

Inflation Expectations and Returns of Residential Property Investments in Some Selected Areas of Abuja, Nigeria

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Abstract

The aim of this research was to examine the relationship between residential real estate investment returns and the expected inflation of the Nigerian economy, with a view to determining the inflation-hedging characteristics in Phase 2 and Phase 3, Abuja, Nigeria. In order to achieve the stated aim, the following objectives were set: to determine the returns of residential real estate in districts of Phase 2 and Phase 3, Abuja, to examine the expected inflationary trend in the study area and to investigate the inflation-hedging characteristics of residential real estate investment in the study area. This research work adopted the cross-sectional survey type of design to obtain data from Estate Surveyors and Valuers in the study area through questionnaire survey. This was subsequently translated to returns using the Holding Period Returns. Similarly, secondary data with respect to the 91-day Treasury bill rates (used as proxy for expected inflation) for the period between 2012 and 2021 were also collected from the Central Bank of Nigeria. The two groups of data obtained for the study were subjected to unit root test using the rule of thumb method and the Ordinary Least Square Regression analysis was conducted between the variables. The study revealed that throughout the study period, the actual inflation had been in the double-digit range with the exception of 2016, 2020 and 2021 and it indicated a downward sloping characteristic in the inflationary trend analysis with a low R^2 value of 0.4524. The study also found out that the returns in the districts of Phase 2 in Abuja indicated a complete hedge against inflation with a beta value of 1.00223, while that of Phase 3 districts returned a beta value of -0.14439. The study concluded that the residential property investments in Phase 2 of the Federal Capital Territory, Abuja, has the ability to hedge against inflation, while that of Phase 3 district has perverse inflation-hedging potentials. The investment information provided in this study has significant implications for both local and foreign investors desiring to invest in the Nigerian property market.

Keywords: Returns, Expected Inflation, Investment, Residential Property, Abuja.

Introduction

Inflation and returns of residential real estate play a vital role in the economic development of any nation. The investment of resources in a way that produces financial benefits or returns is one of the ways used in rating the successful performance of any real estate market. On the other hand, inflation is seen as the general increase in prices of goods and services in an economy and it corresponds to the reduction in the purchasing power of

money. According to Ekpo and Jeremiah (2022), investors who are wise always seek to protect the purchasing power of real estate investment fund so they can continue maintaining the expected future income stream. However, it has always been noticed that during periods of inflation, certain financial returns, rather exhibits perverse hedging characteristics, thereby bringing down the purchasing power of such investments. According to Odu (2011) and Ogunba *et al.*, (2013) a real estate investment is said to have hedge against inflation when it yields a certain degree of protection against the gradual rise in the general price level of goods and services in an economy over a period of time. Dabara (2014) and Dabara (2015) posited that the term inflation usually comprises the actual, expected and unexpected inflation. Oluwasegun and Dabara (2013) added that the Consumer Price Index is the official measure of inflation worldwide and is always adopted as a proxy for measuring actual inflation. In the same vein, the 90-days Treasury bill rates, Livingston Survey and the Autoregressive Integrated Moving Average (ARIMA) are often used as a proxy for expected inflation. This research will equip shrewd and well informed investors in the real estate cycle in Abuja, to be able to deliver attractive returns from such investments by taking advantage of appropriate risk-return strategy to be adopted for a particular portfolio at a particular time. This study will also expand the scope of the inflation-hedging literature by empirically investigating the inflation-hedging performance of residential real estate investments in Abuja.

