



Study on the influence of government expenditure on housing supply

Naftaly Mose¹ ID
Stoyan Tanchev² ID
Ardian Durmishi³ ID
Svetla Boneva⁴ ID



(✉ Corresponding Author)

¹University of Eldoret, Kenya.
¹Email: ngmoce@yahoo.com
²South West University, Bulgaria.
²Email: stoyan_tanchev@swu.bg
³Aleksander Xhuvani University, Albania.
³Email: ardian.durmishi@uniel.edu.al
⁴University of National and World Economy, Bulgaria.
⁴Email: svetla_bogdanova@yahoo.com

Abstract

The debate over whether government spending on housing aids or impedes residential investment and housing supply remains a significant topic of discussion. This study examines the effects of government housing expenditure on housing supply in Kenya from 1980 to 2024. Utilizing a time series data regression method, the analysis employs a fully modified ordinary least squares (FMOLS) approach, along with robustness tests, to explore the relationship between the relevant variables. The findings indicate that government housing expenditure has a negative and significant impact on housing supply in Kenya. Specifically, a 1% increase in public housing expenditure is associated with a potential reduction of 0.8 housing units supplied. These results suggest that public spending may adversely affect investment in the housing sector, hinder employment, and slow the rate of housing supply. The VECM and OLS robustness tests indicate that public spending harms housing provision, suggesting that government expenditure on housing is not being allocated effectively and should be reassessed. The study recommends that the government should harness private sector expertise and funding to facilitate the construction and maintenance of housing. This approach could potentially lower costs and enhance the efficiency of government expenditure. A balanced strategy that integrates government support with market-driven solutions is essential for addressing the housing crisis in the Kenyan construction sector.

Keywords: Construction sector, Government housing expenditure, Housing supply, Kenya, Residential investment.

JEL Classification: E24; E44; E64.

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Contribution of this paper to the literature

This study provides the first comprehensive long-run evidence on the effect of government housing expenditure on housing supply using annual data from 1980-2024. It applies the Fully Modified Ordinary Least Squares (FMOLS) estimator and validates the findings through OLS and VECM robustness analyses, offering new policy insights.

1. Introduction

Housing is universally recognized as a fundamental human need and a core component of sustainable urban development (Alrababaa, Ibrahim, Shaheen, & Ibrahim, 2026; Saiz, 2023). It not only provides shelter but also supports economic productivity, health, and overall well-being. In both developed and developing economies, the housing sector significantly contributes to economic growth and employment. However, many developing economies, including Kenya, continue to grapple with severe housing shortages, especially in urban areas (Wide, 2024). The rising population, increased rural-to-urban migration, and inadequate investment have exacerbated the housing deficit. Kenya's housing deficit is estimated to be over 200,000 units annually, with only a fraction of this being met by formal housing markets (Wide, 2024). In response, the government has introduced various public investment programs and increased government housing expenditure aimed at boosting housing supply, most notably under the Affordable Housing Programme (AHP) within the Big Four Agenda.

Globally, governments have historically played a crucial role in shaping housing outcomes through a range of fiscal policy instruments and expenditure programs. In developed countries, state-led initiatives during the post-World War II period resulted in large-scale public housing developments. Over time, many nations shifted from supply-side subsidies such as public housing construction to demand-side mechanisms, including housing vouchers and tax credits (Kholodilin, Kohl, Korzhenevych, & Pfeiffer, 2023). In the United States, the Low-Income Housing Tax Credit (LIHTC) program has facilitated the development of affordable housing units, though with limitations regarding location and long-term affordability (Luque, Ikromov, & Noseworthy, 2019). In developing countries, housing deficits are more severe due to rapid urbanization, population growth, and institutional capacity constraints. The World Bank estimates that over 1.6 billion people live in inadequate housing globally, with affordability being a major barrier (Saiz, 2023). Governments in countries such as Brazil and India have initiated public housing schemes to bridge this gap, yet success has often depended on institutional frameworks, government budget allocation, land use policies, and effective implementation (UN-Habitat & UNOPS, 2021).

