The Implication of Land-Use Policies on Property Rental Value Trend in Abuja

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Abstract: Land-use policies and regulations are employed all over the world to control land usage. Relative to the type of regulations, these can have several impacts on the value of properties. However, the value of properties might increase or decrease depending on the type of measures that are yearly employed. Thus the objective of this study was to assess the implication of land use regulations on rental value trend in Abuja, Nigeria. The survey design was used to elicit relevant information from occupiers and Estate Surveying and Valuation firms in Abuja. Results were presented on tables, and an annual growth rate factor was used to assess the relative growth of rent within the three locations (Wuse, Maitama and Nyanya), studied. Results indicate a significant rise in the rental value of properties between 2008 and 2017. Thus, the planning authorities in Abuja should reconsider the kind of policies they implement within the study area to avoid abuse and unnecessary restrictions that affect the state of the environment and value.

Key words: Land use policies, rental value, rental growth, rental trend.

1. Introduction

The value attached to a property is a function of many interrelated elements. The elements sometimes relate to the property attributes, and in another instance, the residential environment. The level of contribution of these elements to value is largely dependent on whether they are amenities or dis-amenities to the property or its environment. Jaeger [1] observed that an amenity effect is when land-use regulations benefit the owner or renter of a property. Thus, a well-planned residential environment with effective land-use control might serve as a magnet that attracts people to live in an area and be willing to pay a commensurate rental amount for a specified period. Contrariwise, a decrepit, unplanned residential environment or property might experience low patronage from informed would-be-renters and thus negatively affect the value of properties within the neighbourhood. Relative to the state of the environment, planning authorities must be proactive in providing the guidelines and mechanism that promote a balance between land ownership and land uses.

Several land-use planning standards and measures including zoning, building height restrictions, building plan approval, setbacks among others have been used to achieve an orderly and salubrious residential environment. Unfortunately, while orderly controls of land uses have been sustained in many developed countries, there are complacencies in several developing countries including Nigeria. In Nigeria, especially in Abuja land use planning standards and measures are selectively implemented relative to social status or class of people living within the location. For instance, there has been marginal control and enforcement of land use measures such as limitations of plots and buildable area among others within the city, but total neglect or absence of such measures at further away location. Thus it became necessary to measure the relative influences of land use control policies on the implicit rental value of residential properties and
observe the magnitude overtime.

In the past, many studies have assessed the relative contributions of land use control measures to value of properties [1-5]. In the Nigerian context, therefore, the known studies that evaluated the influence of land use regulations on property values are Ajibola, Olaniyan-Adekoya and Simon, 2012; Adebayo and Ogunleye, 2014; Okafor and Onuaha, 2016; Ahmed, Sangari, Idris and Ogah, 2019 [6-9]. This study extends the debate by focusing on the direct and indirect impacts relative to rental value trends from 2008 to 2017. The rationale was that the magnitude of such controls varies from year to year and thus might influence property owners and renters decision annually on purchase or rent of land and property.

The remainder of this study is divided into four sections including the literature review in Section 2, the research methodology in Section 3, results and discussion in Section 4 and the concluding remarks in Section 5.

2. Literature Review

Several factors such as construction cost, interest rate sensitivity, land use controls and regulations are responsive to changes in the value of properties. Thus a bubble period would result in a high return on property investment, while a burst period would result in a decline in property return. The relationship between land-use regulations and property prices or values had been studied in the past with variegated findings [5]. The findings from these studies are results of amenity or dis-amenity effects (extent or magnitude) of land use regulations relative to the jurisdiction(s). Thus, a jurisdiction that restricts a particular use(s) would experience a decline in land prices [5, 10], thereby placing a limit on the developer’s profit. Conversely, jurisdictions that employ land-use regulations might experience an increase in the price of land particularly if these regulations contribute to amenity effect on the environment [11].

