

# A Study of Real Estate Assets Pricing in Ibadan Metropolis, Nigeria

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## ABSTRACT

This study examined the determinants of residential real estate asset pricing in Ibadan Metropolis, Nigeria, with emphasis on the influence of macroeconomic, microeconomic, and property-specific factors. A quantitative research design was adopted using structured questionnaires administered to private estate developers and residents of selected housing estates. Descriptive statistics and multiple regression analysis were employed to analyse the data. The descriptive findings revealed that respondents perceived macroeconomic factors as the most influential determinants of property prices, with inflation rate ranking highest among macroeconomic variables. Earnings and profitability emerged as the leading microeconomic factor, while location was identified as the most influential property-specific characteristic. However, regression results showed that interest rate, inflation rate, money supply, gross domestic product, and capital flow did not significantly influence the prices of detached, semi-detached, terrace, and four-bedroom residential properties. The study concludes that residential property prices are better explained by a combination of property-specific, neighbourhood, institutional, and market-related factors than by macroeconomic variables alone. The study recommends integrating these variables into future residential property pricing models to improve valuation accuracy and investment decisions.

**Keywords:** Macro economics, micro economics, Prices, Real Estate, Ibadan Metropolis

## INTRODUCTION

The investment decision process starts with assessment of the economic environment expected to influence not only the development of the financial markets but also the real estate market. However, determining or estimating price of assets value is of importance to investors and speculators Amidu, (2006). In other words, important to decision making in any transaction is the determination of value of the assets. Apart from the fact that pricing of assets plays an important role in the decision-making process, its also considers qualitative elements and special factors which act as a guide to investors. According to Muhlebach and Alexander, (2008), the timing and frequency with which rental income can be varied is a critical feature in determining the prices of individual investment. However, central to this determination of investment value of asset is the yield or the price with which to capitalise income or rent passing from the assets. Olopade (2002).

The determination of rent from property assets, no-doubt is simple and has received wide attention in literature, Goebel, et. al., (2013). On the contrary, the determination of the price of risk of property investments cannot be regarded as a well-researched area especially among Nigerian scholars yield which is the component of price reflects investors' expectations and is traditionally more sensitive to changes in current economic conditions and market sentiments than rental value. In other words, it is the price or premium received by an investor for making his fund in an investment, thus reflecting its importance in investment decision

Real estate investment like any other form of investment is subject to a wide variety of risks including, but not limited to general and local economic and social conditions as weak as the property's specular risks arising from its characteristics, such as its lack of liquidity.

In addition, the fact that property can be affected by natural and man-induced catastrophic events should tell us more of the importance of pricing the risks involved correctly.

Understanding the pricing behaviour of assets is a key issue in investment and has received a worldwide attention especially in the developed world. Studies have evolved, especially in the financial literature that sought to improve appraisal's ability at pricing. Salustr (2016) capital assets pricing model (CAPM) was developed and considered the return on any risky security/ asset as being equal to a linear combination of the risk-free rate of return plus the sensitivity of the security's systematic risk to the market portfolio risk which is commonly referred to as beta. Also, a multi factor model like the Rosenthal, (2011) Arbitrage Pricing Theory (APT) has been proposed to explain the return from assets. Since the authors have used these models to investigate and have introduced ways of dealing with his problem of pricing.

In Nigeria, apart from the fact that the issue of real estate asset pricing is still in its rudimentary stage. There is no known study in this area since most of the previous literature investigated pricing of real estate asset in different and developed markets such as US and UK.

Understanding the pricing of real estate assets in Nigeria would be of interest to investors and practioners. The study therefore, aimed at improving understanding of market information on real estate price in Ibadan metropolis with a view of enhancing market operational efficiencies and effective

## LITERATURE REVIEW

In real estate industry considering the peculiarity of real estate, many authors such as Liu (2006), Bond, Karolyn and Sander (2003) have argued that multi-factor model (APT) is more appropriate than simple factor models (REITs). An important perspective of the theoretical approach of multi factor model in asset pricing is the study of micro economic factors. One important factor that comes to mind is whether prices are determined by the choices of identified marginal investors or whether all subject are original, each contributing to pricing as predicted by general equilibrium theory of Bossert, Plott and Zame, (2003). Chen, Roll and Ross (1986) pioneered this line of investigation using a five-factor model. In their work, they found that the factors representing the growth rate in Gross Development Product (GDP), the yield spread between long- and short-term government bond and changes in default spreads have significant effects on assets' risk premium. In real estate context McCue and Kling (1994) studied the return of Equity Real Estate Investment Trust (REITs). They found that macroeconomic variables such as nominal interest rates explain almost 60% of the variation in real estate prices. Output and investment variables offer little explanation for the variance in real estate prices (Stephen, 2015) also found that growth rate in real per capital consumption is the only macroeconomic variables that have a systematic positive effect on commercial real estate returns. They argue further that investors should avoid all other forms of risk to which real estate assets are positively exposed in order to alleviate experiencing return sensitivity without a return premium.