Statement of the Problem

The study of the inflation-hedging characteristics of real estate investment is very vital to real estate investors because if careful consideration is not made, they may risk inflation eroding the income of their investments. There is a dearth of literature on the hedging abilities of residential property for residential property investments for prospective investors in Nigeria and in Abuja in particular. Previous studies conducted in both developed and developing economies had varying results. While some studies showed that real estate performed excellently as an inflation-hedge, some were observed to differ considerably. Some authors attributed the disparity to be caused by factors including varying timeframes, fluctuating economic conditions as well as differences in microeconomic and macroeconomic indicators, among other things. Most researches done on this subject primarily focused on the real estate markets of south-western states of Nigeria and little consideration given to carrying out in the north-central property market. Therefore, this study aims at examining the relationship between residential real estate investment returns and the expected inflation of the Nigerian economy, with a view to determining the inflation-hedging characteristics in Phase 2 and Phase 3, Abuja, Nigeria. in order to achieve the stated aim, the following objectives were set:

- (i) To determine the returns of residential real estate in districts of Phase 2 and Phase 3, Abuja.
- (ii) To examine the expected inflationary trend in the study area.

- (iii) To investigate the inflation-hedging characteristics of residential real estate investment in the study area.

Review of Related Literature

Conceptual Review

Inflation may be referred to an increase in the average prices of a particular economy's goods and services over a set period of time. Inflation is one of the challenges facing property values any urban areas in the World. The first is through increased costs: higher wages for construction labor, higher construction material costs and higher land prices (Finkel, 2023). With so much speculation regarding the forecast of the economy of any nation and how inflation rates will change, those in the property market need to know how inflation can affect the real estate sector. Passive income from an investment is always the goal, and the property market has always been known to be a prime market for investors (Odu, 2011). Still, the recent surges in inflation cause many prospective property investors to have a second thought before embarking on any real estate investment (Ekpo et al., 2022). The good news is that, generally, inflationary times can present excellent investment opportunities in real estate as this paper will reveal.

From a real estate perspective, inflation can impact the property market in a range of ways. Inflation leads to increased rental property rates (Finkel, 2023). In periods of high inflation, it can be harder than ever for consumers to secure affordable mortgage terms. As a result, many have no choice but to continue to rent, keeping demand high and competition fierce. As more tenants flood the market and the cost of construction stalls new housing developments, a slump in inventory creates even more demand, further pushing rent prices up. According to Bello, (2005) property values typically appreciate during periods of inflation. The greater the demand, the more property is worth. In inflationary times, fewer new buildings and other development plans can get off the ground due to rising costs of construction-related products and services. This leads to plummeting property inventory levels, keeping demand ratios high and thus increasing prices. This often leads to potential buyers being priced out of buying a property and can also spur affordability migration.

However, Odu (2011), Dabara (2015) and Ekpo Ekpo et al., (2022) all posited that real estate serves as a hedge against inflation. Investors commonly purchase tangible assets such as real estate to hedge against inflation. Other investments, such as stocks, typically react negatively to rising inflation, but property responds proportionally, often increasing in value as inflation creeps up (Dabara, 2014). In the United Kingdom, the Office for National Statistics produces several different measures of inflation to include: Retail Prices Index, Consumer Prices Index, Harmonised Index of Consumer Prices. However, in Nigeria, Dabara 2015 and Ekpo et al., (2022) classify inflation into actual inflation, expected inflation and unexpected inflation. Both authors use the consumer prices index as the actual inflation, the Nigerian Treasury bills as the expected inflation and the difference between the actual

inflation and the expected inflation as the unexpected inflation. This present research considers the effect of the expected inflation on the returns of residential properties.

Leung (2010) embarked on a study aimed at establishing the inflation hedging capacity of office spaces, industrial outlets and shops in Australia between for 24-year period. Returns data were sourced from the property investors digest. The index was based on valuations of properties and covered over one thousand retail, office and industrial properties. For actual inflation, the consumer's price index published by the Australian bureau of statistics were used as a proxy. For expected inflation, the difference in nominal and indexed bond yields for ten-year bonds issued by the common wealth government was employed. The author adopted by Fama and Schwert's (1977) regression model to analyse data. The study found that Australian property at an average level provided a good hedge for expected inflation. This study was done in a developed country. However, the study should also be intensively undertaken in the emerging real estate market of developing economy such as that of Nigeria, which possesses different real estate market characteristics.

