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THE DYNAMICS OF OFFICE RENTS IN GARKI AREA OF ABUJA, NIGERIA

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Abstract

This study examined the dynamics of office rents in Garki area of Abuja, Nigeria. Primary and secondary data were utilised for the study. Primary data obtained for the study include office rental levels and office space data in the study area for the period, 2001-2012. Secondary data for the study were obtained from the National Bureau of Statistics (NBS) and the Central Bank of Nigeria (CBN) and are mainly macroeconomic variables in Nigeria for the period, 2001-2012. Appropriate statistical techniques were used for data analysis. The study revealed that real GDP growth and vacancy rate are the major drivers of rental growth in the office property market in Garki as they account for about 77% - 88% of the variation in office property rents in the commercial property market in the area. Also, Rental index for office properties in the study area using 2001 as the base year indicates progressive upward movement in rental values of office properties in the city within the study period.

Keywords: *Office Property Market; Office Rental Determinants; Rental Growth; Wuse; Nigeria*

Introduction

As an economic return to real property, *rent* varies in concept and form. Land economists over the years have found it appropriate to differentiate between the three basic concepts of rent. These have been identified by Barlowe (1986) to include contract rent, land rent and economic rent. However, the notion of rent which is implied in this study and also, which is the focus of this study is market rent. In this context, rent is the actual payments tenants make for use of the properties of others. The amount of these rental payments is normally agreed by the landlord and tenant in advance of the period of property use and thus emanate from mutual contractual arrangement. If it is determined by the interaction of demand and supply in the property market in the absence of any government interference, then it is known as commercial rent (Harvey, 1992) or market rent (Ifediora, 1993; Mackmin, 1995 and IPF, 2007). Rent is also viewed as a return on the capital value of real estate investments and landlords and property owners normally compare this return with those they could receive from alternative capital investments (Barlowe, 1986). Rental values are a key property benchmark, a major cost for tenants and a source of income for the landlord and it is often used as an indicator by other property market participants such as investors and developers to assess the value of their property investments as well as the viability of their real estate development projects.

Commercial properties constitute an important part of the investment portfolios of investors globally. Hough and Kratz (1983) argued that commercial properties make up an important component of the urban landscape. DiPasquale and Wheaton (1992) asserted that commercial properties, particularly office properties comprise a large portion of the wealth of nations. According to Clapp (1993), commercial properties provide the working environment that allows many businesses to operate efficiently. Equity investors, lenders, property valuers and appraisers, architects, urban planners and others have a vested interest in better understanding commercial properties, particularly office properties, their markets and the factors that influence them (Slade, 2000).

Some evidence in existing literature suggests that real estate market performance in one geographic area is different from market performance in another area. Thus, local market analysis is required to accurately assess real estate investment performance, including rental trend analysis (Born and Pyhrr, 1994). In Nigeria, there is the need for real estate practitioners in the country to get a better understanding of the characteristics of rental fluctuations so as to obtain important insights to the behaviour of the commercial property market in the country. This study examined the drivers of office property rents in Garki area of Abuja, the Federal Capital Territory of Nigeria.

Literature Review

Previous empirical studies on office property rental determinants reviewed for this study show that they were conducted in America, Europe, Asia and Australia. In searching through previous literature on the determinants of commercial property rental growth in African cities and particularly, Nigerian cities, not a single relevant research paper was found. This scenario has been attributed to undeveloped commercial property markets, lack of transparency

in commercial property market transactions and problem of availability and reliability of data (Yusof, 2001; Chin, 2003; Boon and Higgins, 2007).

A careful examination of the determinants of office property rental growth identified by previous empirical studies shows that there are two broad determinants of office property rents in cities. These are the demand factors and supply factors.