Recent asset-pricing models have explored the effect on asset return of heterogeneity in preferences to see if this can explain the empirical proportion of return. Chan (2002) found that in a model where agents differ in their risk aversion the time series properties of asset returns are chosen to their empirical counterparts.

Wary (1996) studied the effect of heterogeneity in risk aversion on bond yields while Dumas (1989) explores the effect on the risk-free rate and the risk premium. Intuitively, it can be said that changes in economic conditions will lead to changes in the discount rate and consequently predictable returns. Thus, researchers must judge whether the empirical patterns in returns are consistent with credible models of rational behaviour or can be better explained by irrational mis-pricing. Bossert and Plott (2004) noted that since the early fifties two major considerations have driven the development of asset pricing theory namely:

1. The Presence of Risk-Averse Investors And
2. Asymmetric information.

The behaviour of risk-averse investors has led to a better theoretical understanding of risk and its equilibrium compensation in asset pricing consumers make investment decisions based, in part, on their expectations of future prices.

The premises of standard asset pricing theory have been that expected utility maximizing agent react in competitive markets and that prices react to eventually reach general equilibrium. The main implications have been that this risk is to be measured in terms of the covariance between the return on two security and some aggregate risk factors. Preferably, the latter can be identified in terms of the return on a specific set of benchmark portfolios in Barberis, Huang and Santos (2001) asset pricing model have been suggested that build Kinks in the utility function at endowment. This position is also maintained by Epstein and Zin (2001) quadratic utility function at endowment. This position is also maintained by Epstein and Zin (2001) quadratic utility can therefore be justified by the fact that risk is small so that quadratic utility obtains as an approximation of true utility.

In summary, a look at the studies reviewed, in the foregoing section will leave no case in doubt that there is evidence to suggest that there are studies have focused on asset pricing strategies and the potential risk factor and assets prices. There is also evidence to show that the empirical studies focused on finding the relationship that existed between potential risk factors and assets prices. However, a critical examination of the results of the above studies misses a fundamental issue regarding real state asset pricing in an emerging (less developed) real estate capital market like Nigeria.

Very few studies, if any, have looked at the issues of pricing the risk of real estate investments in the Nigeria property market. The few studies in the Nigerian context which included those of Ajayi (1996), Aluko (2000) and Ojo (2004), Shiyanbola and Olaleye (2019) did not address directly the issue of factor influencing/affecting prices of real estate assets. For example, Ajayi (1988) who focused on examining the usefulness of capital asset pricing model to practice or analyse the factors influencing real estate asset prices. The same can be said of Ajayi (1994) and Ojo (2004) who proffered valuations in Nigeria. Ogunba (1997) studied the valuation and pricing method in the residential property market in Lagos metropolis but did not actually look at the factor affecting assets prices and the relationship between prices and these factors. In the like factor affecting assets prices and the relationship between prices and these factors, in the like manner, Aluko (2000) studied the appropriateness of mortgage valuation for institutional lending in Nigeria without looking at the issue of risk factors affecting real estate asset prices. Meanwhile, as more investors get involved the major issue that confronts both investors and their advisor and their advisor is how effective the pricing of real estate asset is. An examination of the factors influencing the assets prices will also be of interest to them.

## METHODOLOGY

The study was conducted in Ibadan Metropolis, the capital city of Oyo State, southwestern Nigeria. Ibadan is one of Africa's largest indigenous cities, characterized by rapid urbanization and complex land-use dynamics. It comprises of eleven local government areas (five urban and six semi-urban).

This study uses quantitative method. A structured questionnaire was used to extract information from respondents. The respondents are the private housing developers and residents of selected estates developed by the firms. The study uses developers as supply-side and residents as demand-side. There are approximately 45 active private estate developers in Ibadan where 10 is selected as sample for the study. They were purposively selected because they are REDAN-registered (Real Estate Developers Association of Nigeria), their scale of operation, and variably completed housing projects within the study area.

On the demand side, the sampling frame comprised households living in ten (10) selected estates developed by these firms. A total of 200 randomly selected households within the estates where the firms have developed structures were sampled across the estates, providing adequate representation of residents' experiences.

Descriptive and inferential statistics were used for the analysis. The descriptive uses frequency distribution, percentages, mean and standard deviation while inferential statistics uses regression model to analyse the relationship between residential asset prices, macro and micro economic factors in the market.

