iii. Co-integration Test: The Engle-Granger and Johansen co-integration tests were applied to assess whether a long-term equilibrium relationship existed among the variables. The null hypothesis stated that no co-integration existed.

iv. Error Correction Model (ECM): When co-integration was confirmed, an ECM was developed to capture both short-run and long-run relationships. The ECM corrected deviations from equilibrium by linking past imbalances with current adjustments. The Vector Autoregressive (VAR) model and Engle-Granger two-step method were employed to estimate dynamic interrelationships among the variables.

v. Vector Error Correction Model (VECM): In cases of co-integration, the VECM was used to model short-run adjustments while maintaining long-run equilibrium relationships. The model incorporated differences and lagged variables to reflect the temporal interactions among mortgage financing, and interest rates.

Post-estimation tests included:

Journal of Finance and Accounting
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- Granger Causality Test: To determine whether one variable could predict another. The null hypothesis posited no causality between the series.
- Impulse Response Function (IRF): To assess how a shock or sudden change in one variable (e.g., interest rate, GDP growth rate) influences others over time.

Thus, the study's robust methodological framework combined descriptive research design, comprehensive time-series econometric modeling, and multiple diagnostic tests to examine both short-term and long-term determinants of mortgage financing growth in Kenya between 2002 and 2021.

4.0 FINDINGS AND DISCUSSION

4.1 Summary of the descriptive statistics

This section presents the summary and describes the features of the data collected with regard to the Growth of mortgage financing and GDP growth rate. The findings are as presented in Table 1.

TABLE 1: Summary of the descriptive statistics of the variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Growth of mortgage financing	80	5.729406	2.36876	2.408013	9.365625
GDP growth rate	80	4.448373	2.450218	-0.81073	13.30276

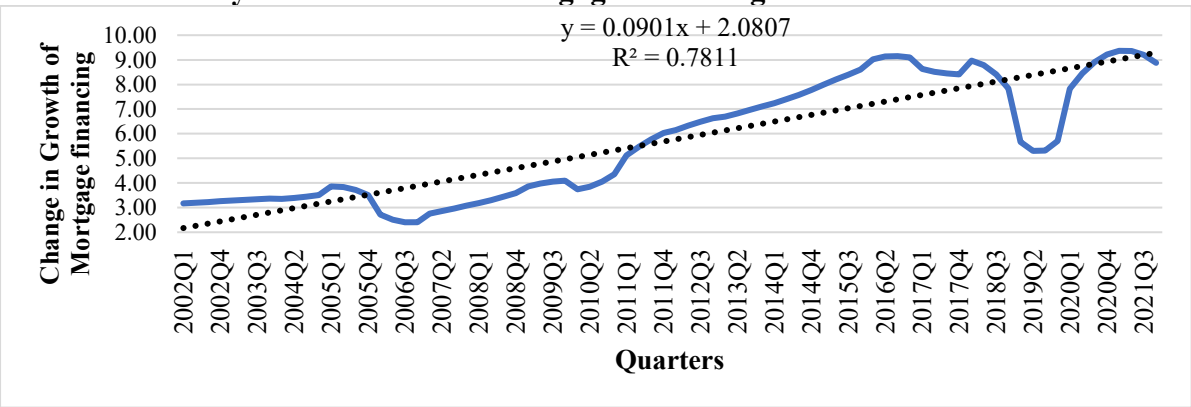
Source: Research Data (2022)

Table 1 revealed that the mean growth of mortgage financing in Kenya between the year 2002 and 2021 was 5.729 (S.D = 2.36876). GDP growth rate in the same period was 4.448 (S.D = 2.450218) and the mean for money supply in the same period was 38.178 (S.D = 2.646694). Their respective trend values across the years are as shown in the next section.

4.2 Trend Analysis

The following section presents the trend patterns of the macroeconomic variables surveyed and the growth of mortgage financing.

4.2.1 Trend Analysis for Growth of Mortgage Financing



Source: Research Data (2022)

FIGURE 2: Trend analysis for Growth of mortgage financing

Figure 1 above indicates an increasing trend in the growth of mortgage financing from the year 2002 to the year 2021 as evidenced by the positive beta coefficient of 0.0901.