Demand Factors

The demand for offices is essentially a derived demand from the demand for business and personal services (Jones, 1995). Office rental movements are the results of the adjustment of the demand and supply of office space over time (Hui and Yu, 2006). Consequently, most empirical studies on office rental determinants have used both demand-side and supply-side variables to capture the dynamics of the demand/supply situations of the office rental sector. The demand factors which influence office rental growth as identified in the previous studies are economics-based and include Gross Domestic Product (GDP), inflation or change in Consumer Price Index (CPI), service sector unemployment and employment rates, service sector output and interest rate.

Gross Domestic Product (GDP)

Gross Domestic Product is the value of output produced by both nationals and non-nationals within a given domestic economy (Onodugo, 1998). The rate of increase in Gross Domestic Product is the conventional measure of economic growth (Barras, 1983; Gardiner and Henneberry, 1989; Dobson and Goddard, 1992; Giussani et al, 1993; RICS, 1994; McGough and Tsolacos, 1995; D'Arcy et al, 1998; McGough et al, 1998; Odoko, Okafor and Kama, 2004; Karantonis and Ge, 2007; Ge, 2009).

Economic growth refers to the increase in the value of goods and services produced by an economy (Odoko et al, 2004). GDP growth rate reflects the general economic performance in a particular period of time, compared to that of a preceding period (Hui and Yu, 2006).Thus, a positive GDP growth rate indicates that the economy is performing well and is a catalyst for further production of goods and services due to the sustainable demand (Giussani et al, 1993; D'Arcy et al, 1999; Hui and Yu, 2006). All previous studies on commercial property rental determinants have utilised real Gross Domestic Product as a significant demand-side variable which influence office rental growth.

As observed by Barras (1983); Chin (2003); Hui and

Yu (2006); Boon and Higgins (2007), real Gross Domestic Product is the most appropriate and widely used office demand-side measurement at an aggregate level as it gives a broad indicator of office activity, including the manufacturing and service sectors of the economy. This assumption has gained significant support from most previous empirical studies.

Inflation

Ojo (2000) describes inflation as a general and persistent increase in the prices of goods and services in an economy. Inflation has also been described as an economic situation when the increase in money supply is faster than the new production of goods and services (Mordi et al, 2007). Inflation rate is measured as the percentage change in the price index, that is, consumer price index, wholesale price index and producer price index. In economics literature, change in Consumer Price Index (CPI) has been adopted as the appropriate measure of inflation rate because it represents the cost of living and a measure of the welfare of the people (Chukwu, 1997; Mordi et al, 2007).

As argued by Essien (2002), consumer price index measures the price of a representative basket of goods and services purchased by the average consumer and calculated on the basis of periodic survey of consumer prices. In Nigeria, headline, core and non-core inflation rates are determined based on changes in the consumer price index for the appropriate periods (Chukwu, 1997; Mordi et al, 2007).This is the approach adopted in other developed and developing economies of the world (Hui and Yu, 2006; Karantonis and Ge, 2007; Ge, 2009).

Inflation rate or change in the consumer price index is primarily the indicator for the price movements of consumer goods in general (Hui and Yu, 2006). As analysed by Neo-Keynesian economists, there are three major types of inflation (Mordi et al, 2007).These are demand-pull inflation, cost-push inflation and structural inflation. Firstly, demand-pull inflation occurs when aggregate demand is in excess of available supply. This phenomenon is also known as the Phillips curve inflation. Secondly, cost-push inflation or commodity inflation or supply shock inflation occurs in the event of a sudden decrease in aggregate supply, owing to an increase in the price or cost of the commodity where there are no suitable alternatives. According to Mordi et al (2007), this type of inflation has been more common in Nigeria in recent times as evident in the rising price of housing, energy and food and is often reflected in

the price and wage spirals in firms, whereby workers try to keep up their wages with the change in the price level and employers pass on the burden of higher costs to consumers through increase in prices. Thirdly, structural inflation is the built-in inflation usually induced by changes in monetary policy.