Though considerable studies exist on the subject matter in the developed countries [1, 5, 11, 12], the matter is still receiving attention not only in the developed countries but substantially in the developing countries. The magnitude of land use regulations and control relative to a context breeds disagreement that necessitates more empirical analysis that unravels the consequence on property prices/values for contextual decision making. For instance, the empirical assessment of land use regulations and land prices in Nok et al. [5] who extended the work of Quigley, Raphael & Rosenthal [13], of San Francisco Bay Area, found that land-use regulations are significantly correlated to the value of properties sold. Relative to their findings, pervasive land use regulations and contribution of land values played a vital role in capitalizing property prices in the San Francisco Bay Area.

Jaeger [1] did a study in Oregon, US and found that land-use regulations always have a positive effect on the property in settings that were amenity, scarcity or both effects are allowed to fester. Ihlandeldt [4], investigated the influence of land use regulations on the property and vacant land prices in Florida, US and found that more regulations have a positive contribution to property prices and decrease in land prices. Antoniucci, Marella & Moroni [14] investigated the relationship between land use and city planning and property price variation in some Italian property markets during a bust period and found a decline in property prices.

However, while the reviewed studies were concerned with contributions of land use regulations on land and property prices, the current empirical study is a concern with a rental value of the property. Therefore the primary audience is renter occupiers and not owner-occupiers, hence, the primary focus is rents paid and how this amount changes from year to year relative to policies. The study became necessary because an earlier study on land use policies and rental value in Abuja by these authors [9], fails to show rental value trend from year to year. Thus, studies on property value
trends exist, though most studies focus on changes relative to locational effect or other related elements, this study is concerned with changes relative to land use regulations. Trends in value should reveal two perspectives—progressive or regressive and that are largely determined by the state of the economy.

Consequently, Nwuba [15] in Abuja, Nigeria observed an upward growth in rental value. Iroham, Oluwunmi, Simon and Akerele [16] reported a high rate of rental value increase in Akure, Nigeria. Chukwu, Aniagolu & Obodo [17] compared the rental trends in two neighbourhoods in Enugu, Nigeria, and found yearly upward increase in rental value. Ankeli, Dabara, Gambo, Lawal & Agidi [18] in Oshogbo, Nigeria measured the trend in rental value and found a considerable increase in rental between 2005 and 2014. Recently, Dabara, Uwaezuoike, Omotehinshe, Lawal & Ebenezer [19] examined the trend in rental value on proximate properties to Federal Polytechnic, Ede, Nigeria and found that between 2007 to 2016 rental value has considerably increased. The authors, however, attributed the increase to a rise in students’ population during the year under reviewed.

3. Research Methods

The study area is Abuja Municipal Area Council (AMAC) of the Nigerian Federal Capital Territory. The AMAC is stratified into three (3) namely Wuse, Maitama and Nyanya, respectively. Consequently, the household of residential properties in rented occupation and Estate Surveying and Valuation Firms were targeted for this study. The sample frame comprises of 31,608,085 based on the records of National Housing Census of 2006, Nigeria Bureau of Statistics and Social Economic Survey (2008). The list of 104 Estate Surveying Firms was found in the 2018 directory of the Nigerian Institution of Estate Surveyors and Valuers. The formula advanced by Yamane [20] and Otte [21] was used to determine the sample size of 400 households used in gathering data in this analysis. This was proportionately shared and distributed to household heads within the three locations (Wuse 133, Maitama 133, and Nyanya 134). The response rate indicated that 114 (86%), 109 (82%), and 116 (87%) questionnaires were returned for Wuse, Maitama and Nyanya for analysis.

Since implications of land use policies and rental value had already been studied (see, for instance, Ahmed, Sangari, Idris & Ogah [9]), this study used information relative to rental value paid per annum in the study locations for the period (2008 to 2017), which were extracted from the research subjects. The results were presented in table but a growth rate was used to measure the yearly rate of rental growth for the different period under investigation. The analysis was done for different types of rental accommodation including one-bedroom, two-bedroom, three-bedroom, four-bedroom, and duplex among others found in the study locations.

4. Data Analysis and Discussion

This section provides the empirical results for this analysis. Table 1 summarises the results.

