KASU ENVIRONMENTAL SCIENCE JOURNAL (KESJ)
KASU Environmental Science Journal (KESJ) ISSN: 2734-2751
Volume 6, Issue 1, 2026

EFFECT OF INFLATIONARY HEGDING ON RESIDENTIAL PROPERTY INVESTMENT IN ABUJA

Hadiza A. MUSA[1], Maxewell A. KYON[2], Kafilat J. OLANIYI[3]
[1&2]Kaduna Polytechnics: Department of Estate Management
[3]Federal Polytechnics, Offa: Department of Estate Management
Corresponding Author: Hadiza4musa@yahoo.com

ABSTRACT

Purpose*: The study analysed the effect of inflationary hedging on residential property investment returns in selected market in Abuja.*

Design/methodology/approach*: The study employed systematic random sampling for residential properties' transactions from registered estate surveyors and valuers' firms in the selected study areas (Kubwa, Gwarinpa and Lugbe) in Abuja. The study employed simple regression model to determine the inflationary characteristics of residential property investment.*

Findings: *The result revealed that unexpected inflation is major type inflation that is not completely hedged by both 2B/R and 3B/R residential property investment provided a partial hedge over the period of study.*

Research limitation/implication*: the use of only 2bedroom and 3bedroom residential property investment in Abuja without considering other property types.*

Practical implication*: real estate investors should encourage diversification of investment into residential real estate, in that, it is inflationary hedged.*

Originality*: the study showed that residential property investment provided a complete hedged against actual and expected inflation.*

Keywords: Inflation, residential, properties, returns, hedging characteristics

[1] Email: kesj@kasu.edu.ng

1.0 INTRODUCTION

The inflation-hedging characteristics of real estate investments all over the world are of special interest in both direct and indirect property investors because investors who do not give careful consideration to the inflation-hedging characteristics of their investments, the risk of inflation is capable of eroding their investments' real income streams (Dabara, 2014). The available studies in Nigeria which include Olaleye (2008), Bello (2003), Oyewole (2006) Amidu and Aluko (2006), Amidu, et.al (2008) and Ajibola et.al (2009) Wahab, Ola, Sule, Adepoju & Dodo (2018) whose works are on comparison of inflationary characteristics of direct and indirect investment in real estate in Nigeria (intra-sector investment, these works have not been able to examine the hedging capacity of direct residential property investment, this justifies this as intend to examining the effect of inflation of residential investments. Direct residential property investment to be a good substitute for indirect real estate investment, it should provide investment characteristics similar to those of indirect investment, that is, it must have competitive returns and risk relationships, and hedge against inflation and direct property return must have a low correlation with securities market returns over a period (Amidu & Aluko, 2006). Therefore, this study aimed at examining the inflationary hedging characteristics of residential property investment in some selected active market in Abuja with a view to determined level of immunisation provided by the residential market against dearth of inflation in Nigeria.

2.0 LITERATURE REVIEW

Property has been commonly viewed as a good hedge against inflation, as property returns tend to be correlated with rises in the price level. Early studies in the US provided supportive evidence of the positive correlation between direct property returns and inflation rates. Hwa (2003) studied the performance of Malaysia residential property sectors between 1989 and 2001. The work focused on risk-return comparison of residential risk-adjusted performance with equity investments. It also evaluated the diversification benefits of the investment media through correlation analysis. Findings from the study among others indicate that detached houses provided higher capital appreciation compare to other forms of housing. Daniel and Sheridan (2010) encompass earlier studies which examine the relation between stock returns and price changes of commercial real estate in individual countries. Their research recommends that in the US, real estate returns and stock returns are not highly correlated and that the relation may in fact be negative. It was found that only U.S. real estate returns and stock returns are not correlated but all the remaining 16 countries have correlation in the returns of real estate and stocks. Ralph (2006) argues the performance of equities, direct property and property shares and provides a background for comparing the advantages and disadvantages of these two distinct types of property investments and eventually highlights the similarities and differences between property shares and direct property investment.