Zhe (2010) probed the inflation hedging capability of domestic real estate, factory real estate, offices and shops in Hong Kong between 1993 and 2009. The Auto Regressive Integrated Moving Average was used as a proxy for expected inflation. The data on real estate returns was obtained from the Rating and Valuation Department. (HKSAR) in Hong Kong. The ordinary least square regression model as proposed by Fama and Schwert's (1977) was used to regress the rate of returns on real estate in the study area against the expected inflation rate. The rental index and the price index of the returns were employed in the study and the study revealed that office property and private domestic property were better in hedging against expected inflation, than retail and industrial real estate. The study was conducted between 1993 and 2009.

Zhou and Clements (2010) examined the inflation hedging ability of the general real estate investments in China between 2000 and 2008. The variable used to estimate the return on direct real estate investment was the real estate price index from the Chinese economic database. The Auto Regressive Integrated Moving Average was used as a proxy for the expected inflation. The stationarity of the data was tested using the unit rate test and Engle and Grainger cointegration techniques were employed to test the hedging ability of the Chinese real estate. The study found out that Chinese real estate was not an effective inflation hedging asset.

Ogunba et al (2013) tested the hedging characteristics of office/shop property investments between 2000 and 2010 in Ibadan metropolis, Nigeria. The 91-day treasury bill rates as a proxy for expected inflation. Property returns were obtained from firms of estate surveying and valuation in the study area. The ordinary regression model was adopted for analysis of data collected. The study found out that investments in office/shop properties indicated a complete hedge against expected inflation.

Ekpo and Jeremiah (2022) investigated the return characteristics and the inflation hedging potential of residential real estate investment in Phase 2, Abuja between 2012 and 2022.

The survey research design method was employed in this research. Descriptive and inferential statistics were employed to analyse the data. The study found out that the returns in the study area indicated a perverse hedge against inflation. This implied that the returns from residential property investment in Phase 2 of the Federal Capital Territory, Abuja, does not have to hedge against inflation. Based on the research findings, it was recommended that further research be carried out in other parts of Abuja to ascertain the relationship between returns and other components of inflation. However, the authors employed only the actual inflation component while regressing with the returns and did not attempt to test for the stationarity of data in their research.

Dabara (2014) examined the relationship between inflation and commercial real estate investment returns with a view to determining the inflation hedging characteristics of commercial property investments in Akure metropolis, Nigeria. Questionnaire survey was conducted to obtain primary data on rental and capital values of commercial properties from branch managers of estate surveying and valuation firms in the study area. Secondary data with respect to the 90-day treasury bills rates used as a proxy for the expected inflation, were collected from the Central Bank of Nigeria (CBN). Ordinary least square regression analysis was employed and the study revealed that the commercial property returns provided a perverse hedge against inflation in the study area.

Study Area

Abuja is the administrative and political capital of Nigeria located within longitude 9°4'N and latitude 7°29'E. It is also a key capital on the African continent due to Nigeria's geo-political influence in regional affairs. For ease and co-ordination of developmental efforts, the city was divided into 'Phases' by its planners, with the city's development taking a concentric form with Phase 1, which consists of the city's inner districts-Central Area, Maitama, Asokoro, Wuse, Wuse II, Garki, Garki II, Guzape and Guzape II-at its core spreading out from the foot of Aso Rock. However, the scope of this research covers only towns in Phase 2 and Phase 3 districts. Phase 2 is one of the developed axes in the city of Abuja hosting sixteen districts. They include Gudu, Mabushi, Katampe, Katampe Extension, Jahi, Dakibiyu, Kaura, Duboyi, Kukwuaba, Durumi, Utako, Jabi, Wuye, Kado, Gaduwa and Dutse. Most of the districts in this area are developed while a few others are undeveloped. Notable Places in Phase 2 include: Apo Legislative Quarters, High Court of FCT, National Open University of Nigeria new study center, the Public Service Institute, Jahi Clinic, Abuja Enterprise Agency, FourSquare Gospel Church, Nippon Grand Hotel, Peace Apartment Jahi, Shashilga Court, Aduvie International School, Forest Garden, Inspire Academy Staff House, TSTV Head Office, Mostop Limited, Cedar Homes amongst others.