Table 1 shows the rent passing of the different housing typologies for residential properties in Abuja. The different housing typologies such as one-bedroom flats, two-bedroom flats, three-bedroom flats, four-bedroom flats, duplexes and semi-detached/detached apartments rent have been analysed and presented. The comparative analysis of residential properties in the three areas has been presented and considered for better meaning and interpretation to the level of rent been paid in the study area.

In determining the trend movements (increase or decrease) in the rental values of different types of residential properties in Wuse, a linear trend analysis was carried out and a model for predicting the trends was derived as a result of the nature of the data. This was achieved with the use of the least square regression technique for the trend equation to derive the trend lines. The resulting model and coefficient of
Table 1  Rent passing and growth rate of different housing typologies of residential properties in the study areas.

| Area    | House typology   | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  |
|---------|------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Wuse    | One bedroom      | 750,000 | 800,000 | 800,000 | 850,000 | 900,000 | 1,000,000 | 1,200,000 | 1,350,000 | 1,400,000 | 1,500,000 |
|         | Growth rate (1 + g) | 1.00  | 1.07  | 1.00  | 1.06  | 1.11  | 1.20  | 1.13  | 1.13  | 1.04  | 1.07  |
|         | Two bedroom      | 900,000 | 1,100,000 | 1,200,000 | 1,350,000 | 1,500,000 | 1,600,000 | 1,800,000 | 2,000,000 | 2,200,000 |
|         | Growth rate (1 + g) | 1.00  | 1.22  | 1.09  | 1.11  | 1.07  | 1.13  | 1.00  | 1.11  | 1.10  |       |
|         | Three bedroom    | 1,000,000 | 1,500,000 | 1,700,000 | 1,800,000 | 2,000,000 | 2,200,000 | 2,200,000 | 2,300,000 | 2,400,000 | 2,500,000 |
|         | Growth rate (1 + g) | 1.00  | 1.50  | 1.13  | 1.11  | 1.10  | 1.00  | 1.05  | 1.04  | 1.04  | 1.00  |
|         | Four bedroom     | 1,200,000 | 1,600,000 | 1,800,000 | 2,000,000 | 2,200,000 | 2,200,000 | 2,300,000 | 2,400,000 | 2,500,000 | 2,500,000 |
|         | Growth rate (1 + g) | 1.00  | 1.33  | 1.13  | 1.11  | 1.10  | 1.00  | 1.05  | 1.04  | 1.04  | 1.00  |
|         | Duplex           | 1,500,000 | 1,500,000 | 1,800,000 | 2,100,000 | 2,300,000 | 2,300,000 | 2,400,000 | 2,500,000 | 2,500,000 | 2,800,000 |
|         | Growth rate (1 + g) | 1.00  | 1.00  | 1.20  | 1.17  | 1.10  | 1.00  | 1.04  | 1.04  | 1.00  | 1.12  |
|         | Detached/semi-detached | 2,500,000 | 2,800,000 | 2,800,000 | 3,000,000 | 3,500,000 | 4,000,000 | 4,000,000 | 4,500,000 | 4,500,000 | 5,000,000 |
|         | Growth rate (1 + g) | 1.00  | 1.12  | 1.00  | 1.07  | 1.17  | 1.14  | 1.00  | 1.13  | 1.00  | 1.11  |
| Maitama | One bedroom      | 800,000 | 850,000 | 900,000 | 1,000,000 | 1,200,000 | 1,200,000 | 1,500,000 | 1,600,000 | 1,650,000 | 1,700,000 |
|         | Growth rate (1 + g) | 1.00  | 1.06  | 1.06  | 1.11  | 1.20  | 1.00  | 1.25  | 1.07  | 1.03  | 1.03  |
|         | Two bedroom      | 1,000,000 | 1,200,000 | 1,200,000 | 1,400,000 | 1,500,000 | 1,500,000 | 1,700,000 | 1,800,000 | 1,900,000 | 2,000,000 |
|         | Growth rate (1 + g) | 1.00  | 1.20  | 1.00  | 1.17  | 1.07  | 1.00  | 1.13  | 1.06  | 1.06  | 1.05  |
|         | Three bedroom    | 1,200,000 | 1,500,000 | 1,700,000 | 2,000,000 | 2,500,000 | 2,500,000 | 2,700,000 | 2,800,000 | 3,000,000 | 3,000,000 |
|         | Growth rate (1 + g) | 1.00  | 1.25  | 1.13  | 1.18  | 1.25  | 1.00  | 1.08  | 1.04  | 1.07  | 1.00  |
|         | Four bedroom     | 1,500,000 | 1,800,000 | 1,800,000 | 2,000,000 | 2,200,000 | 2,500,000 | 2,800,000 | 3,000,000 | 3,200,000 | 3,500,000 |
|         | Growth rate (1 + g) | 1.00  | 1.20  | 1.00  | 1.11  | 1.10  | 1.14  | 1.12  | 1.07  | 1.07  | 1.09  |
|         | Duplex           | 1,800,000 | 2,000,000 | 2,200,000 | 2,500,000 | 2,500,000 | 2,700,000 | 3,000,000 | 3,200,000 | 3,500,000 | 3,800,000 |
|         | Growth rate (1 + g) | 1.00  | 1.11  | 1.10  | 1.14  | 1.00  | 1.08  | 1.11  | 1.07  | 1.09  | 1.09  |
|         | Detached/semi-detached | 2,000,000 | 2,500,000 | 2,500,000 | 2,800,000 | 2,800,000 | 3,000,000 | 3,200,000 | 3,500,000 | 3,500,000 | 4,000,000 |
|         | Growth rate (1 + g) | 1.00  | 1.25  | 1.00  | 1.12  | 1.00  | 1.07  | 1.07  | 1.09  | 1.00  | 1.14  |
### Table 1 (continued)