Bello (2003) studied the relative performance of residential property investment and securities in terms of average annual return, risk adjusted return, income growth and capital growth. The results of the study rank investment in ordinary share above that of the residential property in absolute terms and risked adjusted return. Idowu (2006) examined returns from residential properties in Lagos Metropolis between 1991 and 2004 and publicized that returns in real term depict unstable pattern, but rental and capital value were both showing upward growth. This work was not comparative, and limited its focus on residential property as direct real estate investment. Amidu (2006) was another notable indigenous (Nigeria) study, though comparative work. The study sought primarily to study the performance of listed construction companies and only listed real estate Company in Nigeria (UACN) and all share index (used as a proxy for the performance of stocks within the period of 1998 to 2005.The risk adjusted performance of the

companies, assessed through sharp ratio, showed that both listed property and construction companies performed worse than stocks, but nevertheless presented diversification possibilities due to their low correlation with the stock market.

Oyewole (2006) study of direct property and indirect property investments in Lagos, stretched the work of (Amidu, Aluko, Nuhu & Saibu, 2007) in the sense that it identified the comparative performance of direct real estate with indirect real estate investment. It considered direct property of eight non-listed property companies, and UACN property development company (the only listed property company in Nigeria) shares within the period of 1999 to 2004. The study on the performance level of the media showed that commercial property performed better at direct property intra-media level.

Morawski, Rehkugler and Füss, (2008) explored whether securitized real estate is to be considered as a regular equity investment or equivalent as in an investment in the direct real estate market. A correlation analysis is made, and the data periods used when comparing the two different investment types have been quarterly data from 1978-2006 for the US market and monthly data from 1983 - 2006 for the UK market. In the short-term, real estate stocks show similarities to the stock market in terms of co-movements, but this relationship has declined in the end of the data period. In the long-term, the interdependence is much stronger between securitized real estate and direct ownership of real estate. Furthermore, it can be seen that in the long term, securitized real estate tends to lead the returns of the direct real estate market.

McAllister (2000) assessed the merits and demerits of direct and indirect methods of international property investment. The author reviewed many studies carried out in the developed economies and argued that direct investment will only be justifiable where investors are confident that they have the ability to identify under-priced assets, can manage the assets as effectively as local property companies and can handle associated investment risks. He concluded that for many investment funds, indirect investment in specialist property companies would seem to offer a more suitable approach of gaining exposure to international property market. He also observed that general indirect markets are more transparent, highly liquid and can be easily measured in terms of performance.

Osagie, Gambo, Anyakora and Idowu (2012) examined commercial (office and shop) hedging ability against inflation in Lagos city, Nigeria between 1998 and 2008. The study employed the usage of mult-equation technique to establish both short and long runs' dynamic capacity of rental values. The result indicated that office property does not provide good hedge in the short run, but provides good hedge over long run period; while shop property does not hedge against inflation both periods (long and short runs).
Ogunba, Obiyomi and Dugeri (2013) analysed hedging capacity commercial property investment in Ibadan between 2000 and 2010. Simple regression was employed to determine least squares characteristics of the data employed, the result revealed that commercial property investment was poorly and perversely hedged against actual and unexpected inflation respectively, and provided a good and effective hedge against expected inflation.

Dabara (2014) correlated inflation with return on commercial property investment in Akure between 2002 and 2012. Unit root test was carried out through Philip-perron and regression analysis. The result of the test revealed that commercial property in Akure provided a perverse hedge against actual and expected inflation while unexpected inflation is perversely hedged.
Umeh and Oluwasore (2015) studied the hedging ability of residential property investment between 2002 and 2014 in Ibadan metropolis. The result of simple regression through ordinary least squares (OLS)

