

## **Market Performance of Real Estate Stock: The Case of Nigeria**

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*The paper provides further empirical evidence of the market performance of real estate stock as an emerging asset class in the Nigerian financial landscape. While real estate stocks are often presented as useful tools for diversification, findings to date about the variations in the correlations between real estate stock's returns and general market index as well as its relative return competitiveness have remained largely mixed. The paper addresses this issue by using published longer-term asset returns data of UACN Property Development Company Plc (UPDC) as well as market index from the Nigerian Stock Exchange over 12 trading years (2000 – 2011), through the two-fold lenses of market risk and rate of return performance. Using regression analytics, the results show that the Nigerian real estate stock is not only uncorrelated to the broad market, the asset class tends to outperform the same general market in nominal and risk-adjusted terms when held in the long-term. This supports the importance of real estate stock as a relatively low-risk and high-yielding asset class that investors can leverage for building sustainable optimal portfolios. The study has implications, not only for sustainable real estate finance, but also for strategic portfolio management practice and investor education policy reforms.*

**Field of Research:** Investment Analysis and Portfolio Management

### **1. Introduction**

A vibrant capital market is very essential to the on-going Economic Transformation Agenda in Nigeria especially in terms of achieving sustainable capital formation for rapid entrepreneurial and economic development in the country. Given the increasing uncertainties in stock markets across the nations of the world, the task of optimizing portfolio returns has become more challenging than ever before. In this context, securitized real estate has been speculated as the logical answer to the growing demand for an efficient diversified portfolio because the underlying physical property asset is generally regarded as a superior investment vehicle with low inflation risk (Oteh, 2011). An empirical enquiry into the unique behaviour of asset classes in the Nigerian Capital Market could not be more pertinent given the changing market dynamics following the 2008 global financial crisis, perhaps the worst case since the Great Depression of the 1930s. A dominant view is that the recent global financial crisis was not a natural disaster but the result of large-scale investors' failure to appreciate the risk-reward behaviour associated with capital market investments (Wikipedia, 2011). In this context, there is an increasing perception of the real estate peculiarities, particularly as regards providing investors the means for portfolio diversification needed to generate stable income streams from their portfolios at low risk that can mitigate the negative

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impact of market slurs. Since its emergence fourteen years ago, Nigeria's Real Estate-backed Capital Market (RECAM) has gradually attracted research interest because of its relative novelty as an emerging segment for indirect property investing and trading.

One notable area of concern relates to the acclaimed uniqueness of real estate stock which is thought to 'behave' in contradiction to the risk-return trade-off assumption of finance (Graham & Dodd 2008; Brealey, Myers, & Allen 2014). The issue relates to the search for empirical data regarding asset class's diversification worth; that is, the extent to which the rate of return from real estate stock is truly uncorrelated with the broader market trend while outperforming the market in nominal or risk-adjusted terms. While appreciable local studies have been conducted to deal with this issue, there has been a preponderance of conflicting evidences, worsened by the sparse literature with particular regards to the Nigerian real estate capital market. Specifically, some past studies such as Amidu and Aluko (2006), Bamiduro and Aro-Gordon (2007), and Amidu, Nuhu, Aluko, and Saibu (2008), among others, have emerged to offer mixed findings about the relative volatility and competitiveness of Nigerian real estate stock. Past contributions were mostly based on data prior to the recent (2008-2009) world-wide financial crisis and it was unclear if the conclusions from previous studies were still valid. The question therefore remains as to how real estate stock in Nigeria has performed in terms of market risk and risk-return, especially since the recent global financial crisis. In addressing this issue, the present paper attempts a step further than the previous studies by looking at the market performance of real estate stocks in Nigeria, not only for more considerable period, but through more lenses, than probably hitherto done in the field.

Using the Nigeria's flagship real estate stock (UPDC) as a proxy for the asset class under study, the paper aims at achieving two-fold objectives. The first research objective is to determine whether or not the Nigerian real estate stock outperforms the market portfolio in nominal and risk-adjusted terms during the period analyzed, 2000 – 2011. The second objective is to find out whether or not there is any significant correlation between the real estate stock's return and market return during the same period. This paper is important because the current findings are expected to, among other implications, add substantially to the growing literature on investment analysis and portfolio management by providing fresh insight into current empirical market performance of real estate-backed equities in Nigeria, which has policy implications for the country's desire to leverage the capital markets for addressing the country's perennial ₦60 trillion housing finance deficit. Additionally, unless concerted research efforts are made to fill the identified gap in knowledge on actual stock market workings, many investors may continue to unknowingly maintain a high concentration of risk in their investment portfolios because of the tendency to apply the orthodox diversification strategy to securities rather than to risk (Kiyosaki, 2011).