Besides, inflation may also be classified based on the intensity, severity and persistence of the price increase (Mordi *et al*, 2007). These include hyperinflation (an extreme acceleration of yearly price increases of three digits percentage points); extremely high inflation (ranging between 50 percent and 100 per cent); chronic inflation (15-30 percent and lasting at least five consecutive years); high inflation (with rates between 30-50 per cent per year); moderate inflation (when the general price level ranges from 5 per cent to 25-30 per cent) and low inflation (when the change in the consumer price index ranges from 1-2 per cent to 5 percent). In overall, inflation exerts direct and indirect influence on prices, wages and rents, including commercial property rents.

Ibbotson and Siegel(1983) examined the response of real estate returns to inflation. The results of their study showed that real estate returns compensated investors for both expected and unexpected inflation during the period, 1973-1983. This period was a period of steady inflation in the United States. Wurtzebach, Mueller and Machi(1991) further developed the study of Ibbotson and Siegel(1983) by examining real estate performance during high and low inflation. They found that real estate, particularly office and industrial real estate is an effective inflation hedge when supply and demand are in balance. They concluded that the impact of forces from supply-demand imbalance become more important than inflation in determining real estate returns and as such the inflation hedging effectiveness of real estate is diminished during periods of property market imbalance.

Service Sector Employment and Unemployment Rates

The rate of unemployment is a key parameter of conditions in the aggregate labour market (Gwartney, Stroup and Sobel, 2000). It is a very useful measure of the overall health of the economy (Gee, 2009). Also, employment and unemployment rates normally proxy for economic conditions (Chin, 2003). According to previous empirical studies, the service sector employment rate has close links with office rental values (Gardiner and Henneberry, 1989; Dobson and Goddard, 1992; Giussani *et al*, 1993; D'Arcy *et al*, 1994; Keogh *et al*, 1998; D'Arcy *et al*,

1998; Yusof, 2001; Hui and Yu, 2006; Boon and Higgins, 2007).

Dobson and Goddard (1992); D'Arcy *et al* (1994) and Keogh *et al* (1998) asserted that the majority of service sector activity takes place in an office environment. It is believed that changes in the level of employment in the service sector are expected to reflect the trends in particular office-based industries which have generally been considered to be the most dynamic (Giussani *et al*, 1993; McGough *et al*, 1998).Thus, demand for office space is associated with employment level changes. As argued by Chin (2003), demand for office space is a derived demand reflecting the demand for the services produced by office-based activities and as such when employment in the service sector rises, it increases demand for office space and pressure rises on the rental values.

Service Sector Output

Service sector output is a similar measure to service sector employment or unemployment (Chin, 2003). As the main occupier of office properties is service sector, service sector output is an alternative measure of national activity and performance in service sector industries (Keogh *et al*, 1998). It is measured using the real wage index as it provides a good reflection of the productivity of labour over a given period of time (Hui and Yu, 2006). When service sector output increases, demand for office space increases, resulting in increase in office property rents.

Interest Rate

The Appraisal institute (2002) defines interest rate as the price of money, the rate of return or yield rate on debt capital usually expressed as the nominal percentage of the amount loaned or invested. Interest itself has been defined by Stanlake and Grant (1999) as the earnings of capital or the price which has to be paid for the services of capital. Chang and Huang (1998) believe that interest rates provide an indication of the availability and cost of capital and are considered as predictors of economic conditions. Onodugo (1998) analysed the nature of interest rate as a determinant of investment and concluded that:

"The general acceptable view is that the key determinant of the level of investment is the rate of interest. This thinking is only logical and right in that the rate of interest is the cost of borrowing investment capital. So the higher the cost of this capital, the lower the amount to be borrowed and this decreases investment. The lower the cost of this capital on the other hand, the more eager business investors would want to borrow and subsequently, increase in investment"

Interest rates and their structure are of primary importance in the financial markets as they affect capital movements, savings, investment and consumption decision (Ukeje *et al*, 2004). Interest rates are influenced by monetary policy which is formulated based on the demand and supply of funds (Ge, 2009). Previous empirical studies have used interest rates as a demand-side variable to examine office rental movements (Giussani *et al*, 1993; D'Arcy *et al*, 1994; Keogh *et al*, 1998; Hui and Yu, 2006; Boon and Higgins, 2007). However, high interest rates will discourage office property development decisions with resultant negative impact on office space supply. Consequently, an increase in office space demand with reduction in office space supply will result in increase in office property rents.