model revealed that residential investment failed to hedge against actual inflation in the market but provide a complete hedge expected inflation, provided partial hedge against unexpected inflation.
Wahab, Ola, Sule, Adepoju & Dodo (2018) investigated the inflationary characteristic of house price in Abuja. The employed fully modified ordinary least squares to establish both long run and long run inflationary characteristics. The finding revealed that housing markets failed to provide a complete hedge across all the markets within a possible short run. The result of cointegating regression revealed that housing market provide a complete hedge across all the market in the long run, Osiemo, Obere and Odada (2018) examined the relationship between inflation and real estate investment in Kenya between 1985-2018. The study employed VAR model, pairwise granger-causality test and *stationarity test for the time series through* unit root tests. The result found that, in the long-run, real estate's contribution are associated with 2.177 increase in current inflation rate but associated with a 3.455 decrease in the subsequent year's inflation showing an inverse relationship making the researcher to conclude that real estate investment exhibited a hedging ability on inflation in the long-run.

Dittmann (2024) assessed the potential of residential property in Poland as an inflation hedge investment between 3Q2006-4Q2022. The study was conducted using innovative measures of the level of inflation hedging. The study was made for Poland's six largest local residential markets, for two types of investments, for different investment horizons (from 6 to 15 years). The study found that inflation hedging across the selected housing investment market was found to be very low.
However, none of these empirical studies have investigated the effect of inflation hedging on residential market in recent time following the aftermath of subsidy removal. the need to investigate the general assumption that rising in return due to subsidy removal in residential market require empirical investigation.

3.0 METHODOLOGY

The primary data on rental values and sale values was collected through questionnaires from primary source. The study required the selection of registered firms of estate surveyors and valuers in Abuja to give information on rental and capital values, residential property types. The Nigerian of Institution of Estate Surveyors and Valuers (NIESV) through its annual Directory (2017) put the figure of active estate surveyor and valuer firms at 110 from which the relevant information on residential property investment were obtained.

Systematic random sampling was adopted to select residential properties that have required data for the study. Systematic random sampling involved the selection of residential property units of the sample at a fixed interval on sampling frame with the first number selected at random.
Simple regression: the regression model was adopted to beta coefficient in the regression analysis in order to determine hedging characteristics of direct and indirect property investment. the study also determines the overall influence of the model and to identify the significant of the model.

$$\text{Log}Y = \mathbf{a} + \beta_1 \mathbf{\log x_1} + \beta_2 \mathbf{\log x_2} + \mathbf{.....} + \beta_n \mathbf{\log x_n} + \mathbf{e}$$

A complete hedge against inflation i.e if the value of β is not significantly less than 1, A partial hedge against inflation i.e if the value of β is significantly less than 1, Zero hedge against inflation if the value of β is not significantly different from zero.

The sample size for each residential sub-market in Abuja was quantitatively determined using the model developed by Frankfort-Nachmias (1996) for sample size determination as follows:

$$n = \frac{Z^2 pqN}{e^2(N-1) + Z^2 pq}$$ equ1

Where N = population size
n = sample size
p = 95% confidence level of the target population
q = 1- p
e = Acceptable error Z = 1.96(the standard normal deviation at 95% confidence level)

Table 3.1: Population and Sampled Size for the Study

Study areas	Total Residential Transactions		Sampled Sized Determine	
	2B/R	3B/R	2B/R	3B/R
Kubwa	97	67	33	40
Gwaripa	41	82	21	37
Lugbe	80	90	30	39
Total	**218**	**239**	**84**	**116**

4.0 RESULTS AND DISCUSSION

The trend in rate of returns of two-bedroom properties (2B/R) in Abuja is presented in table 1. The table revealed that the fluctuated rate of return across the study areas. In Kubwa the highest return was recorded in 2024 at 21.03%, followed by 2023 and 2022 at 19.01% and 17.23%. In Gwarinpa, the highest was recorded in 2017 at 11.49%, followed by 2016 and 2024 at 10.28 and 10.01% respectively. Finally, Lugbe recorded highest rate of returns in 2022 at 9.85, followed by 2020 and 2017 at 9.42% and 9.00% respectively.