## RESULTS AND DISCUSSIONS

**Table 1 :Basis for the Choice of Comparable**

| Method/Basis              | Mostly Used |      | Normally Used |      | Of Less Usage |      | Not In Use |      | X     | Std   |
|---------------------------|-------------|------|---------------|------|---------------|------|------------|------|-------|-------|
|                           | Freq        | %    | Freq          | %    | Freq          | %    | Freq       | %    |       |       |
| Property Location         | 89          | 86.4 | 8             | 7.8  | -             | -    | 3          | 2.9  | 3.747 | 0.737 |
| Property Type             | 30          | 29.1 | 65            | 83.1 | -             | -    | 6          | 5.8  | 3.135 | 0.767 |
| Lease Contract            | 6           | 5.8  | 4.7           | 45.6 | 14            | 13.6 | 30         | 29.1 | 2.223 | 0.999 |
| Tenant Size And Condition | 6           | 5.8  | 4.5           | 43.7 | 25            | 24.3 | 21         | 20.4 | 2.291 | 0.925 |
| Neighborhood Character    | -           | -    | 1             | 1.0  | -             | -    | -          | -    | 1.019 | 0.197 |

Table 1 shows the basis for choice of comparison. According to the outcome, the property location and property type have the highest frequency. The property location has mean value of 3.747 and standard deviation of 0.737 while the property type has mean value of 3.135 and standard deviation of 0.767. Residents prefers to keep secrecy attached to property information in the market, due to this, obtaining detailed information on lease contract and size of tenants might be difficult, if not impossible in Nigeria.

### Income Approach to Subjective Estimation of Parameter

Table 2 shows the approach to subjective estimation of parameter. For those respondents who used income approach in estimating subjective parameters, the following analysis provides details of the methods they normally adopt. The result in table 2 revealed that 73.8% of the firms mostly used capitalization in perpetuity method while only 9.7% used most often discounted ratio method. The means and standard deviation measure revealed that capitalization method ranked highest with mean and standard deviation values of 3.524 and 6.948 respectively. Discounted ratio method has mean and standard deviation values of 2.379% and 0.898 respectively.

**Table 2 Income Approach of Subjective Estimation**

| Method/Basis            | Mostly Used |      | Normally Used |      | Of Less Usage |      | Not In Use |     | X     | Std   |
|-------------------------|-------------|------|---------------|------|---------------|------|------------|-----|-------|-------|
|                         | Freq        | %    | Freq          | %    | Freq          | %    | Freq       | %   |       |       |
| Capitalization method   | 76          | 73.8 | 16            | 15.5 | -             | -    | 9          | 8.7 | 3.524 | 0.948 |
| Discounted ratio method | 10          | 9.7  | 38            | 36.9 | 36            | 35.0 | 16         | 5.5 | 2.379 | 0.898 |

Table 3 examines respondents' perceptions of the broad categories of factors influencing property prices: macroeconomic, microeconomic, property-specific, and market influence. The results indicate that macroeconomic factors were perceived as the most influential, with a mean score of 3.942. Approximately 40.8% of the respondents rated macroeconomic factors as having the greatest influence, while 37.9% considered them to have a greater influence. This suggests that respondents believe economic conditions such as inflation, interest rates, GDP, and capital flow are major determinants of property prices.

Microeconomic factors ranked second with a mean score of 3.437. Over half of the respondents (57.3%) indicated that these factors exert a greater influence on property prices, suggesting that variables operating at the firm or market level also play an important role.

Property-specific factors recorded a mean score of 2.680, indicating a moderate influence on property prices. While some respondents considered these factors important, nearly half (47.6%) did not provide a response, suggesting varying opinions regarding their significance.

Market influence received the lowest mean score (1.037), with 85.4% of respondents providing no response, indicating that respondents generally perceived market influence as the least important determinant of property prices.

**Table 3: Factors Influencing Property Price**

| Factors            | Of Greatest Influence |      | Of Greater Influence |      | Of Great Influence |      | Of Less Influence |     | Net Response |      | X     | Std   |
|--------------------|-----------------------|------|----------------------|------|--------------------|------|-------------------|-----|--------------|------|-------|-------|
|                    | Freq                  | %    | Freq                 | %    | Freq               | %    | Freq              | %   | Freq         | %    |       |       |
| Macro Economic     | 42                    | 40.8 | 39                   | 37.9 | 8                  | 7.8  | 2                 | 1.9 | 12           | 11.7 | 3.942 | 1.274 |
| Micro Economic     | 17                    | 16.5 | 59                   | 57.3 | 2                  | 1.9  | 2                 | 1.9 | 23           | 22.3 | 3.437 | 1.405 |
| Property Specifies | 22                    | 21.4 | 21                   | 20.4 | 11                 | 10.7 | -                 | -   | 49           | 47.6 | 2.680 | 1.699 |
| Market Influence   | -                     | -    | 15                   | 14.6 | -                  | -    | -                 | -   | 88           | 85.4 | 1.037 | 1.063 |

### Macroeconomic Variables Influencing Property Pricing

Having identified the major factors influencing property prices the analysis that follows tries to examine the relative influencing/importance of the variables making up each of the already identified major factors namely macroeconomic, micro economic and property specific factors on residential assets price, the analysis in table 4 to 6 gives details of responses.