Supply Factors

Variation in office property rents reflect changes in market conditions caused by interaction of demand and supply variables (D'Arcy *et al*, 1999). Supply-side variables utilised in previous empirical studies include office building output (Tsolacos, 1995); changes in existing office floor stock (Shilling *et al*, 1987; Gardiner and Henneberry, 1989; RICS, 1994; Hendershott *et al*, 1998; D'Arcy *et al*, 1999) and vacancy rate (Hekman, 1985; Shilling *et al*, 1987; Glascock *et al*, 1990; Wurtzebach *et al*, 1991; Sivitanides, 1997). However, the use of vacancy rate as a supply-side variable in explaining office rental movements is mostly found in studies conducted in the United States of America (Hekman, 1985; Glascock *et al*, 1990; Sivitanides, 1997). The basic premise of most of these studies as summarised by Sivitanides (1997) is that, rent changes in the commercial real estate market are triggered by excess demand or excess supply, as measured by the deviation of the prevailing vacancy rate from a "natural" or "structural" vacancy rate.

Rosen and Smith (1983) defined natural vacancy rate in a manner analogous to the natural unemployment rate as the vacant stock required to facilitate the search needs of tenants looking for office space as well as the search needs of landlords looking for tenants . According to Shilling *et al* (1987) it is defined as the optimal inventory of vacant units that maximizes landlords' anticipated profits and, as such, it depends on their expectations with respect to office space demand and the marginal cost of holding vacant units. As suggested by D'Arcy *et al* (1999), vacancy variables can be considered as endogenous variables in office rent equations. This implies that they are simultaneously determined by other common variables (Wheaton and Toto, 1988;

Boon and Higgins, 2007).

Vacancy rates have been identified by numerous researchers as a key variable linked to rent cycles and building cycles. Wheaton and Torto (1988) analysed national office data for the period between 1968 and 1986 and found a clear indication that office vacancy rates and real rents were cyclical. The peaks and troughs of the real rent cycle lagged the trough and peak, respectively, of the vacancy rate cycle by about one year. They suggested that both tenants and office managers apparently recognized the need for real rent adjustments in response to vacancies above and below the structural (natural) vacancy rate.

In the United States, the natural vacancy rate was about 7.5% in 1968, but by 1988 it had increased to nearly 12%. Wheaton and Torto (1988) extensively documented evidence of real estate cycles, but cited the failure of existing explanations to provide a satisfactory answer for the boom-and-bust behavior in real estate markets. The severity of the boom-and-bust cycle has been attributed to developers lagging optimum timing, building too late in the boom, and continuing to build into the bust (Wheaton and Torto, 1988).

In his study, Chinloy (1996) established the linkage between production and absorption of apartment units to prices and rents of both existing units and new construction in a theoretical construct. His model showed that when builders' under-forecast rent increases, unexpected excess returns trigger construction. He argued that apartment market rents depend on the behavior of the vacancy rate cycle, which affects new supply and concluded that rent adjustments were sluggish to return to equilibrium after a macroeconomic shock. Other distinct supply-side variables utilised in previous empirical studies include yield rate (Hui and Yu, 2006) and construction costs (Boon and Higgins, 2007).

Furthermore, majority of the previous studies acknowledge data limitations with respect to supply-side variables. In some studies, supply-side variables are excluded due to data non-availability (Giussani *et al*, 1993; D'Arcy *et al*, 1997b and Yusof, 2001). Although previous empirical studies demonstrate that office floor space has significant effect on office rental markets, they find it less influential than demand-side variables (Hekman, 1985; Gardiner and Henneberry, 1989; RICS, 1994; Keogh *et al*, 1998; D'Arcy *et al*, 1998).