| Area          | House typology  | 2008   | 2009   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   |
|---------------|-----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Nyanya        | One bedroom     |        |        |        |        |        |        |        |        |        |        |
|               | Growth rate (1 + g) | 1.00   | 1.20   | 1.25   | 1.00   | 1.07   | 1.06   | 1.06   | 1.00   | 1.11   | 1.00   |
|               | Rent passing    | 100,000| 120,000| 150,000| 150,000| 160,000| 170,000| 180,000| 180,000| 200,000| 200,000|
| Nyanya        | Two bedroom     |        |        |        |        |        |        |        |        |        |        |
|               | Growth rate (1 + g) | 1.00   | 1.20   | 1.00   | 1.06   | 1.05   | 1.10   | 1.14   | 1.12   | 1.00   | 1.07   |
|               | Rent passing    | 150,000| 180,000| 180,000| 190,000| 200,000| 220,000| 250,000| 280,000| 280,000| 300,000|
| Nyanya        | Three bedroom   |        |        |        |        |        |        |        |        |        |        |
|               | Growth rate (1 + g) | 1.00   | 1.11   | 1.10   | 1.14   | 1.20   | 1.00   | 1.03   | 1.03   | 1.03   | 1.05   |
|               | Rent passing    | 180,000| 200,000| 220,000| 250,000| 300,000| 350,000| 360,000| 370,000| 380,000| 400,000|
| Nyanya        | Four bedroom    |        |        |        |        |        |        |        |        |        |        |
|               | Growth rate (1 + g) | 1.00   | 1.25   | 1.12   | 1.07   | 1.17   | 1.14   | 1.13   | 1.11   | 1.20   | 1.08   |
|               | Rent passing    | 200,000| 250,000| 280,000| 300,000| 350,000| 400,000| 450,000| 500,000| 600,000| 650,000|
| Nyanya        | Duplex          |        |        |        |        |        |        |        |        |        |        |
|               | Growth rate (1 + g) | 1.00   | 1.08   | 1.11   | 1.07   | 1.09   | 1.14   | 1.13   | 1.04   | 1.02   | 1.04   |
|               | Rent passing    | 250,000| 270,000| 300,000| 320,000| 350,000| 400,000| 450,000| 470,000| 480,000| 500,000|
| Nyanya        | Detached/semi-detached | 450,000| 480,000| 500,000| 550,000| 560,000| 580,000| 600,000| 650,000| 650,000| 700,000|
|               | Growth rate (1 + g) | 1.00   | 1.07   | 1.04   | 1.10   | 1.02   | 1.04   | 1.03   | 1.08   |        |        |

The 1.00, in this case, is used to show the trend in the growth of the rents of residential properties in the study area.  

\[ R_{t-1}(1 + g)^n = R_t \]

where:  
- \( R_{t-1} \): rent of the preceding year;  
- \( R_t \): rent of the current year  
- \( n \): number of years;  
- \( g \): growth rate.  