Table 1: Rate of Returns on 2B/R Direct Property Investment in Abuja

Year	Kubwa	Gwarinpa	Lugbe
2015	11.56	9.12	9.85
2016	14.73	10.28	8.99
2017	16.87	11.49	9.00
2018	10.15	8.61	5.17
2019	11.22	9.02	4.31
2020	15.38	8.35	9.42
2021	12.44	9.50	4.52
2022	17.23	12.1	8.02
2023	19.01	9.03	6.12
2024	21.03	10.01	8.23

Source: Field Survey, 2023

The trend in rate of returns of two-bedroom properties (3B/R) in Abuja is presented in table 2. The table revealed that the fluctuated rate of return across the study areas. In Kubwa the highest return was recorded in 2020 at 21.54%, followed by 2024 and 2023 at 19.01% and 17.23%. In Gwarinpa, the highest was recorded in 2018 at 19.78%, followed by 2021 and 2021 at 15.65 and 15.58% respectively. Finally, Lugbe recorded highest rate of returns in 2023 at 11.12, followed by 2020 and 2021 at 10.36% and 8.99% respectively.

Table 2: Rate of Returns on 3B/R Direct Property Investment in Abuja

Year	Kubwa	Gwarinpa	Lugbe
2015	14.55	13.87	5.16
2016	20.73	14.09	6.13
2017	16.91	15.65	9.49
2018	15.17	19.78	5.31
2019	19.38	14.89	5.72
2020	21.54	15.23	10.36
2021	16.23	15.58	9.87
2022	16.48	6.06	8.99
2023	19.01	10.03	11.12
2024	21.03	10.01	8.23

Source: Field Survey, 2024.

The result of performance of direct and indirect property investment is presented in Table 3. the result showed the ranking of performance of the investment based on risk return (coefficient of variation) and risk-adjusted return. 2B/R and 3B/R Kubwa outperformed all other residential investment and was ranked 1st and 2nd

Table 3: Descriptive Statistics of Residential Property Investment

Property market	Mean	Standard Deviation	Sample Variance	Coefficient of Variation	Ranking
Kubwa 2B/R	18.103	2.55009	6.502957	0.14	1st
Gwarinpa 2B/R	13.519	3.849506	14.8187	0.28	4th
Lugbe 2B/R	8.038	2.261675	5.115173	0.28	5th
Kubwa 3B/R	14.962	3.610352	13.03464	0.24	2nd
Gwarinpa 3B/R	10.039	2.2966	81394.14	0.23	3rd
Lugbe 3B/R	7.363	2.126144	4.52049	0.29	6th

Source: Author Computation

The trend in actual, expected and unexpected inflation is presented in Table 4. The actual inflation experienced double digit rate between 2015 and 2019, after which there was single digit between 2020 and 2022. Later move to double digit in 2016 and 2017. Expected inflation experience single digit between 2015 to 2018, after which there was double digit rate from 2019 to 2024. Unexpected inflation experienced a single digit rate over the period and negative unexpected rate was observed between 2019 and 2022

Table 4: Inflation Indices in Nigeria

Year	Actual Inflation (%)	Expected Inflation (%)	Unexpected Inflation (%)
2015	11.5	9	2.5
2016	12.6	9.2	3.4
2017	13.8	6.6	7.2
2018	10.8	8.9	1.9
2019	12.2	12.9	-0.7

2020	8	10.7	-2.7
2021	8	12.1	-4.1
2022	9.55	14	-4.45
2023	18.55	14.35	4.2
2024	15.37	12.4	2.97

Source: Central Bank of Nigeria Annual Bulletin, 2024

The inflationary characteristic of property investment presented in Table 5 was examined using ordinary least square regression. 2B/R in Kubwa, Gwarinpa and Lugbe market provided a complete hedged against both expected and actual inflation rate but partially hedged against unexpected inflation over a period. This therefore revealed that direct property investment is better hedged against unexpected inflation than indirect property investment.