In general, supply-side variables identified and utilised in all previous studies reviewed are limited to

those which data are available and reliable with respect to the study period and the study area. In studies conducted in emerging commercial property markets such as the Asian office property markets, certain supply-side variables were excluded due to lack of representative data or incomplete data series and others replaced with available supply-side proxies (Hui and Yu, 2006; Boon and Higgins, 2007).

Methodology and Data

This study utilised primary and secondary data. The primary data basically comprise rental data of commercial properties in the study area. These include annual data on rental levels for office properties under study for the period 2001 – 2012 and their specific characteristics, occupancy levels and property floor stock. Secondary data for the study are mainly data on macro-economic indices in Nigeria for the period 2001 – 2012. These macro-economic indices are inflation rate, interest rate on real estate loans, interest rate on commerce, Monetary Policy Rate (MPR), Gross Development Product (GDP), Unemployment rate, and Employment Rate. Based on the aim of the study, only commercial investment properties were selected for data collection for the study as they constitute the only class of commercial properties which rents are paid to occupy them and such rents undergo changes in form of rental adjustment or rental growth. These properties are mainly office properties in Minna. The rental data were obtained from estate surveying and valuation firms which are active in the commercial property market in the city. Frankfort-Nachmias (1996) model was used to quantitatively determine the sample size for each of the commercial areas under study as follows:-

Table 1: Districts, Number of Office Properties with Required Data and Number of Office Properties sampled in the study area

Districts	Number of Office Properties with Required Data	Number of Office Properties sampled
Garki Area 1	128	47
Garki Area 2	79	38
Garki Area 3	96	42
Garki Area 7	106	43
Garki Area 8	98	42
Garki Area 10	131	47
Garki Area 11	108	44
Total	746	303

Results and Discussion

Rental trend for the office properties under study was established through the rental index, constructed based on the weighted rent/m^2 of office properties in the commercial property markets selected for the study. The rental index was constructed using 2001 as the base year as presented in Table 3. The result of rental index analysis for office properties in the various commercial property sub-markets in the study area indicates upward trend in rental values of office properties in the city within the study period. Annual rental growth rates were determined for the properties under study for the period, 2001 – 2012. The annual rental growth rates were determined based on the rental growth factor for office properties for each year under study. The rental growth factor for office properties in all commercial property sub-markets in Garki area of Abuja for the period, 2001-2012 is 1.0944 – 1.10879. This represents an average rental growth rate of 9.44% - 10.88% for the study period as presented in Table 2. Thus, although office properties in all the commercial areas experienced upward rental changes during the study period, the size of the rental change was higher in Garki Area 1 (10.88%) than in any other commercial area within the study area.

Table 2: Office Rental Change, Rental Growth Factor and Average Rental Growth Rate for Office Properties in the Study Areas, 2001 - 2012

Commercial Property Market	Rental Change	Slope	Rental Growth Factor	Average Rental Growth Rate (%) (2001-2012)
Garki Area 1	1.1360	0.10327	1.10879	10.88
Garki Area 2	1.1334	0.1030388	1.1085	10.85
Garki Area 3	1.1229	0.1020856	1.1075	10.75
Garki Area 7	1.0368675	0.09426	1.0988	9.88
Garki Area 8	0.9926	0.0902	1.0944	9.44
Garki Area 10	1.1053856	0.1004896	1.1057	10.57
Garki Area 11	1.0850867	0.0986	1.10367	10.37

Vacancy rates for office properties in the study area for the period, 2001-2012 were determined as presented in Table 4. This was based on the office space data for the study areas. Macroeconomic data collected for the study were based on the macroeconomic variables identified from the existing literature reviewed for the study. These variables include interest rate on general commerce, interest rate on real estate loans, inflation

rate, monetary policy rate, unemployment rate, exchange rate, real GDP growth rate and change in employment level. The Augmented Dicker Fuller (ADF) unit root test was carried out on all the data series to examine the extent of their stationarity. The ADF result is presented in Table 5.