Relating to this research \( g = \frac{R_t}{R_{t-1}} \) - 1
determination for the certificate of occupancy are indicated in Fig. 1.

In Fig. 1, the trend lines show a sharp increase in the rent payable for most of the properties over the years due to an upward increase in the rent payable. The linear trend line was used to ascertain the trend equation as a result of the nature of the data. It can be seen that the R-squared values for the different types of residential properties are high and very close to 1, so the line is a very good fit to the data. Also, in determining the trend movements (increase or decrease) in the rent passing for the different types of residential properties in Maitama, Abuja between 2008 and 2017, a linear trend analysis was carried out and a model for predicting the trends was derived as a result of the trend of the data. This was achieved with the use least square regression technique for the trend equation to derive the trend lines. The resulting model and coefficient of determination for the different typologies of residential properties are as indicated in Fig. 2.

From Fig. 2, the trend lines show a slight increase and upward trend in the rent passing for the different types of residential properties in Maitama over the years. The linear trend line was used to ascertain the trend equation of the data. The R-squared value and equation have been stated on the graph for ease of understanding. All the R-squared values are very close to 1 so the lines are a good fit to the data. The available data as compiled from the rental analysis provided by the practising Estate Surveying and Valuation Firms in Abuja were used to ascertain the trend in the rental values for different types of residential properties in Abuja between 2008 and 2017.

A linear trend analysis was carried out and a model for predicting the trends was achieved with the use of least squares regression technique. The model and coefficient of determination for assignments are indicated in Fig. 3.

Fig. 3 shows an increase in the rent passing for the different types of residential properties in Nyanya, Abuja between 2008 and 2017. From the linear trend line, it can be seen that the R-squared values for the different types of residential properties in Nyanya are very close to 1 so the lines are a very good fit to the data.
5. Conclusions

The purpose of this study was to measure the contribution of land use regulations to the yearly rental movement in Abuja, Nigeria. The city was stratified into three including Wuse, Maitama and Nyanya to observe the difference in rental trend in the selected area since the impact of land use planning is not proportionately felt in the selected areas. The results were presented relative to the selected areas in table and a rental growth factor was used to ascertain the level of growth. Results reveal significant and steady growth in rental value of residential properties in all the areas used for the analysis. Although rental value is higher in Maitama district, this is attributable to the class of people and the influence of land use planning regulations within the area. This is closely followed by Wuse district but Nyanya has the lowest rental value. This also might be connected to the influence of land use regulations, distance from the city centre and class...
of people living in the area.

The implication of this study is for planning authority to consider the kind of land use regulations they employed within Abuja. For Nyanya, though highly dominated by the middle-level income earners, there exist pockets of abuse that affected the state of the area. Perhaps restriction to some land uses might help to remedy the problems of mixed or uncontrolled development in the area. For future study, it might be necessary to study the exact nature of the land use regulations and its implication on the rental value within the study area.