Journal of Finance and Accounting
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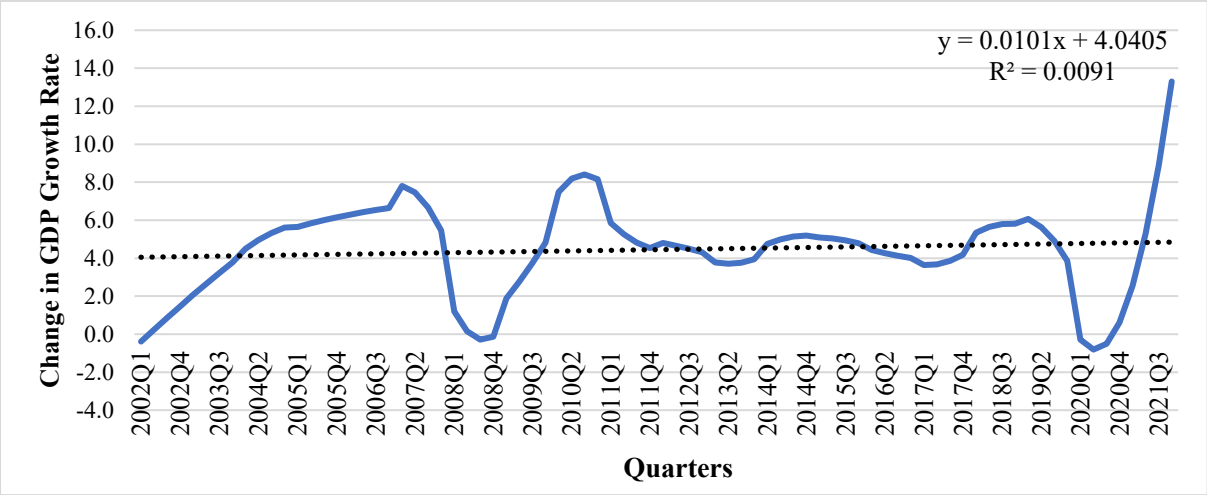
www.edithcowanjournals.org

4.2.1 Trend Analysis for GDP Growth Rate



Source: Research Data (2022)

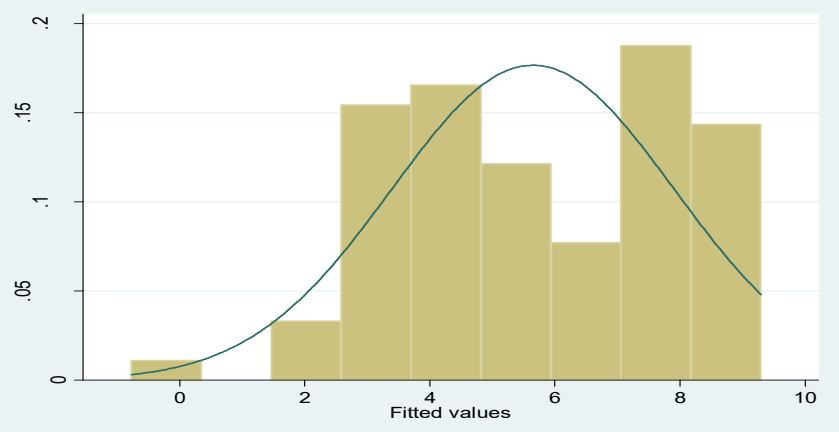
FIGURE 3: Trend analysis for GDP Growth Rate

Figure 3 indicates an increasing trend in GDP growth rate from the year 2002 to the year 2021 as evidenced by the positive beta coefficient of 0.0101.

4.3 Diagnostic testing

4.3.1 Testing for Normality of Residuals

In this study, normality was diagnosed using a histogram of regression standardized residuals as well as the Jarque-Bera test. Standardization is important to determine if the information given by the dependent variable is normally spread. The null hypothesis (**Ho**) states that the residuals are normally distributed. Where the probability value is greater than 0.05, the data is then considered to be normally distributed (Table 2 & Figure 4).



Source: Research Data (2022)

FIGURE 4: Normality Test for the residuals

TABLE 2: Summary of the Details of the residuals

Thresholds	Percentiles	Smallest	Fitted values	Statistics
1%	-0.77345	-0.77345		
5%	2.665128	1.98346		

10%	2.801902	2.53022	Obs	81
25%	3.850593	2.53195	Sum of Wgt.	81
50%	5.595806		Mean	5.649124
		Largest	**Std. Dev.**	**2.257953**
75%	7.849475	8.589404		
90%	8.413531	8.616703	Variance	5.09835
95%	8.580446	8.701281	Skewness	-0.23453
99%	9.296947	9.296947	Kurtosis	2.074686
			Jarque-Bera test	3.632000
			P-value	0.162700

Source: Research Data (2022)

Table 2 shows the absence of abnormality as shown by the Jarque-Bera statistic of *3.632* and the probability value (*0.1627*) which was greater than 0.05. this has been complemented by the shape of the histogram in Figure 4.6. Therefore, the null hypothesis was upheld and therefore, the data is normally distributed.