Table 3: Rental Index for Office Properties in the Study Area, 2001 - 2012

Commercial Property Market	Office Rental Index											
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Garki Area 1	100	106.68	127.52	143.97	159.51	192.55	207.44	220.85	243.67	267.28	293.79	311.43
Garki Area 2	100	109.38	123.62	143.22	169.67	200.63	220.60	243.35	263.81	282.61	298.02	310.63
Garki Area 3	100	111.23	123.57	132.34	170.82	182.81	208.16	231.51	265.67	279.86	295.84	307.39
Garki Area 7	100	104.93	134.96	140.67	152.11	188.70	189.08	212.67	229.06	234.64	251.77	282.04
Garki Area 8	100	104.44	126.21	131.11	147.61	171.49	186.22	195.93	218.71	223.11	230.17	269.83
Garki Area 10	100	104.86	125.23	132.43	148.57	174.32	187.96	199.94	220.47	227.54	243.01	302.04
Garki Area 11	100	104.96	125.65	132.87	149.06	174.89	188.58	200.60	220.31	226.25	238.67	295.97

Table 4: Vacancy Rates for Office Properties in the Study Area, 2001-2012

Commercial Property Market	Office Vacancy Rates											
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Garki Area 1	42.35	39.93	35.41	29.57	24.73	21.50	22.23	19.25	12.61	9.46	7.81	4.23
Garki Area 2	32.57	33.73	33.52	27.19	23.03	21.84	18.56	17.08	15.25	12.48	11.45	4.92
Garki Area 3	49.01	47.04	44.33	38.31	28.95	24.16	19.30	13.76	14.65	11.81	7.95	5.22
Garki Area 7	51.43	47.23	49.39	39.86	35.97	29.27	24.78	22.35	19.56	17.12	16.69	14.44
Garki Area 8	57.95	55.44	51.35	46.36	38.9	30.11	21.72	18.45	13.76	11.05	9.32	5.5
Garki Area 10	48.21	47.52	45.23	37.03	36.63	30.30	27.55	22.38	14.12	14.59	9.69	2.93
Garki Area 11	69.13	61.44	55.31	46.23	43.45	35.8	31.16	24.74	19.21	17.4	12.27	6.53

Table 5: **Result of Stationarity Test for Data Series utilised for the study**

Variable	Computed ADF Statistic	Critical ADF Statistic at α = 0.05
△△ Office Vacancy Rate (Garki Area 1)	-4.4599	-1.9791
△△ Office Rent (Garki Area 1)	-5.5894	-1.9835
△△ Office Vacancy Rate (Garki Area 2)	-2.5967	-1.9835
△△ Office Rent (Garki Area 2)	-2.4264	-1.9835
△△ Office Vacancy Rate (Garki Area 3)	-3.9275	-1.9835
△△ Office Rent (Garki Area 3)	-6.6829	-1.9835
△△ Office Vacancy Rate (Garki Area 7)	-7.2038	-1.9835
△△ Office Rent (Garki Area 7)	-7.0612	-1.9835
△△ Office Vacancy Rate (Garki Area 8)	-2.8950	-1.9835
△△ Office Rent (Garki Area 8)	-5.6130	-1.9835
△△ Office Vacancy Rate (Garki Area 10)	-2.1684	-1.9835
△△ Office Rent (Garki Area 10)	-4.2696	-1.9835
△ Office Vacancy Rate (Garki Area 11)	-3.4702	-1.9755
△△ Office Rent (Garki Area 11)	-4.2016	-1.9835
△ Interest Rate on General Commerce	-6.000	-1.9791
△ Interest Rate on Real Estate Loans	-5.8631	-1.9791
△ Inflation Rate	-5.4785	-1.9791
△ Monetary Policy Rate	-2.8953	-1.9791
△ Unemployment Rate	-4.9116	-1.9791
△ Exchange Rate	-3.1905	-1.9791
△ Real GDP Growth Rate	-4.4665	-1.9791
△ Employment Level	-6.4692	-1.9791