The paper is divided into five sections. The first section is this introductory information. In section two, we reviewed some relevant literatures with emphasis on the status of empirical evidence of the subject under investigation. Section three introduces the methodology of the study while section four presents the research findings. Section five presents the conclusions/implications of the study.

### 2. Literature Review

Theoretically, the term 'real estate stock' is used to denote the evolving financial market segment dealing with the quantitative and qualitative aspects of debt and equity secondary capital markets linked to real estate (Hughes & Arissen 2005; Knight Frank Residential Research 2006; Vickery, 2009; Souza 2011). This includes the business activities of listed Real Estate Operating Companies (REOCs) which engage in direct property development activities comprising residences, office developments, shopping centres and hotel chains (Lohmeier, 2003). The present paper is however focused on real estate equity (common) stocks.

The two major issues involved in a stock's market performance are calculation of risks and returns and the relationship between the two (Raji, 2003). Investors buy a stock because it offers them the prospects of a fair return for its risk; hence the premium attached to the use of such market indicators as Earnings per share (EPS) and Price-Earnings Ratio (PER), and risk-adjusted return, among others (Graham & Dodd, 2008; Herring, Diebold, & Doherty 2010). Hence, risk/return trade-off concept is vital in stock market performance analysis because what is ultimately being evaluated is the way stock prices respond to investors' perception of their investment portfolio return, given the uncertainty in the business environment. A portfolio, in this context, is a combination of investment bouquet in various assets or securities, which is generally aimed at maximizing returns and minimizing risks. A portfolio's 'risk' refers to the variability of the returns of the portfolio around its expected return, and it is measured by the expected variance (or standard deviation) of the distribution. It is thought that diversification in a portfolio of securities or stocks that are highly negatively correlated would generally reduce the overall risk of the investor. This behaviour is perhaps most aptly explained by the *beta* coefficient postulated in Capital Asset Pricing Model (CAPM) built on an idea that stocks have their different risk/return patterns. The *beta* is the gradient (the change in the excess return on the asset over the change in excess return on the market portfolio) of a security market line that describes the relationship between an asset's return and the returns on the market portfolio. The 'market portfolio' is used to refer to all registered stocks on an exchange. The market risk thus describes the fluctuations of rates of returns caused by a long list of 'uncontrollable' or macroeconomic variables (such as lending rates, corporate income tax rate, leverage level, foreign direct investment levels, foreign exchange rate, inflation rate, effects of changes in national debt stock, systemic liquidity, trading volume, GDP growth rates, private sector credit growth rate) that affect all risky assets in the investment markets (Iyiegbuniwe 2007). The CAPM is widely reported in the literature as a versatile device by which the relationship between expected return of a security and its avoidable risk can be measured relative to the market portfolio (Kurfi 2003; Olowe 2008; Prasanna 2008; Brealey, Myers, & Allen 2014).

As crucial as relative systemic behaviour of assets is to market performance and investor education, there has been some relative paucity of empirical research regarding real estate stock's overall market risk behaviour in the Nigerian case. Much of the extant studies on the issue appeared to be focused on developments in the foreign markets or short-term gyrations of stock prices. Bamiduro and Aro-Gordon (2007) attempted an initial assessment of the new asset class's market risk based on 5-year stock dataset of Nigeria's pioneer real estate equity stock, UAC Property Development Company (UPDC). The authors provided evidence of real estate common stock's weak correlation with the market portfolio. A subsequent study by Amidu, Aluko, Nuhu, and

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Saibu (2008) provided more comprehensive data on UPDC's market risk, using the annual open and closing market prices in addition to data on all-share index (ASI), consumer price index (CPI) and yield on 90-days Treasury Bill (TB) obtained over seven years, 1999-2005. The researchers presented the descriptive, *beta* and regression coefficients of the UPDC stock alongside the market index. The study showed that real estate stock was uncorrelated with the stock market, and therefore offered a good choice for inclusion in investment portfolios. However, two limitations of the past studies are noteworthy. The first is its limited coverage - five trading years, thus necessitating the present attempt aimed at providing an updated empirical assessment. The limited coverage of past analyses might however be attributed to the current embryonic developmental level of real estate stock market in Nigeria (NSE, 2010). Secondly, the past studies were mostly based on dataset applicable to the period before the recent 2008 financial crisis that affected several markets across the globe, thus also necessitating an updated perspective provided by this paper. Overall, the approach adopted in this paper is therefore slightly divergent from existing studies basically on the basis of its wider coverage: longer-term (12 trading years) which goes a long way in ensuring the findings interpretative reliability and validity.

