CHANGING MACROECONOMIC INDICATORS AND THE RENTAL VALUES OF RESIDENTIAL PROPERTIES IN EDE, NIGERIA

Augustina Chiwuzie[1], Daniel Ibrahim Dabara[2], Olusegun Joseph Omotehinshe[3], Edith Mbagwu Prince[4] and EleOjo Grace Aiyepada[5]

[1,4,5]*Department of Estate Management, The Federal Polytechnic Ede, Nigeria*
[2]*Department of Estate Management, University of Ibadan, Nigeria*
[3]*Department of Building Technology, The Federal Polytechnic Ede, Nigeria*

There has been a growing concern in prefiguring the role of macroeconomic indicators in property market operations. This study investigated the performance of the residential property market in Ede, with a view to explore the influence of macroeconomic indicators on rental values. Thus, the study analysed residential properties' rentals in Ede; and assessed the relationship between macroeconomic indicators and residential properties' rentals. The study employed primary and secondary data for the period 2002 -2019. The primary data comprised annual rental values for five residential property types; obtained through structured questionnaires administered on landlords in the study area. The secondary data comprising macroeconomic indicators in Nigeria were sourced from the database of the National Bureau of Statistics and Central Bank of Nigeria. Descriptive and inferential statistics were employed in the data analysis. The results revealed a continuous increase in rentals of the five types of residential properties studied. Rental growth rates in the residential property market exhibited random fluctuations with a mean annual growth rates of 15.78%, 15.82%, 15.30%, 18.19% and 19.12% for tenement room, studio room, one-bedroom, two-bedroom and three-bedroom flats, respectively. However, the mean of annual rental growth rate across the considered residential property types was not significantly different at 0.05 level; $F(4, 80) = 0.307$ $p = .872$. Furthermore, there was a very strong positive relationship (0.984) between macroeconomic indicators and rental values of residential properties. Exchange rate and gross domestic product (GDP) had significant positive influences on rental values (p-value =.000 and 0.001, respectively, while the lending and inflation rates exhibited insignificant positive and negative influences, respectively on rental values. The implication of this study is the presence of feedback relationships between GDP and rental value and between exchange rates and rental values of residential properties which, suggests that these variables are determined contemporaneously.

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[1] okaugusta@yahoo.com; chiwuzie.augustina@federalpolyede.edu.ng

[2] danieldabara44@gmail.com

[3] dugumadugu@yahoo.co.uk

[4] edithmbagwu@gmail.com

[5] pade202@yahoo.com

INTRODUCTION

All over the globe, the success of real estate investments is considered very critical due to the vital role it plays in the socio-economic development of countries. The residential property, a sub-sector of real estate investment, remains a critical asset that guarantees adequate housing provision to nations. The value of housing in man's welfare has recently demonstrated with the ongoing COVID-19 pandemic. Residential property became the first line of defence against the ravaging COVID-19 (many governments have imposed stringent restrictions on outdoor activities to protect people from and curtail the spread of the virus). Investments in residential properties are increasingly popular in Nigeria and all over the world. Given the significant role that residential property wealth appears to play in the overall economy, demand for residential units has continued to exceed the supply. In urban centres, "more than 90% of residents patronise privately owned properties, thereby heating up the demand side" (Olukolajo et al., 2015, p. 42). The size and scale of the housing market, therefore, makes it an appealing and worthwhile sector for many investors. Income flow is, therefore, of importance to property investors and also the economic policymakers. Rental income is the fundamental parameter investors use for appraising real estate investment viability (Boon & Higgins, 2007). Activities in the residential segment of the real estate sector have continued to soar considerably in most urban centres, primarily due to rising demand. Hence, the need to study the trends in rental values of residential properties as well as elements affecting rentals in the housing market.

Radzewicz (2013) posited that the housing market is ever changing, resulting from influences of the market players' actions, in addition to other proximate factors. Influences on the property market could be economic or non-economic, and these factors affect rental values either negatively or positively. Samy (2015) observed that over time, performance of housing investment has been assessed based on non-economic features, which include location, neighbourhood and physical/structural features. However, Olatunji et al., (2017) stressed that the property investment market is a critical part of the nation's economic market, hence, the need to study economic elements and its influences on the property investment market. More so, the imperativeness of improved performance in the property investment market necessitated consideration of more than non-economic factors (Olatunji et al., 2017). Hence, the growing interest in modelling the impact of macroeconomic elements in property investment market operations.