4.3.2 Unit Root test

To determine the root unit requirements of the time series in this study, a unit root test was performed using the Augmented Dickey-Fuller (ADF) approach, with the null hypothesis being that the series under examination is non-stationary or has a unit root. First running the normal regression model helps us to show the relationship between R squared and the Durbin Watson. Therefore, stationarity testing was conducted in Table 3 using the Augmented Dickey-Fuller (ADF) testing.

TABLE 3: Stationarity Test for the Variables at various differences

Differences (Lags)	**Test Statistic**	**1% Critical Value**	**5% Critical Value**	**10% Critical Value**
		Growth of mortgage financing		
ADF at level	-2.936	-4.088	-3.472	-3.163
ADF at first difference	-4.258	-4.091	-3.47%	-3.164
		GDP Growth Rate		
ADF at level	-3.063	-4.088	-3.472	-3.163
DF at first difference	-1.166	-4.091	-3.473	-3.164
DF at second difference	-7.060	-4.093	-347%	-3.164

Note: The values are used as absolute and signs are ignored

Source: Research Data (2022)

Table 3, revealed that GDP growth rate was found to be non-stationary at level and after the first difference but were stationary after the second difference since the absolute test statistics (-7.06) was greater than the respective absolute critical values at 1%, 5% and 10%. However, growth of mortgage financing was found to be non-stationary at level but stationary after the first difference since the absolute test statistic (-4.258) was greater than the absolute critical values at 1%, 5% and 10%. Therefore, for the study to perform a regression that is stationarity, the study used the following stationary time series: growth of mortgage financing at 1st difference, and GDP growth rate at 2nd difference.

4.3.3 Lag Length Selection

Furthermore, if the sequence is determined to be static, the Akaike Information Criterion is used to find an optimal time series quantity to prevent the miscalculation/misspecification of the error term. Notwithstanding, because the Granger causality test is very susceptible to the total count of time series used, the appropriate time series proposed is usually 2. This dictates how far a variation in one parameter can be determined in the other. Table 4.4 presents the findings of each variable's optimum lag length selected.

TABLE 4: Lag Length Selection - Selection-order criteria

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
Growth of mortgage financing								
0	-43.274				0.191	1.181	1.193	1.212
1	-34.321	17.905	1	0.000	0.154	0.969	0.993	1.030
2	-34.296	0.050	1	0.823	0.158	0.995	1.032	1.087
3	-33.294	2.005	1	0.157	0.158	0.994	1.044	1.118
4	-19.040	28.507	1	0.000	0.111	0.641	0.703	0.796
GDP Growth Rate								
0	-82.458				0.559	2.256	2.268	2.287
1	-79.523	5.869	1	0.015	0.530	2.203	2.228	2.266
2	-79.506	0.034	1	0.854	0.544	2.230	2.267	2.323
3	-78.864	1.286	1	0.257	0.550	2.240	2.289	2.364
4	-75.975	5.777	1	0.016	0.522	2.189	2.251	2.344

Source: Research Data (2022)

Table 4 indicates that from the test of lag length selection, the appropriate lags to be selected will be four for each of the variables/series under study.

4.3.4 Co-integration Test

The Engle granger test and the Johansen maximum likelihood test were used to assess this test (Brooks, 2008; Engle and Granger, 1987; Godfrey, 1978). The null hypothesis is that there is no co-integration (Godfrey, 1978). Once the trace values are higher than the critical values, the study rejects the null hypothesis and thus, there is co-integration. This was used to establish the long-run relationship between the variables as shown in Table 4.5 (using the 4 lags identified in Table 5).

TABLE 5: Co-integration Test

Maximum rank	Parms	LL	Eigenvalue	Trace statistic	5% critical value
0	80	-430.28808	.	109.3305	68.52
1	89	-408.44782	0.43715	65.65	47.21
2	96	-391.42793	0.36103	31.6102	29.68
3	101	-380.78709	0.24423	10.3285*	15.41
4	104	-375.73256	0.12455	0.2195	3.76
5	105	-375.62282	0.00288		

Source: Research Data (2022)

Table 5 above indicates that in the rank 0 – where there is no co-integration equation, the trace statistic (109.3305) is greater than the critical value (68.52). Likewise, in rank 1, the trace statistic (65.65) is greater than the critical value (47.21). In rank 2, the trace statistic (31.6102) is greater than the critical value (29.68). Therefore, the study rejects the null hypothesis and

thus there is co-integration of the variables in the 2 null hypotheses/maximum ranks. However, there are 3 co-integrating equations in the model.