Some of the prestigious schools in Phase 2 axis District include Start-Rite Schools, Funtaj International School, Kings Ville College and Deo Gratias College, amongst others. Living Faith, The Redeemed Christian Church of God and The Church of God Mission, are some of the worship centers in this area. There are also a few health facilities around this area.

They are Eye Foundation Hospital and Laser Centre, Excel Specialist Hospital, Roux Hospital, among others.

Phase 3 is a developing area in the city of Abuja. There are eleven districts in Phase 3 which include Gwarinpa, Wumba, Mbora, Lokogoma, Galadimawa, Dape, Kafe, Idu Industrial, Dakwo, Karimo, and Kabusa. While a few of the districts here are developed, some others are still in the developing state. Notable Places in Phase 3 are Seven-Up Bottling Company, National Institute, Mbora Unity Garden, Nigerian Police Divisional Headquarters, Efab Estate, Peace Court Estate, Ultimate Garden, amongst others. Some prestigious schools in Phase 3 are African University of Science and Technology, Harvard International School, Esteem International School, just to mention a few. Living Faith Church, Abubakar Assidiq Mosque, Corner Shop Mosque and Christ Embassy are some of the worship centers one may find in Phase 3.

Research Methods

Primary data required for this study was obtained through questionnaire survey. The questionnaire was designed in such a way as to obtain information on the average capital and rental values of selected residential properties, which were mainly 2-bedroom bungalows in Districts of both Phase 2 and Phase 3 in Abuja. The 2-bedroom bungalows comprised majorly flats and rental value determined per square meter, between 2012 and 2021 and this was subsequently computed to obtain the returns using Equation 1. The capital and rental values of residential properties were collected from branch managers who are registered Estate Surveyors and Valuers, through a total enumeration survey of all the eighteen (18) Estate Surveying and Valuation firms in Phase 2 as well as fifteen (15) private practicing Estate Surveying and Valuation firms in Phase 3 District. However, every questionnaire was correctly filled by each branch manager and returned for analysis. This is because the Estate Surveyors and Valuers are the only professionals in Nigeria that are empowered by the law (Decree No. 24 of 1975) to determine the value of properties and their interests. The sample size was considered adequate by the researcher because it is the aggregate value of all the data given by the respondents per square meter that was used for analysis in this study. The secondary data required for the study was obtained from the records of the Central Bank of Nigeria (CBN). However, only the 91-day Treasury bill rate was considered in this research and therefore used as a proxy for expected inflation. This was sought from the records of the Central Bank of Nigeria. The unexpected inflation as well as the actual inflation rates were not considered in this research. Both descriptive and inferential statistics were employed in this research. Durbin-Watson statistics was carried out on the data to check autocorrelation. Regressing two series that are nonstationary yields a spurious regression: that is, a regression whose outcome cannot be used for inferences or forecasting. On this note, a test for the stationarity of the data was carried out by using the rule of thumb, which posits that if the R^2 value obtained from the regression is higher than the Durbin Watson statistic, the low Durbin Watson statistic evidences positive first order auto-correlation of the error terms.

The analysis was based on only the expected inflation rates as well as capital and rental values obtained between 2012 and 2021. The rental and capital values of investment in commercial properties were all computed accordingly to obtain their respective holding period returns using Equation 1.

The Holding Period Return is expressed as

$$r = \frac{H_1 - H_0 + a_1}{H_0}$$

...