According to Ezeokoli et al. (2019), macroeconomic factors are the leading indicators that portends the present-day trends in the economy. Ezeokoli et al. further posited that macroeconomic indicators have no direct nexus with the

investment; nonetheless, they shape the conduct of such investment. Macroeconomic indicators comprise GDP, money supply, inflation, interest and exchange rates, level of employment and unemployment, trade balance, among others. Fischer (1993) studied housing market as an integral part of a country's economy and disclosed the presence of reverse inference on one another. Therefore, the existence of a reverse linkage between the housing market and the macroeconomy, infers that whatever affects the economy also affects the property market and vice versa. Thus, a time of economic volatility results in disequilibrium in the housing market (Dehesh & Pugh 1998). Changes in rental values are expected in the property market. Radzewicz et al. (2011) asserted that even the least of change might have a multiplier effects on other elements of the property market system, thus revising the relationships and dependencies ensuing in the market. On the other hand, Lynn (2007), proffered that when one-element alters, there is always a ripple consequence, which in turn significantly impacts on the economy.

Results of empirical studies from different localities ascertained that macroeconomic indicators are closely linked with property prices, rentals and returns. However, these studies reported varying directions of the relationship between the variables and also, different degrees of influence. Some of such studies include Brooks and Tsolacos (1999), De Wit and Van Dijk (2003), Eldelstine and Tsang (2007), Karoki (2013), Miregi and Obere (2014), Olatunji et al. (2017). Specific findings from above studies notwithstanding, these researches established an existing relationship between the economy and property investment market; and that the influences of the economy affect the contribution of the property sector to national economic development. The effects of the macroeconomic indices on rental values of property investment have been the primary source of debate among real estate investors. Ezeokoli et al. (2019) asserted that property investors generally, have frights concerning the safety of their investments. The investors' fear is amplified by the dearth of information in Africa and other emerging property markets. As a result of the information gap, investors in many African countries cannot effectively price and manage risks in the property market. This study will contribute to the debate on the role of macroeconomic indicators in property market operations. The results of this study will be beneficial to real estate investors and professionals in Africa and other continents, by advancing a better understanding of how the residential property market relates to the macroeconomic indicators. Hence, this study investigates the performance of the residential property market in Ede, with a view to exploring the influence of macroeconomic indicators on the rental values. Specifically, the study analysed residential properties' rentals in Ede; and assessed the relationship between macroeconomic indicators and residential properties' rentals. This paper is structured as follows: the introductory part is followed by a brief review of the related literature on the subject matter. The next section presents the methodology adopted for the study, after which the results and their discussion were presented; the paper closes with a concluding remark.

LITERATURE REVIEW

Results of empirical studies conducted both in developed and developing counties have shown the existence of relationship between real property market's growth and macroeconomic indicators. Changes in property rentals are influenced by macroeconomic variables, such as interest, inflation, GDP, inflation, monetary policy, employment, and unemployment rates. In developed countries, Giussani et al. (1992) related office rentals across European cities and the economic activity using the cross-section and time-series analysis. The study employed annual data for the period 1983 - 1991 to analyse the relationship between fluctuations in office rents and economic activity. The results revealed that gross domestic product (GDP) is the main determinant of office rents in Europe. In a similar study conducted between 1982 and 1993, D'Arcy et al. (1994) found that office rents across twelve European cities were determined by Gross Domestic Product (GDP) and unemployment rates. Equally, in Brooks and Tsolacos (1999), the effect of economic and financial factors on property return in the U.K was evaluated using multi-equation regression analysis. The study employed quarterly data for the period 1985 – 1998. The findings revealed unexpected inflation has lagged effect (with a noticeable negative influence) on property return, while short term interest rates were found to exert negative shock on property return.

De Wit and Van Dijk (2003) examined the outcomes of the effect of economic growth and the interplay of demand supply forces on direct real estate return on a macro level. Results of the regression analysis revealed that GDP and inflation rate have positive impact on the prices of direct real property whereas the unemployment rate had a significant negative relationship with a capital appraisal. Eldelstine and Tsang (2007) also employed quarterly data between 1988 and 2003 to study the impact of macroeconomic indicators on the residential property market in the United States. The findings indicated that the U.S housing market was significantly impacted by employment and interest rate. Apergis (2003 also reported that employment rate had a significant positive impact on real estate performance. Relatedly, Wei and Morley (2012) investigated the extent to which macroeconomic indicators interacted with property return in the US market. Findings from the study revealed that changes in property return were significantly influenced by interest rate. This result is consistent with findings in earlier researches such as Joshi (2006), Sari et al. (2007) and Schalck and Antipa (2009).