Across sub-Saharan Africa, housing provision is constrained by a combination of rapid urban growth, informal land tenure, limited infrastructure, and weak institutions (Mose & Moro, 2025). Over 60% of the urban population in Africa lives in slums or informal settlements (Aboulnaga, Badran, & Barakat, 2021). Government efforts to address the housing crisis have yielded mixed results. In Nigeria, for instance, public housing initiatives have often failed to meet targets due to corruption, high costs, and lack of coordination among stakeholders (Ibem & Aduwo, 2013). In South Africa, despite the construction of over three million units under the Reconstruction and Development Programme (RDP), critics argue that the quality and location of many of these units fail to meet urban integration and sustainability goals (Charlton & Kihato, 2006). Rwanda presents a different case, where relatively strong institutional coordination and the use of public-private partnerships have improved housing outcomes, albeit primarily for middle-income groups. Gulyani and Bassett (2007) emphasize that success in African housing programs depends not just on public investment, but also on efficient urban planning, infrastructure development, and governance reforms.

In Kenya, the housing sector faces a persistent supply-demand imbalance. Formal housing provision remains limited, with the majority of urban dwellers relying on informal settlements for accommodation. The Kenya Vision 2030 and the Government of Kenya (2004) identify housing as a key development area. However, implementation has been hampered by budgetary constraints, land tenure issues, and regulatory challenges (Oyugi & K'Akumu, 2007). The evolution of housing supply and government expenditure reflects changing socio-economic priorities and fiscal capacities. Despite the early momentum, housing delivery by the state declined in the 1990s and 2000s due to structural adjustment policies and reduced government involvement in direct housing provision. As of 2009, NHC had developed approximately 20,900 housing units in Nairobi since its establishment. However, supply remained grossly inadequate compared to the rising urban population and housing demand. The Affordable Housing Programme (AHP), introduced under the Big Four Agenda in 2017, aimed to deliver 500,000 housing units by 2022. The program was supported by increased public funding, tax incentives, and partnerships with the private sector. Nonetheless, only a fraction of the targeted units had been completed by 2022, pointing to bottlenecks in financing, land acquisition, and administrative capacity (Horn, 2021). The National Housing Corporation (NHC) noted that while government housing expenditure increased during this period, there has not been a commensurate rise in housing output (Ferri & Herranz-Baez, 2024; Nyobendo, 2023). Further, despite large allocations, mid-year budget performance has revealed implementation bottlenecks. For example, in the first half of FY 2023/24, the Ministry of Housing faced a Ksh 103 billion budget cut due to donor shortfalls and low absorption capacity (Nation Africa, 2024). This signals a need for improved efficiency and coordination to translate allocations into completed housing units. Shocks in housing supply have the potential to precipitate economic downturns, leading governments to implement increased public investment as a strategy to alleviate the adverse effects of such shocks. A few existing empirical studies present conflicting findings (Ibem & Aduwo, 2013; Mwau & Omukami, 2024; Scanlon, Fernández Arrigoitia, & Whitehead, 2014) regarding the impact of government housing expenditures on real estate investment and housing supply, indicating a complex relationship that warrants further examination in Kenya. However, questions remain regarding the efficiency and impact of this public spending on housing supply. This study aims to assess the impact of government housing expenditure on the supply of housing in Kenya, with a view to informing policy and improving housing outcomes. Thus, this study seeks to answer the following research question.

RQ1: What is the impact of government housing expenditure on housing supply in Kenya?

To examine issues empirically, the following hypothesis is formulated.

H1: Government housing expenditure positively and significantly affects housing supply in Kenya.

The paper is structured as follows: Section 2 reviews the literature, Section 3 outlines the data and methodology, Section 4 presents results and discussion, and Section 5 offers conclusions and future research suggestions.

2. Literature Review

2.1. Theoretical Literature

According to Musgrave and Musgrave (1989), public expenditure exhibits a direct correlation with a nation's developmental stage and is considered a prerequisite for economic advancement. Musgrave articulated that as an economy expands, the proportion of investment allocated to the productive sector tends to shift, often redirecting resources towards social overhead capital. The connection between the Musgrave and Musgrave (1989) model and housing expenditure is rooted in the structural role of government spending in influencing the supply of housing, particularly within developing economies. This relationship is pivotal, as increased government investment directly mobilizes private investment, thereby augmenting the overall housing stock. Musgrave and Musgrave (1989) identified public expenditure on housing as a critical variable in understanding house supply dynamics, an essential focus of this study. Keynesian hypothesis (Keynes, 1936) emphasizes the importance of government spending as a tool for economic stabilization and output growth. According to this theory, during periods of insufficient private investment or economic downturn, public expenditure can stimulate aggregate demand and encourage the production of houses (Keynes, 1936; Stiglitz & Rosengard, 2015). Barro (1990) has also considered the impact of government spending on infrastructure, recognizing that well-targeted investments in infrastructure and housing can improve productivity and facilitate economic growth and housing output (Mose & Moro, 2025). The endogenous growth model explores the optimal level of government spending and taxation that maximizes economic growth and social welfare (Barro, 1990). In the context of housing, Keynesian, Musgrave, and endogenous models propagated by Barro support the idea that government investments in housing construction, infrastructure, and related services can directly increase the supply of housing units, while also generating employment and promoting economic development. For developing countries like Kenya, where the private sector is often unable to meet housing needs due to high costs and low returns, public investment becomes essential (Stiglitz & Rosengard, 2015). The theory thus provides a strong foundation for analyzing the relationship between government housing expenditure and the quantity of housing supplied.