The computed ADF statistics are less than the critical value at 0.05 level as presented in Table 5. The implication of this is that, the time series data on the variables utilised for the study are suitable for regression analysis. Also, based on the stationary nature of the time series data utilised for the study, Granger causality test was applied to the data to assess the causal linkage between the explanatory variables explored for the study and office rental movements in the commercial property market under study.

The result of the Granger causality test revealed that among all the explanatory variables explored for the study, only real GDP growth, vacancy rate and inflation rate were found to have statistically significant causal linkage to office rental movements in the various commercial zones in the study area and as such Granger cause office rental movements in the commercial property market in the area. Consequently, explanatory variables with no statistically significant causal linkage were dropped while those with statistically significant causal linkage were utilised to develop regression model for office property rents in the commercial property markets under study. The regression analysis was based on the theoretical framework of the commercial property rent equation in which commercial property rent is assumed to be a linear function of demand and supply factors in the commercial property market. The results of the regression analysis are presented in Table 6.

For Garki Area 1, the Durbin-Watson Statistic for the model is 0.965. This is greater than its critical value at 0.05 level (0.658) and indicates that residual serial correlation was not statistically significant in the model. Again, the collinearity statistics, that is, Tolerance and Variance Inflation Factor (VIF) are within acceptable statistical limits. This indicates that the predictor variables for the model have no problem of multicollinearity. Also, 88% variation in office property rents in the commercial property market in Garki Area 1 is explained by the model. Furthermore, real GDP growth and vacancy rate are the main drivers of rental change in the commercial property market in Garki Area 1. Although inflation rate Granger causes office rental movements in the area within the period under study, its influence in predicting office property rents in the area is insignificant. Thus, a unit increase in real GDP growth will produce 0.6627 increase in office rents in Garki Area 1 while a unit increase in vacancy rate will produce 0.2056 decrease in office rents in the area. Also, a unit increase in inflation will produce

Table 6: Results of the Regression Analysis

Commercial Property Market	Term	Coefficient	t - Statistics	p - Value	Tolerance	VIF	R^2	SE	DW- Statistic
Garki Area 1	Intercept	4.662	31.96	-			0.88	0.15853	0.965
	ΔINR_{t-2}	0.05529	0.83	0.4292	0.4903	2.0396			
	$\Delta RGDP_{t-1}$	0.6627	5.16	0.0009	0.4083	2.4492			
	$\Delta VACR_{t-1}$	-0.2056	-4.69	0.0016	0.7074	1.4136			
Garki Area 2	Intercept	4.726	21.33	< 0.0001			0.77	0.22646	1.20
	ΔINR_{t-2}	0.06453	0.68	0.5166	0.4876	2.0509			
	$\Delta RGDP_{t-1}$	0.7296	3.75	0.0056	0.3636	2.7503			
	$\Delta VACR_{t-1}$	-0.2745	-2.82	0.0225	0.5411	1.8481			
Garki Area 3	Intercept	4.753	23.25	< 0.0001			0.80	0.21229	1.01
	ΔINR_{t-2}	0.06479	0.73	0.4880	0.4880	2.0492			
	$\Delta RGDP_{t-1}$	0.6564	3.84	0.0049	0.4140	2.4155			
	$\Delta VACR_{t-1}$	-0.2433	-3.40	0.0094	0.6798	1.4710			
Garki Area 7	Intercept	4.713	25.25	< 0.0001			0.77	0.19115	0.873
	ΔINR_{t-2}	0.07093	0.89	0.4018	0.4896	2.0425			
	$\Delta RGDP_{t-1}$	0.5967	3.56	0.0074	0.3496	2.8604			
	$\Delta VACR_{t-1}$	-0.2062	-2.76	0.0248	0.5284	1.8925			
Garki Area 8	Intercept	4.721	28.40	< 0.0001			0.79	0.17279	0.861
	ΔINR_{t-2}	0.06604	0.91	0.3888	0.4889	2.0454			
	$\Delta RGDP_{t-1}$	0.5086	3.66	0.0064	0.4144	2.4131			
	$\Delta VACR_{t-1}$	-0.1817	-3.32	0.0105	0.6916	1.4459			
Garki Area 10	Intercept	4.722	25.22	< 0.0001			0.78	0.19362	0.857
	ΔINR_{t-2}	0.05498	0.68	0.5171	0.4899	2.0412			
	$\Delta RGDP_{t-1}$	0.6	3.69	0.0061	0.3806	2.6274			
	$\Delta VACR_{t-1}$	-0.2154	-3.13	0.0140	0.6116	1.6351			
Garki Area 11	Intercept	4.723	25.08	< 0.0001			0.77	0.19374	0.899
	ΔINR_{t-2}	0.05342	0.66	0.5289	0.2230	4.4843			
	$\Delta RGDP_{t-1}$	0.5853	3.60	0.0070	0.2535	3.9448			
	$\Delta VACR_{t-1}$	-0.195	-3.00	0.0172	0.7709	1.2972			