In Kenya, Karoki (2013) assessed the determinants of residential real estate prices and found housing price to be negatively correlated with interest rates; and positively correlated with GDP and level of the money supply. Interest rate had the most significant influence on house prices. Nzalu (2013) also examined indicators such as GDP growth, interest rate, inflation rates and population growth as determinants of real estate growth. Findings from the research revealed that GDP is the most significant determinant of real estate growth in Kenya. Besides, changes in interest rate and inflation were also observed to have significantly contributed to the growth of real estate. Likewise, Miregi and Obere (2014) reviewed the influence of four selected market fundamental indicators on property values using monthly time series for the period between

January 2001 and December 2013. The study adopted the unrestricted vector autoregressive (VAR) model for data analysis. The VAR estimate results showed a property price that is reliant on its lagged values. Inflation and interest rates were found to have insignificant lagged positive and negative influence on property price, while none of building cost and stock prices explained the existing property values. The study concluded that property pricing trend in Kenya is not fundamentally supported, at least by the inflation rate, interest rate, stock prices and building cost. Bioreri (2015) explored the effect of exchange rate among other macroeconomic variables on the performance of real estate performance. The study utilised quarterly data between 2000 and 2014 obtained from 42,180 registered real estate firms. Data collected was analysed using OLS. Results from the study revealed that exchange rate had a coefficient of 0.192 and p-value of 0.422. This suggests that exchange rate was not a significant determinant of real estate performance and as such, was not an essential factor. Bioreri however, acknowledged that in theory, exchange rate influences the operations of property sector because of its information content to the stakeholders.

In Nigeria, Ojetunde (2013) examined the relationship existing between the housing market and macroeconomic variables employing yearly figures for the period between 1984 and 2011. The result of the multi- equation regression adopted for data analysis revealed that GDP, inflation, exchange rate and interest rates had a long-term relationship with housing rents in Nigeria. In addition to this, the finding suggested that GDP and exchange had significant positive effect on residential rents and predicted 31.4% of the changes in house rent. On the other hand, the interest rate was found to have a significant negative effect on house rents while inflation rate had a negative but not significant correlation with residential property rents. Ojetunde concluded that in the Nigerian context, house rents had strong and positive correlation with GDP and exchange rates.

Udoekanem et al. (2015) examined the drivers of office rents in three districts of Abuja, Nigeria. The study utilised single-equation regression to analyse the link between macroeconomic indicators and office rentals from 2001 to 2012. The study found that macroeconomic indicators explained the office property rental variations in the selected districts. GDP and vacancy rate were the primary predictors of office rents in the districts. Findings in Udoekanem et al. also revealed that though inflation rate granger causes rent fluctuations in the study areas, there was evidence that inflation rate does not have a significant influence on rental values of office property in the entire districts.

Olatunji et al. (2017) using residential property total returns index data, and time-series data for annual macroeconomic indices evaluated the influence of macroeconomic variables on Abuja housing market. The study utilised sales and lettings evidences spanning between 2001 and 2015. A representative sample size of 286 and 436 was quantitatively determined from sample frames of 429 transactions of sales and 1213 lettings respectively. The result revealed that macroeconomic variables had a long-run relationship with housing returns. Further, the result showed that variation in property returns across seven housing markets were significantly impacted by macroeconomic

variables. The study concluded that the GDP, exchange rate, inflation, interest rate and employment rate had a significant impact on housing return in Abuja, Nigeria. This result of a significant positive impact of GDP on house rents is consistent with that reported in Chiwuzie et al. (2019).

Elile et al. (2019) investigated the individual effects of inflation, exchange rate, and GDP on the performance of property investment in Nigeria. The research utilised a quantitative research method and utilised secondary data for a period of 37 years (1980- 2017). OLS multiple regression with a lagged dependent variable model was used to analyse data collected. The results revealed that inflation and GDP each had a significant positive influence on property sector growth, while the exchange rate exhibited a significant negative influence on property sector operation. Likewise, Awa et al. (2019) examined the global determinants of direct real estate investment returns in Nigeria. Data for the study were sourced from practising estate surveyors and valuers in Abuja, Lagos and Port-Harcourt. Findings from the study revealed GDP, unemployment rate, inflation, exchange rate and tax rate as the dominant global factors that determine direct real property investment returns in Nigeria.

Previous studies had proven the effect of macroeconomic indicators (GDP, inflation and interest rates among others) on rental values and prices of the real estate investments. However, there are divergent and contradictory results on the direction of the relationship between the selected macroeconomic indicators and property investments as well as the explanatory influence of each macroeconomic indicator on property investments. Also, most of the research were carried out in developed economies. Although, similar studies were carried out in some African countries including Nigeria, no study has related macroeconomic variables to the residential property market in the study area currently investigated. This has created a gap to be filled. This study considered the dominant housing categories in the study area and Nigeria macroeconomic variables that are highly unstable, including GDP, exchange, inflation and lending rates.