2.2. Empirical Literature

Globally, studies have shown a strong link between government spending and housing outcomes, albeit moderated by policy design and institutional effectiveness. Scanlon et al. (2014) observed that in Europe, public housing investments significantly increased affordable housing stock in the post-war era. In the U.S., programs like LIHTC have facilitated affordable housing development but face limitations in targeting and equity (Williams, 2004). Singapore offers a model where government-led housing provision has successfully addressed affordability and home ownership through institutional efficiency and long-term planning (Peng & Phang, 2018). The World Bank (2020) notes that successful housing programs rely not just on funding, but also on sound land policies, infrastructure investment, and private sector engagement.

In Africa, public expenditure on housing supply has had varied success (Tanui et al., 2026). Ibem and Aduwo (2013) found that in Nigeria, despite substantial government budgets, housing programs underperformed due to mismanagement, corruption, and lack of coordination. Gulyani and Bassett (2007) emphasized that housing policy in Africa must be integrated with infrastructure and urban planning to be effective. South Africa's RDP housing program significantly improved access to shelter but faced criticism for poor quality and segregation (Charlton & Kihato, 2006). Rwanda, through coordinated policy and PPPs, has shown that structured institutional support enhances housing supply, although affordability challenges persist (Dushimiyimana, 2024).

Government expenditure on infrastructure, such as the construction of housing, roads, and electricity supply, lowers manufacturing costs. This reduction leads to increased savings for private organizations, ultimately fostering economic growth. In the context of South Africa, Chipaumire, Ngirande, Method, and Ruswa (2014) highlight the 2010 FIFA World Cup as an illustrative example. However, they also caution that government spending can sometimes adversely impact a country's financial system. Such expenditures might result in a debt burden on the national budget, provoke inflation, and lead to higher taxes, which can pose challenges for private housing investors. Furthermore, ongoing government spending may hinder economic growth by expanding public debt and crowding out private consumption. Essentially, while government spending can stimulate economic activity, excessive expenditure may stagnate aggregate demand, negatively affecting the environment for private housing development. Oyugi and K'Akumu (2007) argue that implementation of housing policies in Kenya is often hampered by inadequate funding and institutional inefficiencies. The World Bank (2017) reports that while the demand for new housing units exceeds 250,000 annually, only about 50,000 formal units are constructed in Kenya (Kieti, 2020). Mwau and Omukami (2024) evaluated the AHP and concluded that although the policy framework is well-defined, execution has been hindered by a lack of clarity in financing, delays in land registration, and overdependence on private developers.

3. Methodology

3.1. Data and Variables

This study adopted the quantitative research design, employing the annual time series data for 45 years spanning 1980 to 2024, to analyze trends and relationships. Secondary data were utilized as they are reliable, original, relevant, accurate, and published by reputable institutions such as the Kenya National Bureau of Statistics (KNBS), National Housing Corporation (NHC), State Department for Housing (SDH), World Bank, and Central Bank. The time scope and sample country, Kenya, were chosen because the time is adequate to impact housing policy decisions in the study country. This study investigates the effect of government housing spending on the growth of housing in Kenya. It considers growth in housing as the dependent variable and government spending as the independent variable, as reported by the Ministry of Housing and KNBS. Four control variables were included in the econometric model to examine the link between government housing expenditure and the supply of houses, which control for the effect of

the main variables of the study. The control factors are inflation rate, price of houses, interest rate, and economic growth. The study variables are selected from the empirical studies conducted by Tanui et al. (2026) and Udensi, Oyama, and Abbey (2024) on the determinants of housing provision in developing countries. Data were analyzed with the help of EViews version 14 software. The description of variables included in the econometric model and their measures are shown in Table 1.

Table 1. Description of variables.