0.05529 increase in office rents in the commercial property market in Garki Area 1, *ceteris paribus*. This scenario is applicable to other commercial areas in Garki (Areas 2 - 11) as depicted by the results in Table 6. The significance of the regression models was tested using F-test. The computed F-statistic for the office rent model for office property rents in all the commercial property sub-markets in (Garki) Abuja is significant at p-value less than 0.05 as presented in Table 7. This implies that the office rent model for the various commercial areas under study fits the data utilised and as such can be used as a basis for prediction of office property rents in the commercial property sub-markets in the study area.

Table 7: Results of the Test for the Statistical Significance of the Regression Models

Commercial Property Market	Source of Variation	Sum of Squares	DF	Mean Square	F-Statistic	p - Value
Garki Area 1	Model	1.44627	3	0.48209	19.18	0.0005
	Residual	0.20106	8	0.02513		
	Total	1.64733	11			
Garki Area 2	Model	1.37943	3	0.45981	8.97	0.0061
	Residual	0.41027	8	0.05128		
	Total	1.78970	11			
Garki Area 3	Model	1.40134	3	0.46711	10.36	0.0039
	Residual	0.36054	8	0.04507		
	Total	1.76188	11			
Garki Area 7	Model	0.98518	3	0.32839	8.99	0.0061
	Residual	0.29229	8	0.03654		
	Total	1.27747	11			
Garki Area 8	Model	0.92452	3	0.30817	10.32	0.0040
	Residual	0.23885	8	0.02986		
	Total	1.16337	11			
Garki Area 10	Model	1.03625	3	0.34542	9.21	0.0057
	Residual	0.29993	8	0.03749		
	Total	1.33617	11			
Garki Area 11	Model	0.99342	3	0.33114	8.82	0.0064
	Residual	0.30028	8	0.03754		
	Total	1.29370	11			

Conclusion

Real GDP growth and vacancy rates are the significant drivers of office rental change in the commercial property market in Garki area of Abuja. Theoretically, real GDP growth is an office space demand factor while vacancy rate is a major factor for office space supply.

In addition, sustained commercial property rental performance in the area also implies enhanced annual or rateable values of commercial properties for tenement rate purposes. Such property tax in Abuja can generate huge revenue to the government if properly harnessed. Therefore, the Federal Capital Territory Administration through its relevant agencies should reform the urban property tax laws and policies to make them effective and efficient in harnessing the huge tax benefits of sustained commercial property rental growth in this area of the city

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