RESEARCH METHODS

This study utilised annual rental data of five residential property categories. The residential properties in Ede Town were categorised on the basis of numbers of rooms and ancillary facilities. The categories of residential property used for this study include tenement rooms (consisting single rooms with common toilet and kitchen); studio apartment also known as "one-room self-contained" is a room attached with toilet and kitchen; one-bedroom flat (a bedroom and living room attached with kitchen and toilet); two and three-bedroom flats respectively. Dabara et al. (2018) observed that the above-mentioned housing categories are predominant in the study area. Hence, their consideration in the current study. The data on rental values for the period 2002 - 2019 was obtained through structured questionnaires administered on landlords in the study area. The choice of the study period was premised on data availability. Preliminary investigations revealed that rental data of

residential properties covering the study period were not readily available in estate firms. However, the authors were able to source data from landlords who rented out their residential property within the study period.

The sample size for this research was estimated using Cochran (1977) recommendation for an infinite population. Thus, a total of three hundred and eighty-five (385) copies of questionnaire were distributed to the respondents through random sampling. Out of this, two hundred and eighty-seven (287) copies of questionnaire were returned indicating a 74.5% response rate. The secondary data comprising macroeconomic indicators in Nigeria for the period 2002 - 2019 was obtained from the database of the Central Bank of Nigeria and National Bureau of Statistics. The consideration of macroeconomic indicators in this research was based on the conjecture that price trends in housing market is correlated with occurrences in the real and financial economy. The macroeconomic indicators considered in this study include the GDP, exchange, inflation and lending rates. These macroeconomic indicators were selected because they have been the critical indicators studied by previous authors concerning property investment alternatives like commercial and residential properties.

Furthermore, the annual rental values of residential properties in Ede were analysed and evaluated against the selected macroeconomic variables prevailing in Nigeria. Data collected were presented in tables and charts. ANOVA was employed to analyse growth in rentals of the five house categories studied. A multiple regression model, on the other hand, was employed to determine the interrelationship between macroeconomic indicators and house rentals and also demonstrate the influence of the selected macroeconomic indicators on house rents. Pallant (2011) suggested that a multiple regression model permits a complex assessment of the interrelation amongst variables. The multiple regression model is an extension of the linear model that include several independent variables using the same theory. Thus, the interrelationship between the dependent and independent variables could be defined as:

$$Y = a + b_1X_1 + b_2X_2 + \text{------} + b_nX_n + e \qquad\qquad i$$

Where:
Y = House rent
a = Constant
X1 - Xn = the independent variables (macroeconomic indicators)
b1 - bn = beta coefficient of the independent variable which measures the amount of the variation in Y associated with a unit change in X
e = the error term assumed to be associated with the variables.

RESULTS

This segment presents the results of data analysis. The section was organised to present the trends in residential rents in Ede Town during the period between 2002 and 2019; and the relationship between macroeconomic indicators and residential rents.

Residential rents in Ede, 2002 - 2019

The rental data of the five house categories for the period between 2002 and 2019 were supplied by the respondents in both prime and non-prime areas in Ede. The annual rental data were averaged to provide an overall image of the rental housing market in Ede. The average annual rents of the five dominant house categories studied were converted to a series of index numbers using 2002 as the base year. The results are displayed in Table 1.

Table 1: Indexes of Residential properties' rents in Ede between 2002 and 2019 (2002=100)

Year	Tenement room	Studio room	One-bedroom flat	Two-bedroom flat	Three-bedroom flat
2002	100.0	100.0	100.0	100.0	100.0
2003	150.0	140.0	135.4	142.9	142.9
2004	158.3	153.3	141.6	160.8	171.4
2005	200.0	180.0	143.9	178.7	200.0
2006	208.3	186.7	156.3	205.5	257.1
2007	225.0	206.7	200.0	250.2	314.2
2008	229.2	226.7	218.0	277.0	357.0
2009	250.0	233.3	239.6	303.8	399.9
2010	275.0	260.0	291.7	357.4	485.6
2011	300.0	280.0	312.6	428.9	542.8
2012	333.4	333.3	427.2	500.4	685.6
2013	458.4	500.0	521.0	679.1	928.4
2014	604.3	600.0	583.5	768.5	1114.0
2015	750.1	766.7	750.2	1215.3	1285.5
2016	916.8	900.0	833.6	1340.4	1542.6
2017	958.5	933.3	875.2	1376.1	1642.6
2018	1000.0	1000.0	916.7	1464.2	1742.8
2019	1083.3	1066.7	979.2	1535.7	1857.1