Variables	Description	Sign	Reference	Source
Housing government expenditure (HE)	Government expenditure on housing (% GDP)	+	Ferri and Herranz-Baez (2024)	KNBS
House price (HP)	Average price of a house	+	Ryś and Ryś (2025)	KNBS
Economic growth (GDP)	GDP per capita (%)	+	Akkay (2021)	KNBS
Interest rate (IR)	Lending interest rate (%)	-	Yazar Öztürk and Akça (2023)	World Bank
Inflation rate (INF)	Consumer price index (%)	-	Akkay (2021)	World Bank
Housing supply (HS)	Housing stock	ND	Tanui et al. (2026)	KNBS

3.2. Estimation Method and Model Specification

Building on this framework, Ferroni and Kanbur (1990) and Mala, Omolo, and Etyang (2025) expanded upon the theory of public expenditure articulated by Musgrave and Musgrave (1989) proposing that the government’s optimal inter-sectoral allocation of government expenditure constitutes a problem of maximizing welfare and output within the constraints of a fixed fiscal budget, as illustrated in the following equation:

MAX $W = W(G_i, Z, Y, X_{k \neq j}),$

s.t.

$$\sum_{j=1}^k G_K = G \ \& G_K > 0 \tag{1}$$

In this equation, G_k represents government expenditure within sector k, X encapsulates housing output indicators, Y denotes per capita income, Z is a vector of variables that may influence targeted output indicators, and G signifies the total public expenditure accessible to the government. Accordingly, Ferroni and Kanbur (1990) established that the housing output function exemplifies a relationship among housing expenditure, income levels, and various other factors that affect housing output indicators, including interest rates, inflation, and housing prices.

In a related discourse, Anderson, de Renzio, and Levy (2006) asserted that by enhancing both the quantity and quality of diverse housing types, public spending exerts a direct influence on housing output. To assess the impact of public expenditure on housing welfare, Anderson et al. (2006) formulated a housing output function represented as follows:

$$V_h = f(M_h, P_j, Z_k) \tag{2}$$

Where V_h denotes housing output, M_h represents per capita income, P_j refers to the prices of houses purchased by households, and Z_k signifies the fixed quantities of housing provided by the government. The effect of public expenditure on housing output can be evaluated through the marginal derivative $\partial V / \partial K$. It is anticipated that this direct effect will adhere to the law of declining marginal utility and may vary according to household preferences, thereby indicating that households assign different values to public goods.

The study applied a baseline model adopted from Barro (1990), Egbetunde (2012), and Morina, Misiri, and Alijaj (2024) empirical studies to explore the association among the variables of interest. This model is a multiple linear regression model designed to investigate how economic factors (government housing expenditure, house prices, inflation rate, interest rates, and economic growth) influence housing supply in Kenya.

$$HS = f(HE, HP, INF, IR, GDP) \tag{3}$$

To be able to analyze the hypothesis of the study, the researcher has demarcated a regression function as presented below. FMOLS equation is given as;

$$HS_t = \alpha + \delta_1 HE_t + \delta_2 HP_t + \delta_3 GDP_t + \delta_4 IR_t + \delta_5 INF_t + \varepsilon_t \tag{4}$$

Where δ represents the model coefficient, ε expresses the disturbance term, p represents the number of lags used in the FMOLS model, and the subscript expresses the time dimension. Equation 4 is estimated using a fully modified ordinary least squares (FMOLS) regression model.

The study conducted a unit root test using the Augmented Dickey-Fuller (ADF) method. Moreover, Johansen cointegration techniques are conducted to test long-term relationships among study variables. Furthermore, the Vector Error Correction Model (VECM) approach is used to identify long-term causality among dependent and explanatory factors. The study used VECM to isolate long-run causality (via the ECT) rather than testing for simple pairwise VAR Granger causality. The research adopted a basic linear FMOLS model established and propagated by Phillips and Moon (1999) and Al-Mulali, Tang, and Ozturk (2015) to estimate the cointegration regression model in Kenya. FMOLS applies Kernel techniques to modify least squares to account for serial correlation and endogeneity in the explanatory factors that originate from co-integration. The study utilized FMOLS, which provides reliable relationship estimates; the analysis handles non-stationarity and endogeneity (Khan et al., 2019; Merlin & Chen, 2021). This approach tackles simultaneity bias as well as non-stationary regressor issues. However, for a robustness check, VECM and OLS analyses were conducted. The study continued with data analysis and presentation of the regression results.

4. Results and Discussion

4.1. Descriptive and Correlation Analysis

The study data in Table 2 provide the summary statistics for the target variables, i.e., government housing expenditure (HE), supply of housing (HS), economic growth (GDP), price of houses (HP), interest rates (IR), and inflation rates (INF), based on data from 1980 to 2024, generating 45 observations. Table 2 shows the results of the descriptive investigations from 1980 to 2024.