Equation 1

Where:

r = Holding Period Return

H₀ = Capital value of commercial property at the beginning

H₁ = Capital value of commercial property at the end

a₁ = Net Income of direct property received during the holding period

From the foregoing, the holding period returns of the residential property investment were obtained. The secondary data on expected inflation required for the study was obtained from the records of the Central Bank of Nigeria (CBN) in line with previous studies such as Sing and Low, (2000, Ogunba *et al* (2013), Dabara *et al.*, (2014), Dabara (2014), Dabara (2015) Ekpo and Udoh, (2021) and Ekpo *et al.*, (2022). Furthermore, trend lines were used to graphically display trends in the inflation and returns data series used for this study to help analyze problem of future predictions. The R² value was used to determine the reliability of the trend and the accuracy of the forecast or predictions made. A trend line is said to be most accurate when its R-Squared value is at or near 1. Similarly, least square linear regression equations were generated for prediction of future rental, capital and total returns as well as inflation rates. These are the equations of a straight line that best fits the points on the chart. The method used to determine these equations involves finding the line that produces the least value for the sum of the squares of the vertical differences between data points and the line. The equation is in the form:

$$y = mx + b$$

...Equation 2

where: y is the dependent variable (rental, capital or returns values as the case may be) m is the slope of the line, which equals the change in the y value divided by the change in the x value; x is the independent variable (year in this case); and b is the y-axis intercept of the line.

Decision Rule: An asset is considered a complete hedge against inflation if the value of β (beta) is not significantly less than 1 (i.e., between 1 and 0.5). An asset is a partial hedge against inflation if the value of β is significantly less than 1 (i.e., between 0.4 and 0.1). An asset has zero hedge against inflation if the value of β is not significantly different from zero. An asset has a perverse hedge against inflation if the value of β is negative.

Data Presentation and Analysis

This section presented the results from analysis of data collected for the study and goes on to discuss the results accordingly. First, the profile of the respondents was analyzed; second, the average rental/capital values of the residential property investments in the study areas were presented and used to calculate the total returns obtained from the study area between 2012 and 2021. Third, the expected inflation trend in the study area within the study period was presented and analyzed accordingly. Finally, regression results which revealed the inflation-hedging characteristics of the selected residential property were accordingly presented and discussed in order to achieve the main objectives of this research work.

Analysis of the Profile of Respondents

In this section, an attempt was made to analyse the profile of the respondents in order to ascertain the reliability of the data obtained.

Table 1: Respondents' profile

Profile	Item	Frequency	Percentage
Educational Qualification	Doctor of Philosophy (PhD)	5	15.15
	Master of Science (MSc)	8	24.24
	Bachelor of Science (BSc)	18	54.55
	Higher National Diploma (HND)	2	6.06
	Total	33	100
Professional Qualification	FNIVS	8	24.24
	ANIVS/RSV	14	42.43
	ANIVS	11	33.33
	Total	33	100
Years of Professional Experience	Above 20 years	2	6.06
	15 – 19 years	3	9.09
	10 – 14 years	6	18.18
	5 – 9 years	13	39.40
	1 – 4 years	9	27.27
	Total	33	100

Source: Researchers' field survey, 2022.

Table 1 presents the profile of respondents who supplied primary data on rental and capital values in terms of their educational qualifications, professional qualifications and years of professional practice as Estate Surveyors and Valuers. This was carried out in order to ascertain the validity and reliability of the data collected for the study. All the respondents were either polytechnic or university graduates with different categories of degree. The

PhD holders, HND (Higher National Diploma) holders and MSc holders constituted 15.15%, 6.06% and 24.24% respectively while the BSc holders constituted 54.55% and formed the highest rate. This shows that all the respondents had good academic qualifications in the respective firms, which give more credence to the reliability of the data provided. In the same vein, all the respondents are in different membership cadre of the Nigerian Institution of Estate Surveyors and Valuers (NIESV), and most of them have professional experience of above 10 years. This showed that all the respondents are academically and professionally qualified to supply reliable data for this study.