4.3.5 Vector Error Correction Model

Since the VAR variables were found to be co-integrated, a vector error correction model was applied (instead of error correction modelling). As a result, a VECM was used to ascertain short relationships between co-integrated variables, limiting long interactions of factors via co-integrated connections, whereas a VAR model is used where there is no co-integration. The VEC model offers a systematic approach to representing the complexities that interconnect the factors under consideration.

TABLE 6: Johansen normalization restriction imposed

beta	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
_ce1						
Growth of mortgage financing	1	.	.	.	.	.
GDP growth rate	-0.21403	0.08624	-2.48	0.013	-0.3830	-0.0450
_cons	-6.24036	.	.	.	.	.

Note: when reporting the coefficients of the Johansen normalization report, the signs are reversed (Hamilton, Waggoner & Zha, 2007).

Source: Research Data (2022)

Table 6 indicates that, in the long run, GDP growth rate has an asymmetric effect on the long-run growth of mortgage financing in Kenya; that is to predict changes/movements in the growth of mortgage financing. Therefore, the long-run error correction term (ECT) is as follows:

$$ECT_{t-1} = 1.000\ Y_{t-1} + 0.16000X_{t-1} - 6.24036$$

Where:
Y_t = Mortgage financing
X_t = GDP growth rate
μ_t = Error term in time series
t = periods under study (20 years)

4.4 Correlation Analysis between Macro-economic Factors and Growth of Mortgage Financing in Kenya

Given that all the variables were confirmed to be stationary, the study, therefore, conducted the Pearson correlation to establish the correlation between the dependent and the independent variables. The Pearson correlation coefficient was used to determine the association between the variables which is denoted by **r**. A correlation between 0.81 and 1.00 is considered very strong, between 0.61 and 0.8 is considered strong, between 0.41 to 0.6 moderate between 0.21 to 0.40 weak and between 0.00 - 0.20 no relationship (Gogtay, & Thatte, 2017).

TABLE 7: Correlation Matrix

Correlations	Growth of mortgage financing	GDP growth rate
Growth of mortgage financing	1	
GDP growth rate	0.4989*	1
	0.0000	

Source: Research Data (2022)

Table 7 showed that GDP growth rate and growth of mortgage financing in Kenya have a positive and significant relationship (r= 0.4989, p=0.000). This implies a moderate collinearity between GDP growth rate and the growth of mortgage financing in Kenya. These findings are consistent with Shi et al. (2021) who indicated that GDP growth rates higher funding productivity gains than joint-stock financial institutions, showing that the latter phase reduces overall effectiveness. Xu (2017) also indicated that bank loans increase consumer expenditure and contribute to GDP. As a result, GDP will have a beneficial influence on property prices, which represent housing prosperity.

4.5 Regression analysis between GDP Growth Rate and Growth of Mortgage Financing in Kenya

This section presents the findings of the regression that sought to determine the extent and magnitude of the cause-effect of GDP growth rate on the growth of mortgage financing. The results are presented in Table 8.

TABLE 8: Relationship between GDP Growth Rate and Growth of Mortgage Financing in Kenya

Source	SS	df	MS	Number of obs	79	
				F (4, 75)	82.79	
Model	371.174	5	74.235	Prob > F	0.000	
Residual	65.455	73	0.897	R-squared	0.8501	
				Adj R-squared	0.8398	
Total	436.630	78	5.598	Root MSE	0.94692	
Growth of mortgage financing	**Coef.**	**Std. Err.**	**t**	**P>t**	**[95% Conf.**	**Interval]**
ECT (β_4)	1.016	0.051	19.82	0.000	0.914	1.118
GDP growth rate	0.380	0.115	3.31	0.001	0.152	0.609
_cons	-0.102	0.312	-0.33	0.745	-0.724	0.520

Source: Research Data (2022)

In table 8 above the model R- squared was 0.8501, implying that the goodness of fit of the model explains 85.01% of the variation in the growth of mortgage financing in Kenya. This is further supported by a significant F statistic [F (4, 75) = 82.79] at 0.05 significance level where the Prob (F-statistic), Prob > F= 0.000. This implies the time series linear model is statistically significant.