References

[1] Jaeger, W. K. 2006. “The Effects of Land-Use Regulations on Property Values.” Environmental Law 36 (1): 105-30.
[2] Beaton, W. P. 1991. “The Impact of Regional Land-Use Controls on Property Values: The Case of the New Jersey Pinelands.” Land Economics 67 (2): 172-94.
[3] Quigley, J. M., and Rosenthal, L. A. 2005. “The Effects of Land Use Regulation on the Price of Housing: What Do We Know? What Can We Learn?” Cityscape 8 (1): 69-137.
[4] Ihlandeldt, K. R. 2007. “The Effect of Land Use Regulation on Housing and Land Prices.” Journal of Urban Economics 61 (3): 420-35.
[5] Nok, N., Monkkonen, P., and Quigley, J. M. 2014. “Land Use Regulations and the Value of Land and Housing: An Intra-metropolitan Analysis.” Journal of Urban Economics 81: 136-48.
[6] Ajibola, M. O., Olaniyi-Adekola, M., and Simon, R. F. 2012. “Assessing the Effects of Urban Planning on Residential Property Values in Agege, Lagos.” European Scientific Journal 8 (11): 1-20.
[7] Adebayo, M. A., and Ogunleye, M. B. 2014. “Impact of Density on Highest and Best Use of Residential Lands in Metropolitan Lagos.” Mediterranean Journal of Social Sciences 5 (27): 1698-703.
[8] Okafor, B. N., and Onuoha, D. C. 2016. “Evaluation of the Effect of Slum on Property Values in Onitsha Metropolis of Anambra State.” International Journal of Interdisciplinary Research Method 3 (3): 9-23.
[9] Ahmed, A. A., Sangari, D. U., Idris, N. M., and Ogah, T. A. 2019. “An Analysis of the Impact of Zoning Policies on Residential Property Values in Abuja.” Journal of Civil Engineering and Architecture, Accepted.
[10] Ohls, J. C., Weisberg, R. C., and White, M. J. 1974. “The Effect of Zoning on Land Value.” Journal of Urban Economics 1: 428-44.
[11] Glaeser, E. L., and Ward, B. A. 2009. “The Causes and Consequences of Land Use Regulation: Evidence from Greater Boston.” Journal of Urban Economics 65: 265-78.
[12] Huang, H., and Tang, Y. 2012. “Residential Land Use Regulation and the US Housing Price Cycle between 2000 and 2009.” Journal of Urban Economics 71: 93-9.
[13] Quigley, J. M., Raphael, S., and Rosenthal, L. A. 2009. “Measuring Land-Use Regulations and Their Effects in the Housing Market.” In Housing Markets and the Economy, edited by Glaeser, E. L., and Quigley, J. M. Lincoln Institute of Land Policy, Cambridge, MA.
[14] Antoniucci, V., Marella, G., and Moroni, S. 2016. “Forms and Norms: How Planning Affected Property Prices Variation in Italy during the Crisis.” Procedia—Social and Behavioral Sciences 223: 25-30.
[15] Nwuba, C. C. 2008. “An Analysis of Office Rent Movement in Abuja.” Nigerian Journal of Education 7 (1): 1-11.
[16] Iroham, C. O., Oluwunmi, A. O., Simon, R. F., and Akerele, B. A. 2014. “Assessing the Trend in Rental Values of Commercial Properties along Oyemekun Road, Akure, Nigeria.” Covenant Journal of Research in the Built Environment (CJRBIE) 1 (1) (Maiden Edition).
[17] Chukwu, A. C., Amiaogu, C. O., and Obodo, C. M. 2016. “Trends in Rental Values of Residential Properties in Enugu, Nigeria; A Comparative Study between New Haven and Achara Layouts.” Journal of Multidisciplinary Engineering Science and Technology (JMEST) 3 (2): 4037-47.
[18] Ankeli, I. A., Dabara, D. I., Gambo, M. D., Lawal, K. O., and Agidi, O. M. 2016. “Residential Housing Rental Values and Infrastructural Development In Osogbo, Nigeria.” Conference of the International Journal of Arts & Sciences 09 (1): 29-40.
[19] Dabara, D. I., Uwaezueke, I. N., Omotehinse, O. J., Lawal, O. K., and Ebenezer, O. O. 2018. “Trends in the Rental Values of Residential Properties Proximate to Tertiary Institutions: The Case of Federal Polytechnic Ede, Nigeria.” European Journal of Business and Management 10 (24): 17-23.
[20] Yamane, T. 1967. Statistics: An Introductory Analysis. 2nd edition, New York: Harper and Row.
[21] Otte, J. 2006. “Sample Size Considerations.” FAO Corporate Document Repository.