Table 2. Preliminary test results.

Variables	HS	HP	IR	GDP	HE	INF
Descriptive statistics						
Observations	45	45	45	45	45	45
Mean	443	1028	15	1352	6242	9
Maximum	3521	11714	36	1890	86499	45
Minimum	10	1	10	1169	4	2
Std. Dev.	691	2275	6	183	14559	8
Matrix of Correlations						
Housing supply	1					
House prices	0.545***	1				
Interest rate	-0.343**	-0.469***	1			
Economic growth	0.698***	0.749***	-0.372**	1		
Government expenditure	0.437***	0.956***	-0.463***	0.782***	1	
Inflation rate	-0.044	-0.281*	0.119	-0.275**	-0.302*	1

Note: *, **, *** indicate significance at the 10, 5, and 1 percent levels, respectively.

According to the descriptive statistics results in Table 2, all six variables have an equal number of observations (45 each) based on data from 1980 to 2024. The study variables' mean, standard deviation, maximum, and minimum were calculated to describe the study variables. The average supply of houses (HS) is 443 homes, and values range from 10 to 3521, suggesting some variability in the supply of housing in Kenya. The government housing expenditure (HE) shows a mean of 6242 million, with high variability, as shown by a high standard deviation of 14559 and values ranging from 4 to 86499 million. This growth in HE budget indicates government expenditure allocation on housing improvement over much of the period. Other control variables have also indicated substantial variability across the study period.

Table 2 provides the first direct link between the variables that were chosen. The study findings indicate a strong relationship between government housing expenditure and the supply of housing, suggesting that government expenditure levels play a significant role in determining the supply of affordable housing in Kenya, possibly due to the expansion of local public expenditure bringing about the wealth effect of housing appreciation for the housing owners. Additionally, economic growth, interest rates, and the price of houses have a substantial influence on the supply of homes. However, the relationship between inflation and the supply of houses is weak, suggesting minimal impact on interactions with other variables, possibly due to stable monetary policies in Kenya. These insights provide a framework for understanding the dynamics between public spending on housing and housing supply in this dataset.

4.2. Unit Root Test Results

Table 3 shows unit root findings, utilizing the ADF stationarity test.

Table 3. Results of unit root tests.

Variables	Level		First difference		Order of integration
	t-statistics	P-value	t-statistics	P-value	I(d)
HS	-1.142	0.690	-12.106	0.000	I(1)
HP	-1.067	0.718	-6.165	0.000	I(1)
IR	-1.875	0.340	-5.258	0.000	I(1)
GDP	2.793	1.000	-3.970	0.003	I(1)
HE	0.090	0.961	-6.722	0.000	I(1)
INF	-0.937	0.304	-8.309	0.000	I(1)

Note: Null Hypothesis: variable has a unit root; Stationary at 1% level of significance.

The stationarity results indicate that housing supply, government housing expenditure, economic growth, inflation rate, interest rate, and house prices are integrated into order one.

4.3. Lag Length Selection

This study applied Vector Autoregression (VAR) to find the appropriate model estimator and lag dimension to be utilized during analysis. Table 4 shows the different lag dimension criteria utilized to determine the appropriate model.

Table 4. Lag determination.

Lag	LogL	LR	FPE	AIC	SC	HQ
0	5.675	NA	4.09e-08	0.015	0.263	0.106
1	182.297	294.369*	5.15e-11*	-6.680*	-4.943*	-6.043*
2	208.462	36.133	9.16e-11	-6.212	-2.985	-5.029
3	239.095	33.549	1.59e-10	-5.956	-1.240	-4.228

Note: * indicates lag order selected by the criterion; AIC: Akaike information criterion

The findings confirm that the AIC is the most appropriate model standard, supported by a minimum value (-6.680) among all other criteria. In addition, a lag of 1 has been identified as the most appropriate lag length for estimation models, and research continued to the next stage to investigate the cointegration relationship.

4.4. Cointegration Results

The study continued to perform the Johansen cointegration test to identify scenarios where two or more non-stationary variables are integrated so that they cannot deviate from equilibrium in the long run. This confirms that there is a high possibility that variables are cointegrated. Johansen cointegration test, which uses unrestricted cointegration rank (Maximum Eigenvalue) and has high power, was used during cointegration analysis. Unrestricted

cointegration rank (Maximum Eigenvalue), which is similar to the Johansen trace, was used to identify the number of cointegration relations in our model using the rank value. The result of the Johansen cointegration test is represented in Table 5.