The findings revealed that GDP Growth Rate and growth of mortgage financing in Kenya are positively and significantly related (β = 0.380, p=0.001). This implies that an increase in GDP growth rate results in an improvement in the growth of mortgage financing by 0.255 units and vice versa. These findings are consistent with Shi et al. (2021) who indicated that GDP growth rates higher funding productivity gains than joint-stock financial institutions, showing that the latter phase reduces overall effectiveness. Xu (2017) also indicated that bank loans increase consumer expenditure and contribute to GDP. As a result, GDP will have a beneficial influence on property prices, which represent housing prosperity. Thus, the time series model can be stated as follows:

$$\Delta y_{t-1} = -0.102 + 0.380\Delta X_{t-1} + 1.016 + \mu_{t-1}$$

Where:

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Y_{t-1} = Growth of Mortgage Financing
X_{t-1} = GDP Growth Rate
Δ = the difference operator
μ_{t-1} = Error term in time series
t = periods under study (20 years)

4.6 Post Estimation Tests

4.6.1 Causality Test

The test was used to determine whether a time series quarterly growth of mortgage financing will granger cause quarterly average GDP growth rate and if its values give statistically significant results in the future. A Vector Autoregressive (VAR) procedure was estimated using the Two-step Engle-Granger test (Granger causality Wald test) to determine whether or not long-run or balance interactions do exist between the possible factors (Godfrey, 1978).

TABLE 9: Granger causality Wald tests for the variables

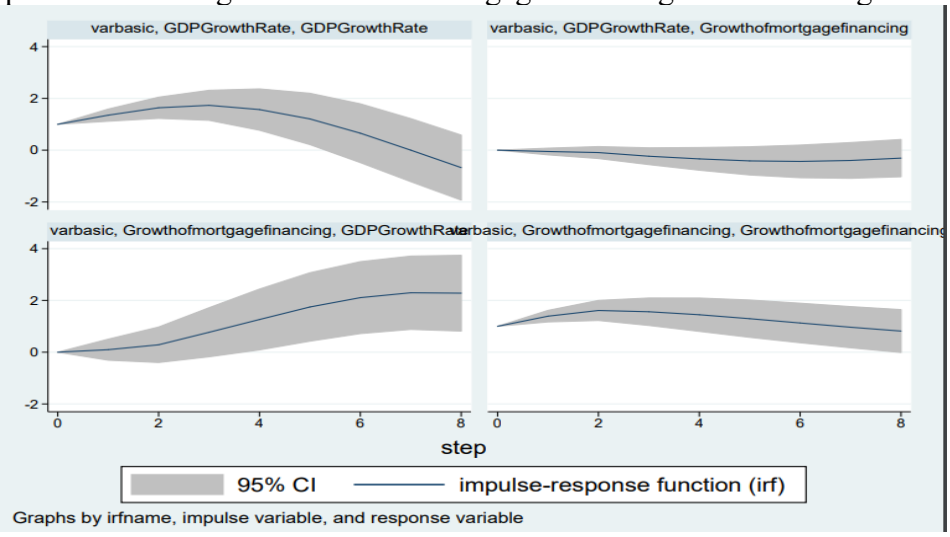
Equation	Excluded	chi2	df	Prob > chi2
Growth of mortgage financing				
Growth of mortgage financing	GDP growth rate	0.34198	2	0.843
GDP growth rate				
GDP growth rate	Growth of mortgage financing	9.6133	2	0.008

Source: Research Data (2022)

Table 9 indicates that Growth of mortgage financing was found to granger causes GDP growth rate thus; the null hypothesis was rejected since (p-value = 0.008< 0.05).

4.6.2 Impulse Response Function

This test describes the behaviour of the independent variables at the time of the distress for a given period. It is a dynamic multiplier that represents the present and any consequent influence on every parameter as a result of an unexpected transformation in one of the parameters. In the study, the impulse response function (IRF) was used to examine the relationship between GDP growth rate and mortgage financing. The following are the results.



Source: Research Data (2022)

FIGURE 4.9: Impulse Response of Growth of Mortgage Financing to GDP Growth Rate

Figure 4 below (graph 3) indicates a decreasing trend in the slope where the growth of mortgage financing responds to standard deviation shock to GDP growth rate. It can, therefore, be concluded that the response of growth of mortgage financing responds to standard deviation shock to GDP growth rate is an increase in the short run but is constant in the long run (0-4 = short run; 7-8 = long run).