Table 5 Hedging Characteristics Residential Property Investment

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Hedging Status
		B	Std. Error	Beta			
	(Constant)	87.260	2.157		40.452	.000	
Kubwa	EI	1.290	.022	.943	57.992	.000	Complete hedge
	AI	1.283	.035	.997	36.593	.000	Complete hedge
	UI	.671	.171	.068	3.921	.006	Partial hedge
	(Constant)	93.217	2.193		42.498	.000	
GWARINPA 2B/R	EI	.847	.023	.999	37.440	.000	Complete hedge
	AI	.843	.027	.996	31.529	.000	Complete hedge
	UI	.494	.174	.076	2.838	.025	Partial hedge
	(Constant)	95.748	2.011		47.603	.000	
LUGBE 2B/R	EI	.593	.021	.997	28.608	.000	Complete hedge
	AI	.592	.021	.995	28.809	.000	Complete hedge
	UI	.449	.160	.098	2.812	.026	Partial hedge

2B/R, EI=Expected Inflation, AI=Actual Inflation and UI = Unexpected Inflation

The result of 3B/R property investment showed presented in Table 6 revealed that 3B/R in Kubwa. Lugbe and Gwarinpa market provided a complete hedged against both expected and actual inflation rate but Kubwa, Lugbe and Gwarinpa partially hedged against unexpected inflation. This therefore revealed that direct property investment is better hedged against unexpected inflation than indirect property investment.

Table 6 Hedging Characteristics of Direct (3B/R) Property Investment

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Hedging Status
	B	Std. Error	Beta			

KUBWA 3B/R	(Constant)	87.425	4.044		21.617	.000	
	EI	1.593	.042	.999	38.204	.000	Complete hedge
	AI	1.585	.053	.996	30.099	.000	Complete hedge
	UI	.821	.321	.067	2.558	.038	Partial hedge
GWARINPA 3B/R	(Constant)	91.088	8.189		11.124	.000	
	EI	1.198	.084	.983	14.188	.000	Complete hedge
	AI	1.196	.079	.983	15.097	.000	Complete hedge
	UI	1.064	.650	.113	1.637	.146	Partial hedge
LUGBE 3B/R	(Constant)	93.392	1.567		59.596	.000	
	UI	-.625	.125	.210	-5.021	.002	Partial Hedge
	AI	.734	.032	.992	22.701	.000	Complete hedge
	EI	.740	.016	.740	45.792	.000	Complete hedge

a. **Dependent Variable: 3B/R**

5.0 CONCLUSION AND RECOMMENDATION

The study found that direct 2B/R and 3B/R property investment is completely hedged against actual and expected inflation rate but partially hedged against inflation rate but indirect property investment is completely hedged against actual and expected but perversely hedged against unexpected inflation. Result further revealed that the influence of inflation rates on direct property investment is statistically significant. Inflation rates influence indirect and direct property investment by 85% and 86%-71% respectively. The study revealed that unexpected inflation is major type inflation that is not completely hedged by both 2B/R and 3B/R residential property investment provided a partial hedge over the period of study. It has been discovered that both residential property investment provided a complete hedged against actual and expected inflation. Therefore, it is recommended that government should encourage diversification of investment into real estate in that it is inflationary-hedged.

REFERENCES

Adegoke, O.J. (2009). "A Study of Performance of Residential Property Investment Relative to Security Investment in Lagos Metropolis" *Journal of Environmental Design and Management*. 2(2), 49-53.

Amidu, A., Aluko, B.T., Nuhu, M.B. & Saibu, M.O. (2007). Real Estate Securities and Other Investment Assets. *Journal of Property Investment and Finance. 26(2), 151-161.*

Amidu A, & Aluko B.T. (2006). 'Performance Analysis of Listed Construction and Real Companies in Nigeria' *Journal of Real Estate Portfolio Management 12 (2) 2006, 177-185.*

Bello, M.O. (2003). 'Comparative Analysis of the Performance of Residential Property Investment and Investment in Securities in Lagos, Nigeria' *Journal of Nigerian Institution of Estate Surveyors and Valuers 26 (4) 2003,. 7-1.*

Dabara, D.I. (2014). The Inflation-Hedging Performance and Return Characteristic of Residential Property Investment in Gombe, Nigeria. *AIR 3(1), 71-83*.