Results in table 4 which shows the relative influence of the variable constituting macro-economic factors revealed that 49.5% of the estate firms considered inflation rate as having greatest influence on residential property prices. Another 15.5% and 6.8% believed that capital flow and gross domestic product had greatest influence on property asset prices.

Adopting mean and standard deviation measures to analyze the responses shows clearer results. A Likert-scale of 5 was used to measure these economic variables where 5 = greatest influence, 4 = greater influence, 3 = great influence, 2 = less influence and 1 = no influence. The results shows that inflation rate ranked highest with a mean value of 3.883 while capital flow ranked next with a value of 3.369 and standard deviation of 1,300 interest rate and value credit and gross domestic products ranked third and fourth respectively with a mean value and standard deviation of (2.786, 1.249) and ( 2.604,1.225).

**Table 4: Macroeconomic Variables Influencing Property Prices**

| Factors                     | Of Greatest Influence |      | Of Greater Influence |      | Of Great Influence |      | Of Less Influence |      | No Response |      | X     | Std   |
|-----------------------------|-----------------------|------|----------------------|------|--------------------|------|-------------------|------|-------------|------|-------|-------|
|                             | Freq                  | %    | Freq                 | %    | Freq               | %    | Freq              | %    | Freq        | %    |       |       |
| Interest Rate & Bank Credit | 6                     | 5.8  | 33                   | 32.0 | 17                 | 16.5 | 27                | 26.1 | 20          | 19.4 | 2.786 | 1.249 |
| Inflation Rate              | 51                    | 49.5 | 17                   | 16.5 | 20                 | 19.4 | 2                 | 1.9  | 13          | 12.6 | 3.883 | 1.38  |
| Capital Flow                | 16                    | 15.5 | 46                   | 44.7 | 20                 | 19.4 | 2                 | 1.9  | 19          | 18.5 | 3.369 | 1.30  |
| Gross Domestic Product      | 17                    | 6.8  | 14                   | 13.6 | 40                 | 38.8 | 12                | 11.7 | 28          | 27.2 | 2.604 | 1.22  |

|                     |    |      |     |       |     |      |     |      |     |       |        |      |
|---------------------|----|------|-----|-------|-----|------|-----|------|-----|-------|--------|------|
| Market Indices/Data | -  | -    | 1   | 1.0   | -   | -    | -   | -    | 102 | 99.0  | 1.026  | 0.29 |
| Rate Of Return      | 80 | 77.6 | 111 | 107.8 | 9.7 | 94.1 | 4.3 | 41.7 | 138 | 351.3 | 13.671 | 5.44 |

With regards to micro economic variables, the analysis in **table 5** shows that earnings and profitability play greatest role as micro economic variables influencing property prices. At least 41.7% and 35.9% of the estate forms respectively asserted to this fact only 9.7% of the estate forms considered regulations and deregulations as having greatest influence on assets prices. Using mean value as the basis of interpretation, it is obvious from table 2.5 that estate firms believed that earning and profitability as a micro economic variable had the greatest influence on prices of property assets.

The variable has the highest mean value of 3.942 government regulations and deregulation came second with a mean value of 3.097.

**Table 5: Microeconomic Variables Influencing Property Prices**

| Factor                    | Of Greatest Influence |      | Of Greater Influence |      | Of Great Influence |      | Of Less Influence |     | No Response |      | X     | Std   |
|---------------------------|-----------------------|------|----------------------|------|--------------------|------|-------------------|-----|-------------|------|-------|-------|
|                           | Freq                  | %    | Freq                 | %    | Freq               | %    | Freq              | %   | Freq        | %    |       |       |
| Regulation & Deregulation | 10                    | 9.7  | 32                   | 31.1 | 37                 | 35.9 | 6                 | 5.8 | 18          | 17.5 | 3.097 | 1.20  |
| Earning and Profitability | 43                    | 41.7 | 37                   | 35.9 | 10                 | 9.7  | —                 | —   | 13          | 12.6 | 3.942 | 1.289 |
| Values                    | 1                     | 1.0  |                      |      |                    |      |                   |     | 102         | 99.9 | 1.039 | 0.39  |