5.0 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of the result findings

The correlation findings indicate that GDP growth rate and growth of mortgage financing in Kenya have a positive and significant relationship. GDP growth rate and growth of mortgage financing in Kenya from the regression findings are positively and significantly related. This implies that an increase in GDP growth rate results in an improvement in the growth of mortgage financing. These findings are consistent with Shi et al. (2021) who indicated that GDP growth rates higher funding productivity gains than joint-stock financial institutions, showing that the latter phase reduces overall effectiveness. Xu (2017) also indicated that bank loans increase consumer expenditure and contribute to GDP. As a result, GDP will have a beneficial influence on property prices, which represent housing prosperity.

5.2 Conclusion

The findings demonstrate a strong and statistically significant relationship between the GDP growth rate, and the growth of mortgage financing in Kenya. The model's high explanatory power ($R^2 = 0.8501$) indicates that 85.01% of the variations in mortgage financing growth can be explained by changes in the selected macroeconomic variables, particularly GDP growth. The overall model is statistically significant ($F = 82.79$, $p < 0.05$), confirming the reliability of the regression estimates.

Specifically, the findings reveal that GDP growth rate exerts a positive and significant effect on the growth of mortgage financing ($\beta = 0.380$, $p = 0.001$). This implies that an increase in Kenya's GDP growth rate enhances the performance and expansion of the mortgage market. As the economy grows, household income levels rise, business activities expand, and consumer confidence strengthens—factors that collectively increase demand for housing and stimulate mortgage uptake. Conversely, periods of slower GDP growth tend to suppress borrowing capacity and reduce mortgage market activity.

The results align with prior empirical evidence by Shi et al. (2021) and Xu (2017), who found that GDP growth enhances financial productivity and stimulates property market development through increased credit access and consumer expenditure. Therefore, sustained economic growth creates a favorable environment for mortgage financing by improving liquidity, investment potential, and housing market performance.

In conclusion, the study establishes that GDP growth rate is a key determinant of mortgage financing growth in Kenya. Strengthening the economy through sound macroeconomic policies—such as promoting investment, maintaining fiscal stability, and supporting employment creation—will likely lead to a more vibrant mortgage market. Policymakers should therefore focus on sustaining GDP growth as a strategic avenue for deepening housing finance and achieving broader economic development objectives.

5.3 Recommendations for practice

The Central Bank of Kenya (CBK) should strengthen the use of appropriate monetary policy instruments—such as interest rate adjustments, reserve requirements, and open market operations—to foster stable and sustained GDP growth. Since the findings established a positive and significant relationship between GDP growth and the expansion of mortgage financing, maintaining a conducive macroeconomic environment is essential. By ensuring low and stable inflation, predictable interest rates, and sufficient liquidity in the banking system, the CBK can stimulate investment, enhance consumer confidence, and promote borrowing for housing. This stability not only supports the growth of mortgage markets but also contributes to broader financial sector development and economic resilience.

Moreover, CBK should closely monitor GDP growth trends and incorporate them into its periodic policy reviews and forecasting models. Regular evaluation of the link between economic performance and the mortgage sector can enable early detection of potential downturns and inform timely policy interventions. By aligning monetary policy with growth-oriented fiscal policies, the CBK can support the expansion of the housing finance sector, ensuring that mortgage lending continues to rise alongside improvements in national income. This coordination between macroeconomic stability and mortgage financing would further enhance financial inclusion and housing affordability in Kenya.

In addition, commercial banks and other financial institutions should design mortgage products that are responsive to economic cycles. During periods of GDP growth, banks can expand access to long-term credit through flexible repayment terms and lower interest margins, thereby capitalizing on increased income levels and stronger borrower capacity. Conversely, in times of slower growth, institutions should adopt prudent risk management practices to safeguard portfolio quality while maintaining credit flow to viable borrowers. Such proactive strategies would help sustain mortgage market stability across economic fluctuations.

Finally, the government should complement CBK's efforts by implementing policies that promote economic diversification and job creation. Expanding sectors such as manufacturing, construction, and services can contribute to higher GDP growth and increase household incomes—critical drivers of mortgage demand. Furthermore, strengthening public-private partnerships in housing development and supporting the Kenya Mortgage Refinance Company (KMRC) will enhance credit availability and affordability. A holistic approach that integrates monetary, fiscal, and housing sector policies will ensure that the positive impact of GDP growth on mortgage financing translates into tangible improvements in homeownership and economic well-being for Kenyan households.

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