Table 5. Johansen co-integration test results.

Unrestricted Cointegration Rank Test	Trace			Maximum Eigenvalue	
	Eigenvalue	Trace	0.05	Max-Eigen	0.05
	Statistic	Statistic	Critical Value	Statistic	Critical Value
None *	0.655	125.353	95.753	45.776	40.077
At most 1 *	0.548	79.576	69.818	34.175	33.876
At most 2	0.400	45.401	47.856	22.016	27.584
At most 3	0.315	23.385	29.797	16.320	21.131
At most 4	0.151	7.065	15.494	7.056	14.264
At most 5	0.000	0.008	3.841	0.008	3.841

Note: * denotes rejection of the hypothesis of no cointegration at the 0.05 level

The maximum eigenvalue and trace statistics indicate two cointegration vectors at the 5 per cent significance level, meaning the error correction model can be estimated. The result of cointegration confirmed the presence of a long-term association, and the study continued to check for causation or convergence using VECM analysis. Table 6 demonstrates the coefficients of the VECM analysis.

Table 6. Vector error correction model analysis.

ECT	Coefficient	Standard error	t-Statistics	p-Value
C(1)	-0.771	0.185	-4.158	0.000
C(2)	-0.337	0.159	-2.121	0.042
C(3)	0.231	0.126	1.838	0.076
C(4)	-0.469	0.167	-2.813	0.008
C(5)	0.561	0.292	1.916	0.065
C(6)	0.495	0.256	1.927	0.064

The findings of the VECM test estimates confirm the long-run relationship within the model. Because the term is significant, it proves that the independent variables are causing or driving the dependent variable over the long term to maintain that equilibrium. This is shown by the negative and significant value of the error correction term (-0.771). This implies convergence or causality, which means about 77 percent of disequilibrium or shocks are corrected annually in the long run. A negative, significant Error Correction Term (ECT) indicates that the variables share a stable, long-run equilibrium relationship, pulling any short-term deviations back into balance in Kenya.

4.5. FMOLS Regression Results

Based on the unit root test conducted, all variables were established to be stationary at the first difference, denoted as I (1). Hence, the Fully Modified Ordinary Least Squares method (FMOLS) estimation technique was employed. FMOLS was considered because of its robustness checks and to correct the serial correlation problem of OLS, as well as to solve the problem of endogeneity. The research continued to generate the coefficients using the FMOLS test. Table 7 provides the regression results of the model.

Table 7. Regression results using FMOLS.

Variables	Coefficient	Standard error	t-Statistics	p-Value
HE	-0.778	0.136	-5.687***	0.000
IR	-0.894	0.457	-1.953*	0.058
INF	0.280	0.180	1.552	0.128
HP	0.691	0.132	5.230***	0.000
GDP	10.132	1.479	6.849***	0.000

R² =0.723 JB=1.507(0.142); DW=1.977

Note: *, *** indicate significance at the 10 and 1 percent levels, respectively.

Table 7 results indicate that government expenditure on housing (HE) has a negative and statistically significant coefficient of -0.78 (p < 0.01), suggesting that increased public spending in the housing sector is associated with a decline in housing supply. This unexpected result may be attributed to inefficiencies in public housing projects, delays in implementation, or potential displacement of private sector participation. Also, the interest rate (IR) shows a negative relationship with housing supply, with a coefficient of -0.89, which is marginally significant at the 10% level. While Inflation (INF) has a positive coefficient of 0.280, the relationship is statistically insignificant (p = 0.128). While moderate inflation could stimulate supply through expectations of rising returns, high inflation may increase construction costs and introduce economic uncertainty, thereby dampening any potential positive effect. However, housing prices (HP) have a significant positive impact on housing supply, as indicated by the coefficient of 0.691 (p < 0.01). Similarly, GDP shows a strong and statistically significant positive effect on housing supply, with a large coefficient of 10.13 (p < 0.01).

The adjusted R² is 0.72%, denoting 72% of the disparity in housing supply, described by the changes in government expenditure on housing and control variables. The study performed the Durbin-Watson (DW) test to detect serial correlation. Table 7shows that the DW is close to 2, confirming that serial correlation is not a problem in regression residuals. A residual normality analysis was performed, as shown in the results in Table 7. The p-value of the Jarque-Bera (JB) is 0.142, confirming that the data are normally distributed and reliable.