**Table 6: Property specific variables influencing property prices**

| Factors                 | Of Greatest Influence |      | Of Greater Influence |      | Of Great Influence |      | Of Less Influence |      | No Response |      | X     | Std   |
|-------------------------|-----------------------|------|----------------------|------|--------------------|------|-------------------|------|-------------|------|-------|-------|
|                         | Freq                  | %    | Freq                 | %    | Freq               | %    | Freq              | %    | Freq        | %    |       |       |
| Location                | 88                    | 85.4 | 5                    | 4.9  | 1                  | 1.0  | 7                 | 6.8  | 2           | 1.9  | 4.650 | 0.94  |
| Property Type           | 9                     | 8.7  | 54                   | 52.4 | 22                 | 21.4 | -                 | -    | 18          | 17.5 | 3.350 | 1.210 |
| Neighbourhood Character | 9                     | 8.7  | 33                   | 32.0 | 38                 | 36.9 | 6                 | 5.8  | 17          | 11.7 | 3.107 | 1.179 |
| Design                  | 7                     | 6.8  | 9                    | 8.7  | 13                 | 12.6 | 56                | 54.4 | 18          | 12.6 | 2.330 | 1.079 |
| Materials Used          | 1                     | 1.0  | -                    | -    | -                  | -    | -                 | -    | 102         | 99   | 1.039 | 0.394 |

On property specific factors, the analysis in table 7 shows that 85.4% of the estate firms asserted that location had greatest influence on property prices. The types of property and neighbourhood character were ranked second with 8.7% of the estate firms agreeing to the ranking. Using mean as the basis of ranking the analysis revealed that property location still ranked first with a mean value of 4.65 while property type4s and neighbourhood character ranked second and third respectively with mean values of 3.35 and 3.107

- To get a clearer picture of the relationship between residential assets price (yields) and micro and macro economic variables and to answer the question of how the economic variables have influenced property pricing. The study employed regression model already described in literary reviews because the unquantifiable nature of some of the variables like the property specific factors and other micro variables were not included in the model.
- To analyze the influence of economic variables on residential property prices, the study calculated the average yields of seven different residential properties in the five locations considered. These properties are detached house, semidetached, terrace house 4 bedroom block of flats, 3 bedroom flat, 2 bedroom flat and

- 1 bedroom block of flat. Yield is used as independent variables (y) while the identified economic factors serve as dependent variables. The dependent variables included interest rate, inflation rate, money supply, gross domestic product(GDP) and capital flow. The data were for the period of 2013-2022 when these variable4s are regressed with yields, the estimated coefficients on the variables present the implicit influence of each of the variables on yield. In other words, the coefficients determine the influence on property yield of each variable considered.

The regression coefficients and the regression models derived for each of the property types are shown in tables 7 to 10 for detached house, semi-detached house, terrace building, and 4 bedrooms as dependent variable and macroeconomic variables (Interest Rate, Inflation Rate, Money Supply, Gross Domestic Product, and Capital Flow) as independent variables.

The  $R^2$  and adjusted  $R^2$  as well as the significant level of relationship are also shown for each of the property types. The  $R^2$  gives the percentage variation in property is yield that can be accounted for by the dependent variables  $X_1$ = GDP and  $X_5$ = Capital flow. The coefficients indicate the direction and magnitude of the relationship, while the significance (Sig.) values determine whether each variable has a statistically significant effect on detached house prices.

**Table 7: Regression coefficients on the relationship between detached house prices and economic variables**

| Model                         | Unstandardized coefficients |           | Standard coefficients | I      | Sig  |
|-------------------------------|-----------------------------|-----------|-----------------------|--------|------|
|                               | B                           | Std error | Beta                  |        |      |
| <b>I(Constant)</b>            | 5.480                       | .795      |                       | 6.889  | .006 |
| <b>Interest Rate P.A</b>      | 2.570E.02                   | .024      | .167                  | 1.078  | .360 |
| <b>Inflation Rate</b>         | 2.033E.02                   | .021      | .182                  | .952   | .411 |
| <b>Money Supply</b>           | -1.546E.06                  | .000      | -2.383                | -2.383 | .097 |
| <b>Gross Domestic Product</b> | 1.674E.07                   | .000      | 1.177                 | 1.512  | .228 |
| <b>Capital Flow</b>           | 2.265E.07                   | .000      | .186                  | .432   | .695 |

**Source: Author's field survey and analysis**

The equation for the property price relationship, based on the regression coefficients is given as

$$\gamma = 5.45 + 0.0257X_1 + 0.00033X_2 - 0.00000155X_3 + 0.000000167X_4 + 0.0000002265X_5 \dots\dots 1$$

According to table 7, the regression model indicates that the constant (intercept) has a coefficient of 5.480, which is statistically significant ( $t = 6.889$ ,  $p = 0.006$ ). This implies that when all the explanatory variables are held constant at zero, the predicted value of detached house prices is 5.480 units.