Emele C.R and Umeh O.L (2013) A Fresh Look at the Performance and Diversification Benefits of Real Estate Equities in Nigeria: Case Study of Real Estate Equity and some Selected Common Stocks *International Journal of Development and Sustainability 2(2) (2013): 1300-1311*

Haw, K.T. (2003). Investment Characteristics of Malaysia Residential Market Sector. 9th *Pacific Rim Real Estate Society Annual Conference Brisbane*, Queensland Australia. 20-22 January, 2003.

Idowu, O.B.A. (2006) 'Analysis of Residential Property Returns in Lagos Metropolis (1991-2004) *Environlink-Journal of Physical and Environmental Development 1 2006 pp. 166-176.*

Mcallister L.C (2000) 'Real Estate for the Long Term: the Effect of Return. Real Estate Economics, Vol. 30, No. 3, pp. 48-59.

Morawski, J., Rehkugler, H. & Füss, R. (2008). The Nature of Listed Real Estate Companies: Property or Equity Market? *Financial Markets and Portfolio Management,* 22, 101-126.

Olaleye, A. Adegoke, O.J. and Oyewole, M.O. (2010). "A Comparative Analysis of the Investment Features of Realnestate and Stocks in Nigeria", *Real Estate and Development Economics Research Journal,* Vol. 2 No1 pp. 49-69.

Olaleye, A. (2008), "Property Market Nature and the Choice of Property Portfolio Diversification Strategies: The Nigeria Experience", *International Journal of Strategic Property Management*, 12 (3) 35–51.

Olaleye, A. (2005), "A Study of Real Estate Portfolio Diversification Strategies in the Nigerian Property Market", *Unpublished PhD thesis, Department of Estate Management, Obafemi Awolowo University, Ile-Ife*.

Olaleye A. (2000) 'A Study of Property Portfolio Management Practice in Nigeria', *an Unpublished M.Sc. Thesis of the department of estate management, Obafemi Awolowo University, Ile-Ife, Nigeria 2000.*

Osagie, Gambo, Anyakora and Idowu (2012) Risk –Adjusted Performance of Real Estate Stock. Evidence from Developing Markets. *Journal of Real Estate Research. 26(4), 371-395.*

Oyewole, M.O. (2006). 'A Comparative Study of the Performance of Direct and Indirect Property Investment in Lagos', *an Unpublished M.Sc. Thesis of the Department of Estate Management, Obafemi Awolowo University, Ile-Ife. 2006.*

Pagliari, J. L., Scherer, K. A., & Monopoli, R. T. (2003). Public versus Private Real Estate Equities. *The Journal of Portfolio Management, Special Issue*, 101-111.

Umeh, O.L. (2014). Relative Performance of Real Estate Equities and Other Selected Stock: the Nigeria Market Situation. *ATBU Journal of Environmental Technology.7(1), 22-32.*

Umeh, O.L. & Oluwasore, O.A. (2015). Inflation Hedging Abilities of Residential Properties in Selected Area of Ibadan Metropolis, Nigeria. *ATBU Journal of Environment of Technology.8(2): 93-106.*

Wahab, M. B., Ola, O. S., Sule A. I., Adepoju, A. S. & Dodo, Z. U. (2018) Inflationary Hedging Capacity of House Price Returns In Emerging Economy Of Nigeria. European journal of social science *(IX-II): 152-166* . http://dergipark.gov.tr/euljss **http://en.lau.edu.tr/euljss/**

Wurtzebacl, F.T, Myer, FCN & Webb, JR (1991). REITs as an Asset Class in International Investment Portfolios', Financial Analysts Journal, Vol. 53, No. 2, pp. 55-61.