Analysis of the Average Rental, Capital and Total Returns of Residential Property Investment in Phase 2 Abuja

In order to treat the first objective of this research, an attempt was made to analyse the average rental and average capital values of residential properties in the study area from 2012 to 2021, for the subsequent derivation of the returns rate using Equation 1, and presented in Table 2.

Table 2: Average capital value, average rental value and returns in Phase 2 Districts, Abuja.

Year	Capital Value (N)	Rental Value (N)	Rate of Returns
2012	25,867,216	485,000	12.58
2013	29,206,431	515,000	14.90
2014	43,163,428	570,000	15.50
2015	49,514,322	620,000	16.15
2016	56,494,091	690,000	15.49
2017	65,051,720	730,000	16.44
2018	75,206,430	800,000	16.84
2019	83,736,531	865,000	12.49
2020	88,011,360	900,000	6.18
2021	93,642,062	992,000	7.53

Source: Researchers' field survey, 2022.

As shown in Table 2, apart from a continuous increase in both the capital and rental values of the property from year to year, there is also a consistent increase in returns from year to year, except a decline which occurred in 2019 and 2020. The highest return, which is 16.84% from the residential properties was obtained in 2017; while the lowest return (6.18%) was obtained in the year 2020. This may not be unconnected with the recent economic atmosphere currently prevailing globally.

Analysis of the Average Rental, Capital and Total Returns of Residential Property Investment in Phase 3, Abuja

In this section, an attempt was made to analyse the average rental and average capital values of residential properties and the subsequent computation of the rate of returns in Districts of Phase 3, Abuja, from 2012 to 2021. It was presented in Table 3.

Table 3: Average capital value, average rental value and returns in Phase 3 Districts, Abuja.

Year	Capital Value (N)	Rental Value (N)	Rate of Returns
2012	32,301,112	490,000	8.32
2013	43,412,052	520,000	35.98
2014	46,408,546	585,000	8.25
2015	49,195,652	610,000	7.32
2016	64,275,937	682,000	32.04
2017	68,453,763	720,000	7.62
2018	77,178,536	790,000	13.90
2019	80,048,373	810,000	4.77
2020	87,766,021	895,000	10.76
2021	91,304,725	920,000	5.08

Source: Researchers' field survey, 2022.

Table 3 shows a continuous increase in both the capital and rental values of the property from year to year but there is no consistent increase in returns from year to year, rather it follows a rise and fall pattern. The highest return, which is 35.98% from the residential properties was obtained in 2013; while the lowest return (4.77%) was obtained in the year 2019. This may not be unconnected with the irregular economic atmosphere currently prevailing in the world.

In order to fulfil the second research objective, the expected inflation rate was obtained from the records of the Central Bank of Nigeria (CBN) and presented as shown in Table 4.

Table 4: Expected Inflation rates in Nigeria

Year	Expected Inflation Rates
2012	14.49
2013	10.17
2014	11.92
2015	10.77
2016	5.53
2017	13.60
2018	11.84
2019	10.42

2020	2.39
2021	2.00

Source: Central Bank of Nigeria, 2022

Table 4 showed that throughout the study period, the expected inflation had been in the double-digit range with the exception of 2016, 2020 and 2021. The expected inflation rates were observed to have kept fluctuating indicating some inflation volatility. However, the expected inflation rates may graphically be represented in Figure 1.