4.6. Robustness Analysis

Given the negative relationship identified between government spending and housing provision using the FMOLS estimation technique, this study conducts a robustness check to validate these findings. We will utilize alternative econometric methods, specifically the Vector Error Correction Model (VECM) and Ordinary Least Squares (OLS). The VECM will help us examine both short-term and long-term relationships between the variables, which is important for analyzing time series data. In contrast, the OLS method offers a straightforward estimation of the relationship, providing a baseline understanding. The estimates from these methods are presented below, along with an analysis of their implications. This robustness check enhances the credibility of our results and deepens our understanding of how government spending impacts housing provision. To ensure the robustness of our findings, Table 8 summarizes the estimated model using two specifications: OLS and VECM.

Table 8. Results of robustness test.

Variables	OLS		VECM			
			Long run		Short run	
	Coefficient	t-statistics	Coefficient	t-statistics	Coefficient	t-statistics
HE	-0.473	-2.714**	-0.732	-3.633***	-0.346	-1.234
IR	-0.938	-1.535	-1.925	-3.427***	-0.463	-3.361***
INF	0.127	0.497	-0.794	-4.634***	0.195	0.863
HP	0.655	3.603***	0.310	2.077**	0.030	0.187
GDP	1.057	3.731***	11.630	8.399***	13.621	1.479
ECT	-	-	-	-	-0.811	-4.334***
	R ² =0.46		Note: R ² =0.60			

Note: **, *** indicate significance at the 5 and 1 percent levels, respectively.

The VECM and OLS regression results confirm that government housing expenditure significantly reduces housing provision in Kenya. Specifically, the coefficients indicate that for every unit increase in government spending on housing, housing supply decreases by approximately 0.473 in OLS and 0.732 in the long run and 0.346 in the short run according to the VECM. These findings are corroborated by FMOLS results, suggesting that the conclusions are robust and suitable for policy recommendations. Historically, public housing spending has had a net adverse effect in the long run, indicating inefficiencies due to the crowding out of private sector investment. In the short run, the negative effect is less significant, suggesting minimal immediate influence. While public investment typically supports private investment and increases housing supply, excessive government spending can lead to inefficiencies that may hinder private sector growth in the short term (Merga, 2022; Tanui et al., 2026). Despite recent increases in government housing expenditure, only a fraction of the allocated budget is actually utilized, with a significant portion directed towards recurrent costs rather than new projects.

4.7. Discussion

Increased government expenditure can impede housing supply through several key mechanisms. Ineffective allocation of funds often directs resources toward large-scale projects that fail to address actual community needs, while subsidies may create market distortions that inflate prices, making it challenging for private developers to compete, particularly in the affordable housing market. Moreover, government spending can deter private investment, resulting in a crowding-out effect that ultimately reduces overall housing supply. A focus on quantity over quality might prioritize the sheer number of units constructed, compromising affordability and sustainability. Government efforts to address the housing crisis have yielded mixed results in other countries. In Nigeria, for instance, public housing initiatives have often failed to meet targets due to corruption in public budgeting, high costs, and lack of coordination among stakeholders (Ibem & Aduwo, 2013). Additionally, government involvement in land acquisition can complicate and prolong the housing development process. The finding aligns with Ferri and Herranz-Baez (2024) and Ibem and Aduwo (2013) conclusions. Ferri and Herranz-Baez (2024) established that public spending can harm housing sector investment and employment in Spain, since this diverts workers away from construction, potentially deepening the wound in this sector. Specific labor market attributes and economic indebtedness can catalyze worker displacement from the construction sector, thus adversely affecting residential investment and overall credit. As a result, borrowers face considerable welfare losses. Redirecting government spending toward housing sustains residential activity while exacerbating the overall welfare decline. In contrast, Shiveere (2010) and Scanlon et al. (2014) established that government funding of housing through the Ministry of Housing has a significant effect on the growth of housing in Kenya. Rwanda presents a different case, where relatively strong institutional coordination and the use of public-private partnerships have improved housing outcomes, albeit primarily for middle-income groups (Gulyani & Bassett, 2007). Gulyani and Bassett (2007) emphasize that success in African housing programs depends not just on public expenditure, but also on efficient urban planning, infrastructure development, and governance reforms. These empirical studies support that of Kibati (2015), who recommends more housing funds to the National Housing Corporation in order to impact low-cost housing in Kenya.