Source: Analysis of surveyed data, 2020

Table 1 displayed rental indexes of the five residential property types between 2002 and 2019. It can be seen that during the period under review, rental values of three-bedroom flats increased by 1857.1% as against 1535.7% by the two-bedroom flat. While the one-bedroom flat increased by 979.2%, tenement room and studio room increased by 1083.3% and 1066.7% respectively. There was a continuous increase in house rents in the study area. Trends in rental indexes of the five residential property categories were demonstrated in Figure 1. All five residential property types maintained upward trends, indicating a consistent and steady increase from 2002 to 2019. Furthermore, the series of rental index numbers developed for the various residential property types were subsequently used to compute their respective annual growth rates. The results were presented in Table 2.
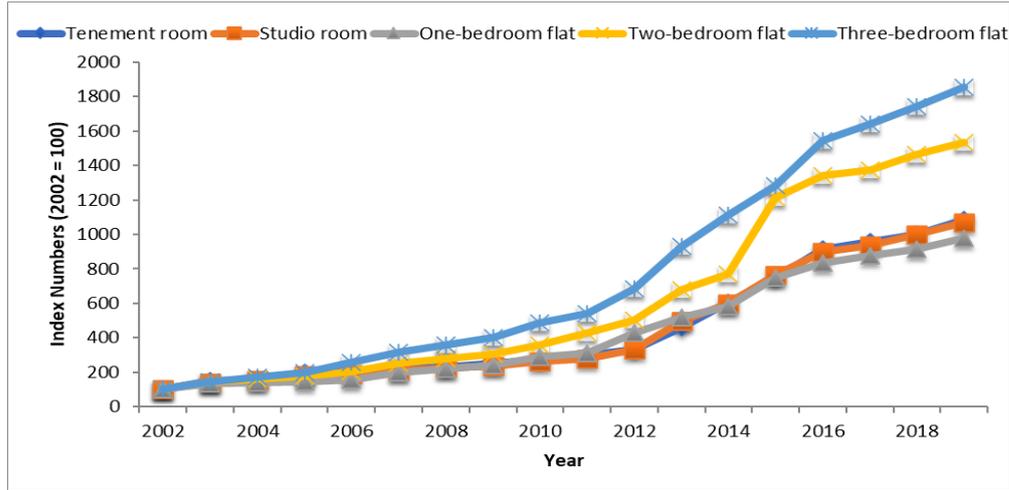
Fig. 1: Trends of Average Rents of Residential Properties in Ede, 2002 - 2019.

Table 2: Yearly growth rates of residential properties' rents in Ede, 2002 -2019

Year	Tenement room	Studio room	1-bedroom flat	2-bedroom flat	3-bedroom flat
2002	-	-	-	-	-
2003	50.00	40.00	35.42	42.85	42.85
2004	5.56	9.50	4.62	12.50	20.00
2005	26.31	17.39	10.29	11.11	16.67
2006	4.17	3.70	7.14	15.00	28.57
2007	8.00	10.71	28.00	21.74	22.22
2008	1.85	9.68	9.38	10.71	13.36
2009	9.09	2.94	9.52	9.68	12.00
2010	10.00	11.43	21.74	17.64	21.43
2011	9.09	7.69	7.14	20.00	11.76
2012	11.11	19.05	36.67	16.67	26.32
2013	37.50	50.00	21.95	35.71	35.42
2014	31.82	20.00	12.00	13.16	20.00
2015	24.14	27.78	28.57	58.14	15.38
2016	22.22	21.74	11.11	10.29	20.00
2017	4.55	3.57	5.00	2.67	6.48
2018	4.45	7.14	4.76	6.49	6.09
2019	8.33	6.67	6.82	4.88	6.56
Mean	15.78	15.82	15.30	18.19	19.12
Std. Dev.	13.85	13.16	11.02	14.56	10.10

Source: Analysis of survey data, 2020.

Table 2 showed that the rents of various house categories increased every year. The growth rates however, differ throughout the study period and from one house category to the another. The annual growth rates ranged between 1.58% and 58.14% during the period studied. This result indicated that rental growth rates in the residential property market exhibited random fluctuations. Table 2 further revealed that during the study period, the mean of the annual growth rates for tenement room, studio room, one-bedroom, two-bedroom and three-bedroom flats were 15.78%, 15.82%, 15.30%, 18.19% and 19.12%, respectively. This further implies that the mean of annual growth rates differs from one residential property category to the other. But how significant are the

differences? The answer to the above question was explored using a one-way analysis of variance and the result presented in Table 3.

Table 3: Result of ANOVA for yearly rental growth rates of residential properties

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	196.761	4	49.190	.307	.872
Within Groups	12811.946	80	160.149		
Total	13008.706	84			

Source: Analysis of survey data 2020

Table 3 presents the result of test of significant difference in the mean annual rental growth rates among the five housing categories. It can be inferred from Table 3 that $F (4, 80) = 0.307$ with p value = .872 > .05. Thus, we can conclude that there is no significant difference in the mean scores of annual rental growth rates across the considered house types. The mean plot is shown in Figure 2.

Fig. 2: Mean plot of yearly rental growth rates of residential properties in Ede, 2002 - 2019.