Interest Rate (P.A.) has an unstandardized coefficient (B) of 0.0257 and a standardized coefficient (Beta) of 0.167. This suggests that an increase in interest rates is associated with a slight increase in detached house prices. However, the relationship is not statistically significant at 5% level of significance ( $t = 1.078$ ,  $p = 0.360 > 0.05$ ), indicating that interest rates do not significantly influence detached house prices in the study.

Inflation Rate has a coefficient of 0.0203 and a standardized Beta of 0.182, indicating a positive relationship with detached house prices. Nevertheless, the effect is not statistically significant at 5% level of significance ( $t = 0.952$ ,  $p = 0.411 > 0.05$ ). Thus, inflation rate does not significantly predict detached house prices.

Money Supply has a negative coefficient ( $B = -1.546E-06$ ) and a standardized Beta of -2.383, suggesting that increases in money supply are associated with decreases in detached house prices. However, despite having the largest standardized coefficient in absolute terms, the relationship remains statistically insignificant ( $p = 0.097 > 0.05$ ), although it is closer to significance than the other predictors.

Gross Domestic Product (GDP) has a positive coefficient ( $B = 1.674E-07$ ) and a standardized Beta of 1.177, indicating that increases in GDP are associated with higher detached house prices. However, this relationship is not statistically significant ( $t = 1.512$ ,  $p = 0.228 > 0.05$ ).

Capital Flow also has a positive coefficient ( $B = 2.265E-07$ ) and a standardized Beta of 0.186, implying a positive relationship with detached house prices. However, the effect is not statistically significant ( $t = 0.432$ ,  $p = 0.695 > 0.05$ ).

**Table 8 Regression coefficients on the relationship between semidetached house price and economic variables**

| Model                  | Unstandardized Coefficients |           | Standardized Coefficients | I     | Sig  |
|------------------------|-----------------------------|-----------|---------------------------|-------|------|
|                        | B                           | Std Error | Beta                      |       |      |
| (Constant)             | 5.513                       | 1.259     | .                         | 4.381 | .022 |
| Interest Rate P.A      | 2.233E-02                   | .038      | .100                      | .592  | .595 |
| Inflation Rate4        | 1.239E-02                   | .034      | .122                      | .367  | .738 |
| Money Supply           | -3.885E-07                  | .000      | -.660                     | .378  | .730 |
| Gross Domestic Product | 2.137E-08                   | .000      | .165                      | .122  | .911 |
| Capital Flow           | -5413E-07                   | .000      | -.489                     | .653  | .560 |

**Source: Author's field survey and analysis**

The regression equation is

$$y = 5.513 + 0.02233X_1 + 0.01239X_2 - 0.0000003885X_3 + 0.00000002137X_4 - 0.000000541X_5 - \dots - 2$$

Table 8 shows the constant (intercept) has a coefficient of 5.513, with a t-value of 4.381 and a p-value of 0.022, which is less than the 0.05 significance level. This indicates that when all the economic variables are held constant, the predicted value of semi-detached house prices is 5.513 units, and the intercept is statistically significant.

Interest Rate (P.A.) has an unstandardized coefficient ( $B = 0.0223$ ) and a standardized coefficient (Beta = 0.100). This indicates a weak positive relationship between interest rates and semi-detached house prices, suggesting that increases in interest rates are associated with slight increases in house prices. However, the relationship is not statistically significant ( $t = 0.592$ ,  $p = 0.595 > 0.05$ ), implying that interest rates do not significantly influence semi-detached house prices.

Inflation Rate has a coefficient of 0.0124 and a standardized coefficient (Beta = 0.122), indicating a weak positive relationship with semi-detached house prices. Nevertheless, the effect is not statistically significant ( $t = 0.367$ ,  $p = 0.738 > 0.05$ ). Therefore, inflation does not significantly affect semi-detached house prices.

Money Supply has a negative coefficient ( $B = -3.885 \times 10^{-7}$ ) and a standardized coefficient (Beta = -0.660). This suggests that increases in money supply are associated with lower semi-detached house prices. However, the relationship is not statistically significant ( $t = 0.378$ ,  $p = 0.730 > 0.05$ ), indicating that money supply is not a significant predictor of semi-detached house prices.

Gross Domestic Product (GDP) has a positive coefficient ( $B = 2.137 \times 10^{-8}$ ) and a standardized coefficient (Beta = 0.165), indicating a positive association between GDP and semi-detached house prices. However, the

relationship is not statistically significant ( $t = 0.122$ ,  $p = 0.911 > 0.05$ ). Thus, GDP does not significantly explain changes in semi-detached house prices.