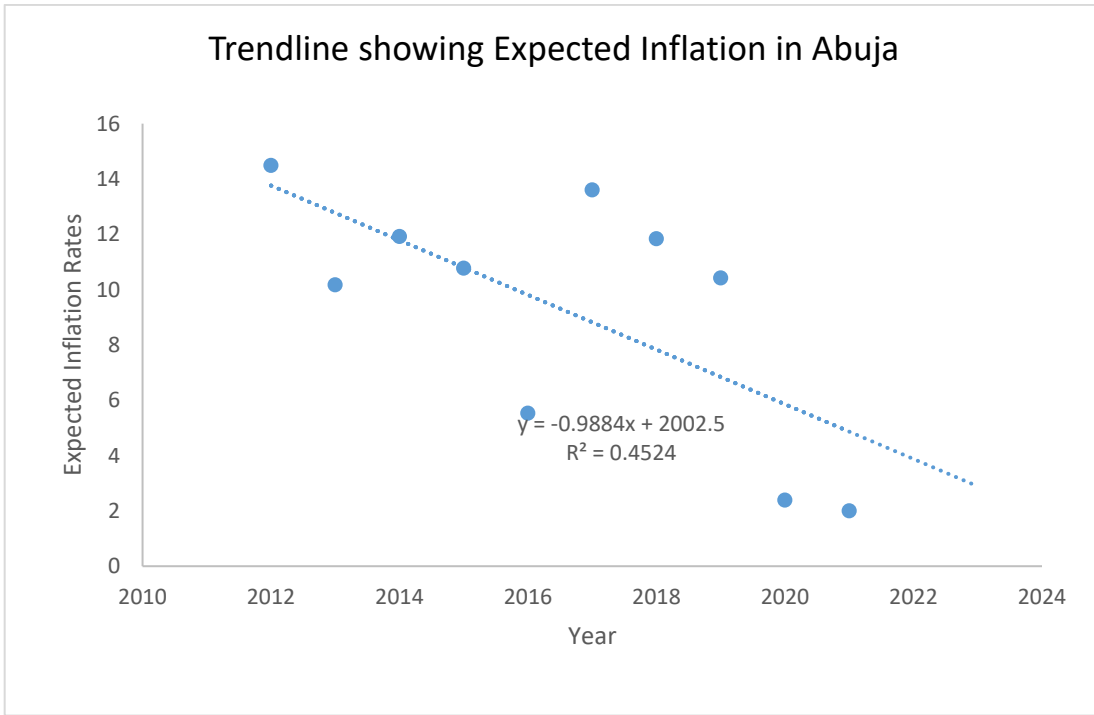


Figure 1: Graphical Illustration of Expected Inflation in Abuja, Nigeria.

Figure 1 shows a downward sloping graphical representation of the expected inflation with R-square value of 0.4524 and a linear trendline equation of $y = -0.9884x + 2002.5$, which may be used to forecast the future expected inflation.

Analysis of the inflation-hedging characteristics of residential property investment in Phases 2 and 3, Abuja.

In this section, attempt was made to ascertain the inflation hedging potentials of residential property investment in Phase 2 and Phase 3 of Abuja, Nigeria. In line with other studies, this was done by carrying out a regression of the returns against the expected inflation. The output of the regression analysis is presented in Table 5.

Table 5: Summary Statistics of the Relationship between Returns and Expected Inflation

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
			-			
Intercept	-2.19145	3.535995	0.6197	0.5550		
Returns_Phase_2			5	48	-10.5527	6.169851
				0.0069		
e_2	1.00223	0.265723	3.77171	67	0.373895	1.630564
			-			
Returns_Phase_3			1.6167	0.1499		
e_3	-0.14439	0.089309	9	56	-0.35557	0.066788

Dependent Variable: TBILLS_91days

The output shows results of fitting a multiple linear regression model to describe the relationship between returns of residential real estate investment in both Phases and the expected inflation rate. It can be deduced that returns in Phase 2 was significant as its p-value was less than 0.05 indicating that there is a statistically significant relationship between residential real estate investment returns and the independent variables at 95% confidence level. The equation of the fitted model is:

$$y = -2.19145 + 1.00223\text{Returns_Phase_2} - 0.14439\text{Returns_Phase_3} \quad \dots \text{Equation 3}$$

Furthermore, the F-ratio is 7.266 and P-value of 0.019584 as shown in Table 6 and the details of the R-squared, R^2 (adjusted for degree of freedom) and Durbin-Watson Statistics are shown in Table 6.