Relationship between macroeconomic indicators and residential properties' rent

Data on the selected Nigerian macroeconomic indicators and residential properties' rent in Ede were analysed to determine the relationship between the two variables. The sample period covers 2002 to 2019 with a total of 18 observations. Summary of descriptive statistics of the variables used in this assessment was presented in Table 4. The results in Table 4 offer some understanding on the nature of the dataset in the form of means, standard deviations, minimum and maximum values. Table 5 showed the results of the multiple regression model employed to determine the influence of each selected predictors (macroeconomic indicators) on the house rent within the period studied. Analysis of the relationship between the two variables was done in two folds. First was on the overall residential properties (Table 5), which gave a general relationship between macroeconomic indicators and rental values of residential properties. The second analysis was to reveal the relationship between macroeconomic indicators and rental values of individual residential property types (Table 6).

Table 4: Summary of descriptive statistics of variables.

Variable	Description	Mean	Std. Dev.	Min.	Max.
Rent	Nominal house rents	26778.89	20923.32	4560.00	64200.00
Lending rate	Short term - lending rate (%)	17.65	2.23	15.14	24.77
Exchange rate	Exchange rates of Nigerian Naira to 1 USD	176.59	67.46	118.55	307.00
Inflation rate	Inflation rates (%)	11.92	3.27	5.38	17.86
GDP	Real Gross Domestic Product (in Billions of Naira)	53386.13	14625.77	28957.71	71333.92

Source: Analysis of survey data 2020

Table 5: Regression analysis of macroeconomic indicators and rental values

Variables	Beta	Std. Error	T	Sig.
Lending rate	.053	15.587	.779	.450
Exchange rate	.639	.986	7.051	.000*
Inflation rate	-.063	9.789	-1.075	.302
GDP growth rate	.439	.004	4.198	.001*

R = .984
R^2 = .969
F = 101.52
Sig. = .000

Source: Analysis of survey data 2020.

Table 5 presented an overall relationship between macroeconomic indicators and the residential property market in Ede. The result revealed a correlation coefficient (R) of 0.984 which equals to a 98.4% relationship. This suggests the existence of a very strong positive relationship between macroeconomic indicators and rentals of residential properties. Moreover, the result showed a coefficient of determination (R2) of 0.969, implying that about 96.9% variation in rental values in Ede residential property market is caused by the selected macroeconomic indicators (Lending rate, Exchange rate, Inflation rate and GDP). In comparison, 3.1% variance may be explained by other variables not incorporated in the model. Also, the regression model produced an F-test of 101.52 and probability value of 0.000 < 0.05. The result of the F-test implies that the regression model was significant in forecasting the relationship between rental values of residential properties and the explanatory variables; and a good fit for the data. Additionally, the beta value in Table 5 demonstrates the degree of influence of individual macroeconomic variable to fluctuations in rental value of residential properties. The result revealed that exchange rate and GDP were positively correlated with house rents. A unit change in exchange rate will produce a 63.9% variation in residential properties' rental values, while a unit change in GDP will result in a 43.9% change in the dependent variable. Thus, exchange rate and GDP (with p-value < .05) were the macroeconomic factors that significantly influence house rents in Ede. On the contrary, lending and inflation rates exhibited insignificant positive and negative influences, respectively, with rental values.

Furthermore, an attempt was made in this study to analyse the relationship between the selected macroeconomic indicators and rents of each of the five residential property categories earlier identified. This analysis was to assess the respective influences of the macroeconomic variables to fluctuations in the rents of the individual residential property types. The results were shown in Table 6.

Table 6: Regression of macroeconomic indicators and rent (by residential property types)

Residential property types	Variables	Coefficients	Std. Error	t	Sig.	R	R^2
Tenement room	Lending rate	.014	12.861	.187	.855	.980	.960
	Exchange rate	.738	.814	7.164	.000*		
	Inflation rate	-.063	8.077	-.944	.362		
	GDP	.309	.003	2.599	.022*		
Studio room	Lending rate	.038	13.751	.464	.650	.977	.955
	Exchange rate	.704	.870	6.483	.000*		
	Inflation rate	-.071	8.636	-1.020	.327		
	GDP	.355	.004	2.833	.014*		
1-bedroom flat	Lending rate	.076	10.343	1.122	.282	.985	.970
	Exchange rate	.572	.654	6.385	.000*		
	Inflation rate	-.052	6.496	-.901	.384		
	GDP	.520	.003	5.031	.000*		
2-bedroom flat	Lending rate	.057	20.433	.724	.482	.979	.958
	Exchange rate	.668	1.293	6.358	.000*		
	Inflation rate	-.059	12.833	-.864	.403		
	GDP	.405	.005	3.337	.005*		
3-bedroom flat	Lending rate	.053	18.630	.867	.402	.987	.967
	Exchange rate	.606	1.179	7.433	.000*		
	Inflation rate	-.067	11.700	-1.279	.223		
	GDP	.447	.005	5.067	.000*		

Source: Analysis of survey data 2020

Table 6 showed that a strong relationship exists between the considered macroeconomic indicators and rents across all residential property types as established by their respective correlation coefficient (R). Besides, exchange rate and GDP growth had significant influences on rental values for all the residential property types. Conversely, lending and inflation rates showed insignificant positive and negative correlations, respectively, with rental values across the five property types.