Capital Flow has a negative coefficient ( $B = -5.413 \times 10^{-7}$ ) and a standardized coefficient ( $Beta = -0.489$ ), suggesting that increases in capital flow are associated with decreases in semi-detached house prices. However, the relationship is not statistically significant ( $t = 0.653$ ,  $p = 0.560 > 0.05$ ). Therefore, capital flow does not significantly influence semi-detached house prices.

**Table 9: Regression coefficients on the relationship between terrace house prices and economic variables**

| Model                  | Unstandardized Coefficients |           | Standardized Coefficients | t     | Sig  |
|------------------------|-----------------------------|-----------|---------------------------|-------|------|
|                        | B                           | Std Error | Beta                      |       |      |
| (Constant)             | 0.552                       | 1.772     |                           | 3.698 | 0.34 |
| Interest Rate          | -2.294E-02                  | .053      | .158                      | -.432 | .695 |
| P.A Inflation Rate     | 3.674E-02                   | .048      | 0.38                      | .077  | .943 |
| Money Supply           | -3.454E-07                  | .000      | .564                      | -.239 | .826 |
| Gross Domestic Product | 3.015E-08                   | .000      | .225                      | -.122 | .910 |
| Capital Flow           | -6.997E-07                  | .000      | .599                      | -.599 | .591 |

The regression equation is as follows

$$\gamma = 6.552 - 0.09229X_1 + 0.003674X_2 - 0.0000000345X_3 + 0.00000003075X_4 - 0.0000007X_5 \dots\dots\dots 3$$

The constant (intercept) has a coefficient of 0.552, with a t-value of 3.698 and a p-value of 0.034, which is less than the 0.05 significance level. This indicates that when all the explanatory variables are held constant, the predicted terrace house price is 0.552 units, and the intercept is statistically significant.

Interest Rate (P.A.) has an unstandardized coefficient ( $B = -0.02294$ ) and a standardized coefficient ( $Beta = -0.158$ ). This indicates a negative relationship between interest rates and terrace house prices, implying that an increase in interest rates tends to reduce terrace house prices. However, this relationship is not statistically significant ( $t = -0.432$ ,  $p = 0.695 > 0.05$ ), suggesting that interest rates do not significantly predict terrace house prices.

Inflation Rate has a positive coefficient ( $B = 0.03674$ ) and a standardized coefficient ( $Beta = 0.038$ ), indicating a weak positive relationship between inflation and terrace house prices. Nevertheless, the effect is not statistically significant ( $t = 0.077$ ,  $p = 0.943 > 0.05$ ), implying that inflation does not significantly influence terrace house prices.

Money Supply has a negative unstandardized coefficient ( $B = -3.454 \times 10^{-7}$ ) and a standardized coefficient ( $Beta = -0.564$ ), suggesting that an increase in money supply is associated with a decrease in terrace house prices. However, the relationship is not statistically significant ( $t = -0.239$ ,  $p = 0.826 > 0.05$ ). Therefore, money supply does not significantly explain variations in terrace house prices.

Gross Domestic Product (GDP) has a positive coefficient ( $B = 3.015 \times 10^{-8}$ ) and a standardized coefficient ( $Beta = 0.225$ ), indicating a positive relationship with terrace house prices. However, the effect is not statistically significant ( $t = -0.122$ ,  $p = 0.910 > 0.05$ ), suggesting that GDP is not a significant predictor of terrace house prices.

Capital Flow has a negative coefficient ( $B = -6.997 \times 10^{-7}$ ) and a standardized coefficient ( $Beta = -0.599$ ), indicating that increased capital flow is associated with lower terrace house prices. However, the relationship is

not statistically significant ( $t = -0.599$ ,  $p = 0.591 > 0.05$ ), indicating that capital flow does not significantly affect terrace house prices.

**Table 10 Regression coefficients on the relationship between price of 4-bedroom property type& economic variable**

| Model                  | Unstandardized Coefficients |           | Standardized Coefficients | t      | Sig  |
|------------------------|-----------------------------|-----------|---------------------------|--------|------|
|                        | B                           | Std Error | Beta                      |        |      |
| (Constant)             | 6.948                       | 1.655     |                           | 4.198  | .025 |
| Interest Rate P.A      | -1.498E-02                  | .050      | .146                      | .393   | .721 |
| Inflation Rate         | 1.872E-02                   | .044      | .193                      | .422   | .702 |
| Money Supply           | 1.123E-06                   | .000      | 1.993                     | .832   | .467 |
| Gross Domestic Product | -2.653E-07                  | .000      | -2.147                    | -1.152 | .333 |
| Capital Field          | -9.463E-07                  | .000      | -.893                     | -.868  | .449 |

The regression equation for the 4 bedroom house type is as follows

$$\gamma = 6.948 - 0.1498X_1 + 0.01872X_2 + 0.00000112X_3 - 0.000000265X_4 - 0.0000000946X_5 + \dots$$

Table 10 shows the relationship between the price of 4-bedroom properties (dependent variable) and selected macroeconomic variables

The constant (intercept) has an unstandardized coefficient of 6.948, with a t-value of 4.198 and a p-value of 0.025, which is less than the 0.05 level of significance. This indicates that when all the explanatory variables are held constant, the predicted price of a 4-bedroom property is 6.948 units, and the intercept is statistically significant.