Table 6: ANOVA of Relationship between Returns and Expected Inflation in Abuja

	<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	2	120.2483	60.12414	7.266969	0.019584
Residual	7	57.91534	8.273619		
Total	9	178.1636			
Multiple R		0.821542			
R Square		0.674932			
Adjusted R Square		0.582055			
Standard Error		2.87639			
Durbin Watson Statistic		0.765			

Source: Researchers' analysis.

From Table 6, the R-squared statistic indicates that the model as fitted explains 67.49% of variability in expected inflation. The adjusted R^2 statistic, which is more suitable for comparing models with different numbers of independent variables, is 58.21%. The Durbin-Watson statistic, which is 0.765, tests the residuals and determines if there is any significant correlation based on the order in which the data occur. From the ANOVA Table, the p-value

of Durbin-Watson statistic (0.765) is greater than the R^2 value, which is 0.6749; implying that there is no indication of serial autocorrelation in the residuals at the 95% confidence level. This confirms the stationarity of the data.

Discussion of Findings

The study found out that the returns of residential real estate investment in Phase 2 had a consistent increase from year 2012 to 2018 when it experienced a sudden fall from 12.49% to 6.18% between 2019 and 2020 before a gradual rise in the returns. Furthermore, the returns from Phase 3 showed an intermittent rise and fall in the rate of returns of residential real estate in the study area. This implies that returns did not follow any definite order and there was no consensus in the rate of returns. The study also found out that throughout the study period, the expected inflation had been in the double-digit range with the exception of 2016, 2020 and 2021. The study also showed a downward sloping characteristic in the inflationary trend analysis with a low R^2 value of 0.4524. This implies that the expected rate of returns may continue to be low in the next few years.

The study also found out that the returns in the districts of Phase 2 in Abuja indicated a complete hedge against inflation with a positive beta value of 1.00223, while that of Phase 3 districts returned a negative beta value of -0.14439. This implies that the residential property investments in Phase 2 of the Federal Capital Territory, Abuja, has the ability to hedge against inflation, while that of Phase 3 district does not have inflation-hedging potentials. The results of this research are in congruent with the works of Ekpo and Jeremiah (2022) and Ogunba *et al.*, (2013).

Conclusion

This study aimed at examining the relationship between residential real estate investment returns and the expected inflation with a view to determining the inflation-hedging characteristics in districts of Phase 2 and Phase 3 areas in Abuja, Nigeria. In order to achieve the stated aim, the study determined the returns of residential real estate, examined the inflationary trend as well as investigated the inflation hedging potential characteristics of the investments in Phase 2 and Phase 3, Abuja. The study employed the survey type of research design, obtained data in form of rental and capital values of residential properties, derived the returns and subsequently analysed the data using the descriptive and inferential statistics. The results from findings showed a positive and negative beta values in Phase 2 and Phase 3 areas of Abuja respectively. It can then, from the research findings, be concluded that investment in residential properties in Phase 2 has a complete hedge against expected inflation, while that of Phase 3 has no inflation-hedging potentials. Therefore, a shrewd investor is advised to undertake more investments in residential real estate in Phase 2, Abuja, as its returns provide a complete hedge against inflation. Estate Surveyors and property investors are more actively involved in the management and investment in residential property portfolio respectively and they are increasingly

confronted with the need to assess the inflation-hedging potentials of residential properties. However, the study recommends that further research be carried out to determine the inflation hedging ability of residential properties using other components of inflation like the actual and unexpected inflation. The information provided in this study can provide a basis for investors to make informed decision with respect to residential real estate investments in emerging property markets in general and in Abuja in particular.

Recommendations

The results of the study provide a basis for making some important recommendations. These include:

- (i) Real estate investors should always research on returns, since there is no consensus on the returns of residential real estate investment in Abuja, Nigeria.
- (ii) It is recommended that residential real estate investors should embark on residential real estate investment in the next few years because of the favourable inflationary trend.
- (iii) It is recommended that prospective investors in Phase 3 should identify housing attributes that could enhance more returns that will help properties in that area to have good hedge against inflation.

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