Moreover, the corresponding coefficient of determination (R^2) revealed that the selected macroeconomic indicators explained 96.60% deviation in rents of tenement properties in the house market in Ede. Additionally, exchange and GDP growth had significant influences on the rental values of tenement category. Hence, a unit rise in exchange rate will translate to a 0.738 rise in tenement rents in Ede, while a unit rise in GDP growth will translate to a 0.309 rise in tenement rents in the study area.

For studio apartments, 95.5% variation in rents of studio apartment in Ede is caused by the selected macroeconomic indicators. Besides, exchange and GDP growth had significant influences on rental values of studio apartments. Therefore, a unit rise in exchange rate will translate to a 0.704 rise in studio apartment rents in Ede, while a unit rise in GDP growth will translate to a 0.355 rise in studio apartment rents in the study area.

For one-bedroom apartments, 97.0% variation in one-bedroom apartment rents is caused by the selected macroeconomic indicators. More so, exchange and GDP growth had significant influences on the rental values of one-bedroom apartments. Accordingly, a unit rise in exchange rate will result to a 0.572 rise in one-bedroom apartments rents in Ede, while a unit rise in GDP growth will lead to a 0.520 rise in one-bedroom apartments' rents in the study area.

For two-bedroom flats, 95.8% variation in rents of two-bedroom flats is caused by the selected macroeconomic indicators. Besides, exchange and GDP growth had significant influences on the rental values of two-bedroom flats. Hence, a unit rise in exchange rate will yield a 0.668 rise in the rent of two-bedroom flats in Ede, while a unit rise in GDP growth will yield a 0.405 rise in the rent of two-bedroom flats in the study area.

For three-bedroom flats, 96.7% variation in three-bedroom flats rents is caused by the selected macroeconomic indicators. Also, exchange and GDP growth had significant influences on the rental values of three-bedroom flats. Consequently, a unit rise in exchange rate will translate to a 0.606 rise in rents of three-bedroom flats, while a unit rise in GDP growth will translate to a 0.447 rise in the rent of three-bedroom flats in the study area.

DISCUSSION

All the five residential property types studied maintained upward rental trends, indicating a consistent and steady increase in rental levels from 2002 to 2019. These results are congruent to the findings in Dabara et al. (2018). This consistent increase in house rents in the study area has been attributed to the increased economic activities in Ede Town, which created upward pressure on the demand for residential properties (Chiwuzie et al., 2019). Furthermore, the outcome of the multiple regression analysis revealed that exchange rate and GDP (with the p-value of .000 and .001, respectively) were the macroeconomic indicators that significantly influence house rents in Ede. This finding is consistent with the results in Ojetunde (2013), Udoekanem et al. (2015), Olatunji et al. (2017) and Chiwuzie et al. (2019). GDP and exchange rates in this study have demonstrated to be useful demand-side indicators in the house market. The result of this study showed that the correlation between GDP and rental value of the residential property was positive with a coefficient of .439, at a statistically significant level of 1%. This result suggests that as GDP rose by a percentage, rental values of residential property increased by about .439%. There is no doubt that GDP as an economic variable, plays a significant role in determining rental income in the residential property market, along with the forces demand and supply. GDP is an economic status, which represents the monetary price for goods and services that a country

produced in a particular time. A rise in GDP, consequently, translates to a rise in the wealth and standard of living of the citizenry. Increase in real GDP would lead to about more people being properly employed, improvement in income levels of the population, which in turn heightens the demand for real property and rentals of fundamental real property such as the house. Therefore, GDP tend to exercise certain level of influence on residential property market. Obviously because, increased GDP results in reasonable economic empowerment for the citizens, the increase in their disposable income will enable them to afford high rents.

Also, the result shows that exchange rate relates positively with a coefficient of .639 to the rental value of the residential property at a statistically significant level of 1%. This result implies that a percentage increase in exchange rate produced a 0.64% increase in residential properties' rent. This result could be interpreted to mean that exchange rate was a significant determinant of residential rents. The entrance of the exchange rate in the model of macroeconomic indicators and rental value of the residential property could be based on the purchase and importation of building materials for the construction of real properties. Exchange rate plays a critical role in many countries, including Nigeria, where some building materials or parts of the material ingredients required for the manufacture of building materials are being imported. When currency rates in a given country depreciate as a result of increased exchange rates, the costs of importation will be high. More money will be paid by such country for imported goods such as building materials and building material ingredients. Increased prices of building materials have been linked to rising residential properties' rents. Ihuah (2015) asserted that increasing prices of building materials inflates the building construction cost, which is invariably passed as rent, leading to rising rents on residential properties