The independent variables (interest rate, inflation rate, money supply, Gross Domestic Product, and capital flow) are not statistically significant which implies that they do not significantly influence the price of 4-bedroom properties.

The findings from tables 7 to 10 suggest that macroeconomic variables used are insufficient to explain variations in the prices of residential properties within the study area. Since none of the predictors was statistically significant at the 5% level, changes in residential property prices are likely influenced by other factors not included in the regression models. These may include property-specific characteristics (such as size, quality of construction, age, and design), neighbourhood attributes (such as accessibility, security, and availability of infrastructure), demographic factors, government housing policies, land availability, and local market dynamics.

From a policy perspective, the results imply that relying solely on broad macroeconomic indicators such as interest rate, inflation, money supply, GDP, and capital flow may not be adequate for predicting or managing residential property prices. Future studies should therefore incorporate structural, locational, institutional, and behavioural variables to develop more robust models of residential property price determination.

## SUMMARY AND CONCLUSION

Our examination of residential property pricing in Ibadan metropolis that revealed that estate surveyors and value/firms still depend on the subjective estimation of parameter when advising client on residential property pricing. The result has shown that estate firms' decisions on this have been largely informed by the property location and property type.

The findings from the descriptive and inferential analyses provide a comprehensive understanding of the factors influencing residential property prices. The descriptive results in tables 1 - 3 and tables 4–6 indicate that respondents perceive macroeconomic factors as the most important determinants of property prices, followed by microeconomic factors and property-specific characteristics. Specifically, inflation rate emerged as the most influential macroeconomic variable, while earnings and profitability were identified as the most important microeconomic factor. Among the property-specific variables, location was overwhelmingly regarded as the strongest determinant of property values, followed by property type and neighbourhood characteristics. These findings suggest that stakeholders in the real estate sector believe that both the broader economic environment and intrinsic property characteristics play significant roles in shaping property values.

However, the regression analyses (Tables 7 - 10) conducted for detached houses, semi-detached houses, terrace houses, and four-bedroom residential properties revealed a different pattern. Although interest rate, inflation rate, money supply, gross domestic product (GDP), and capital flow exhibited either positive or negative relationships with the various property types, none of these macroeconomic variables had a statistically significant effect on property prices at the 5% level of significance. This indicates that while respondents perceived macroeconomic conditions as highly influential, the empirical evidence from the regression models does not support a statistically significant relationship between the selected macroeconomic variables and residential property prices during the study period.

The disparity between respondents' perceptions and the regression results suggests that residential property prices may be influenced by factors beyond the selected macroeconomic indicators. These may include location-specific characteristics, quality of infrastructure, neighbourhood amenities, land-use regulations, housing demand and supply dynamics, population growth, developer behaviour, construction costs, accessibility, security, and other institutional and environmental factors. Such factors may exert stronger influences on residential property values than macroeconomic variables alone.

Overall, the study concludes that although inflation, earnings and profitability, and location are perceived as major determinants of residential property prices, the selected macroeconomic variables (interest rate, inflation rate, money supply, GDP, and capital flow) do not significantly predict the prices of detached, semi-detached, terrace, and four-bedroom residential properties in the study area. Therefore, residential property prices are better explained by a combination of economic, property-specific, neighbourhood, institutional, and market-related factors rather than by macroeconomic conditions alone. Future studies should incorporate these additional variables to develop more comprehensive models for explaining variations in residential property prices.

From the result of empirical investigation however, the following can be said to have influenced the residential property pricing practice in Ibadan metropolis

1. That The Practitioner's Conservative and Reticent Attitudes Towards the Development to Their Knowledge in Their Chosen Career and The Acceptance of Modern Day Developments in Their Field. The Level of Significance Attached to Professional Self-Development Among Other Factors by The Practitioners Rather Their Quantitative and Explicit Approaches And
2. Lack Of Awareness on the Part of Investors as to What Should Constitute Better Pricing Methodology and the Resultant Lack of Pressure for More Accountability and Explicit Analyses on the Part of Estate Surveyors and Values Might Have Contributed to The Findings in This Study.

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