The negative relationship between interest rate and housing provision suggests that higher borrowing costs tend to discourage new housing developments, as both construction financing and consumer mortgages become more expensive. Higher interest rates make borrowing more expensive, which can discourage both developers from starting new construction projects and individuals from purchasing existing homes, thus reducing the overall supply. The findings of this study show that there is no clear relationship between the inflation rate and the supply of houses, despite some theories and empirical studies suggesting otherwise. According to the classical "neutrality of money" view, increases in inflation have little effect on house production, as inflation increases both prices and wages similarly and merely alters the units of measurement. While a small, positive inflation rate can be beneficial, high or rapidly increasing inflation can negatively impact economic growth, purchasing power, and financial markets. The price of houses has a positive effect on housing supply in Kenya. This supports the economic theory that higher prices act as a signal for developers to increase construction activity in anticipation of greater profitability. The finding aligns with the results by Udensi et al. (2024) in Nigeria. Generally, an increase in house prices tends to incentivize an

increase in the supply of new houses, as developers respond to the higher potential for profit. Conversely, when house prices fall, the incentive for developers to build new homes decreases, thus potentially leading to a contraction in the housing supply. The estimates show a positive link between per capita income and house supply. This suggests that economic growth is a key driver of housing supply, likely due to increased income levels, higher demand, and improved investor sentiment during periods of expansion. Economic growth, often measured by GDP growth, can lead to higher incomes, increased demand for housing, and greater investment in construction, ultimately resulting in more houses being built.

5. Conclusion

Kenya's government housing strategy has evolved from direct public housing development in the 1960s to large-scale affordable housing initiatives in the present. The introduction of the AHP and increased budget allocations signify a renewed commitment to addressing the housing crisis. However, persistent issues such as affordability, slow uptake of budget allocation, and implementation inefficiencies continue to limit the impact. As the government pursues its ambitious target of 200,000 units annually by 2027, enhanced policy coherence, improved financing models, and private sector partnerships will be crucial to success. The issue of whether government housing expenditure helps or hinders access to adequate housing is still debatable. This study examines the contribution of government spending on housing towards the supply of housing in Kenya using annual data from 1980 to 2024. This study uses a time series data regression method using the fully modified ordinary least squares (FMOLS) technique and is supported by VECM and OLS estimates. The results of this study indicate that government housing expenditure has a significantly negative effect on house supply. A reduction by 1 percentage point in public housing expenditure in Kenya leads to an immediate increase in the number of houses supplied by about 0.8 percentage points. Based on the findings, the premise that government housing expenditure boosts housing supply in Kenya is currently negative, with the sector facing significant challenges that hinder, rather than boost, output. The result has shown that public spending can paradoxically slow housing provision, particularly when it leads to inefficiencies, crowding out private investment, or inflationary pressures in the construction sector. While intended to increase supply, government-led housing initiatives can encounter structural and operational bottlenecks that inhibit overall output in Kenya.

The study recommends that the government should focus on strengthening accountability mechanisms, promoting public-private partnerships, investing in capacity building for public officials, and enhancing stakeholder engagement. This involves creating clear links between budget allocations and spending activities, and using technology and data to track and manage expenditures. Increased government expenditure on housing in Kenya can sometimes hinder housing supply due to factors like inefficient resource allocation and market distortions. While government investment in housing can be crucial for addressing deficits, poorly planned interventions can stifle private sector involvement and hinder the development of a sustainable housing market. To improve efficiency, governments can focus on targeted subsidies, public-private partnerships, streamlining regulations, and promoting affordable construction methods. In conclusion, while government expenditure on housing is necessary in many Kenyan contexts, it's essential to ensure that interventions are well-planned, targeted, and do not inadvertently hinder the private sector's ability to contribute to the housing supply. A balanced approach that combines government support with market-based solutions is crucial for addressing the housing crisis in Kenya. Based on the finding of unidirectional causality from government housing expenditure to housing supply, since expenditure dictates supply, the government must prioritize and sustain increased budgetary allocations toward housing projects to directly enhance housing availability. This spending should be viewed as a proactive investment to drive construction, rather than a reactive measure. The Government of Kenya must enhance funding directed to the National Housing Corporation and the Ministry of Housing to achieve a meaningful impact on housing growth. Currently, budgetary allocations are insufficient to promote positive development in this sector. Furthermore, the findings of the study indicate that unless there is an increase in housing development budget allocations by the National Housing Corporation and the Department of Housing, their influence on housing growth in Kenya will continue to be detrimental.

While this study utilized aggregate housing expenditure, it is recommended that future research should enhance the econometric analysis by separating housing expenditure into capital and recurrent components. Additionally, given Kenya's adoption of a mandatory housing levy, studies must investigate the interplay between rising public debt and the financing of affordable housing projects.

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