On the other hand, inflation and lending rates were found to have insignificant influences on house rent. This result agrees with findings in Miregi & Obere (2014). De Wit & Van Dijk (2003) earlier found that inflation has a positive effect on the values of direct real estate investment. Contrary to the assertion in De Wit & Van Dijk, this study demonstrates otherwise for residential properties. Inflation rate was observed to have a negative correlation of -0.063 with house rent. This result suggests that a percentage rise in inflation rate translated to about -.063 percentage decline in rental values in the study area during the period reviewed. In theory, an inflationary environment results in more money being required to pay for little commodity, including real property. Therefore, the volume of available money will influence how much households will expend on property acquisition. The operations of the real property market generally depend on price mechanism; the forces of demand and supply determine property prices/rentals. According to the law of demand and supply, all thing being equal, the prices/rentals of a property will increase when the demand is higher than the supply and vice versa. Thus, increases in rental values of properties are ascribed to increased demand and lower supply. The existence of inflation could further reduce demand for the real property below the supply resulting in decreased rental values of properties. This theory

identifies inflation explicitly as having a negative relationship with rental values. Although in this study, inflation rates related negatively with rental values with a p-value of .302 suggesting that the relationship was not statistically significant. This insignificant relationship could be interpreted to mean that inflation rate did not have a significant influence on house rent in Ede housing market and as such, it is not a meaningful indicator. This result is congruent with the findings of Ojetunde (2013) and Udoekanem et al. (2015) but disagrees with findings of Olatunji et al. (2017). However, these conflicting results are not surprising as studies such as Bello (2005) and Dabara (2014, 2015) have recognised that real property investments in Nigeria are not an all-time hedge against inflation. The result of this study further revealed that lending rate had an insignificant positive relationship with house rent in the study area. This result conforms with the findings of Ojetunde (2013) and Miregi and Obere (2014). Nevertheless, the finding on the lending rate in this current study is not congruent with the studies of Eldelstine and Tsang (2007), Wei and Morley (2012), and Olatunji et al. (2017) who identified lending rates as a significant determinant. The inconsistency in the findings regarding the influence of inflation and lending rates on direct real estate investments could be credited to several factors, which include variations in geographical locations, property markets, timeframes, macroeconomic conditions, among others.

CONCLUSION

The goal of this study was to investigate the operation of the residential property market in Ede, with a view to exploring the influence of macroeconomic indicators on rental values. To this end, the annual rent of residential properties in Ede were analysed and evaluated against the selected macroeconomic indicators (GDP, Exchange, Inflation and Lending rates) employing ANOVA and multiple regression model. The result revealed that rental values of all property types maintained upward trends during the period studied; besides, it was found that rental growth rates in the residential property market exhibited random fluctuations with a mean annual growth rate of 15.78%, 15.82%, 15.30%, 18.19% and 19.12% for tenement room, studio room, one-bedroom, two-bedroom and three-bedroom flats, respectively. However, there was no significant difference in the mean of annual rental growth rate across the house categories studied ($F (4, 80) = 0.307$ $p = .872 > .05$). The results also revealed a very strong positive relationship (0.984) between the considered macroeconomic indicators and rental values of residential properties; the selected macroeconomic indicators explained about 96.9% variation in rental values in Ede residential property market. Exchange rate and GDP (with $p = 0.000$ and 0.001 respectively) were found to significantly influence rental values in the residential property market in Ede. On the other hand, lending rate and inflation rate exhibited insignificant positive and negative influences, respectively, with rental values. The implication of this study is the presence of feedback relationships between GDP and rental value and between exchange rates and rental values of residential

properties, which suggest that these variables are determined contemporaneously.

The results of this study will be beneficial to investors and other stakeholders in the African property markets in particular and other real estate markets in the global investment space. Empirical evidence of the significant macroeconomic indicators of rental movements will guide them in making informed investment decisions. Meanwhile, basic rental determinants are known to vary from one location to another. A reliable housing market assessment to get latest pointers that impact rental changes in specific locations at any given time requires accurate statistics on macroeconomic indicators in these locations. To this end, this study recommends that the Central Bank of Nigeria and the National Bureau of Statistics should consider the publication of statistics on macroeconomic indicators for individual states. Macroeconomic statistics of individual states will ensure the determination of critical indicators for house rent movement that reflect the housing markets in a specific locality.

The present study cannot be said to be without any limitations. First, the study is focused on selected macroeconomic indicators and their influences on rental values of residential property investments in Ede, Nigeria. However, there is absence of a well-documented rental data in the study area. Also, other macroeconomic variables such as employment rate, unemployment rate and monetary policy rate were not explored. Further studies that integrate these macroeconomic variables are recommended.

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