With respect to real estate stock's return performance, Amidu and Aluko (2006) utilized the Sharpe Model and average quarterly prices for the securities, and monthly ASI, risk-free rate of 12.26 percent which was the prevailing rate of the Nigerian Government Development Stock as at 2005, to assess the performance of listed construction and real estate companies in Nigeria. The researchers found that real estate stocks underperformed on a risk-adjusted basis, perhaps due to a declining profit experienced by UPDC, the only listed REOC. Bamiduro and Aro-Gordon (2007) demonstrated that the UPDC real estate stock outperformed the market nominally but the study was not focused on risk-adjusted performance. Further studies by Amidu *et al.* (2008) using the same the Sharpe Model however found that the real estate stock outperformed the market portfolio nominally and on a risk-adjusted basis. Aggregating all the viewpoints from the forgoing literature reviewed, the present paper is premised on the perspective that, contrary to some earlier assertions (Ooi & Liow 2004), the Nigerian real estate stock is not only uncorrelated to the broad market, the asset class tends to outperform the same general market in nominal and risk-adjusted terms when held in the long-term.

### 3. The Methodology and Model

Using long-term asset return data sourced primarily from published materials and annual reports and accounts of UPDC, the Central Bank of Nigeria, and the Nigerian Stock Exchange (NSE), descriptive and regression analytical techniques were deployed to evaluate the market performance of publicly traded real estate stock in the Nigerian Capital Market from December 2000 to December 2011. The use of UPDC is justified because the real estate stock is the longest publicly traded real estate stock in Nigeria and thus adopted in this paper as a reliable proxy for corporate empirical analysis (Seaman Jr & Smith 2012). The analysis was guided by two hypotheses. The first enquiry on whether or not UPDC stock outperformed the market portfolio on nominal and risk-adjusted terms, bordered on the relative competitiveness of real estate stocks in comparison with the market portfolio; this being ex-post-facto analysis, the evidences analyzed simply illustrated the hypotheses (Sidhu 2006, p. 202).

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The second enquiry on the real estate stock's market risk was achieved following the standard statistical approach of regression analysis (Draper & Smith 1998). In this respect, the following hypothesis was formulated:

**H<sub>0</sub>:** There is no significant correlation between real estate stock's return and market portfolio return.

In this respect, the Student's t-Test statistic was deployed following the standard procedure (Moti 2005) at t 95 percent (0.05) confidence level, based on N-1 degree of freedom. The coefficient of determination, R-squared ( $R^2$ ), was used to indicate the 'variability' of the empirical dataset, or the strength of the linear relationship between the real estate stock's return and the market portfolio return. The application of  $R^2$  as a simple measure of goodness of fit is justified by the fact that the real estate stock market line is theoretically a simple linear regression of the form:

$$f_i = \alpha + \beta_i(R_m) \quad \dots (1)$$

The  $R^2$  was computed as the square of the correlation between the outcomes and the values of the single regressor, that is,

$$R^2 = 1 - \frac{SS_{Res}}{SS_{tot}} \quad \dots (2)$$

Where,

$SS_{Res}$  = Residual sum of squares

$SS_{tot}$  = Explained sum of squares

The values of  $R^2$  test ranges between 0 and 1; the higher the correlation between the returns being analysed, the closer the  $R^2$  is to "1".

One of the more significant improvements attempted in the present contribution vis-a-viz previous studies (which tended to emphasise return performance) is our combined usage of two stochastic models – CAPM and Sharpe Ratio - for our analysis. The use of these two models was meant to effectively reflect the two major issues involved in investment performance - risks and returns and the relationship between the two. The Sharper Ratio ( $S_R$ ) is one of the widely used mathematical tools for evaluating risk-adjusted return of assets in capital markets and provides a robust means of measuring the risk-adjusted performance of real estate stocks relative to the market portfolio. This is because the model incorporates the statistical technique of standard deviation,  $\delta$ , which is regarded as the most reliable measure of dispersion (Amidu *et al.* 2008; Tuttuh-Adegun, Sivasubramaniam, & Adegoke 2009; Index Mundi, 2012; Brealey *et al.* 2014). Computing  $S_R$  was preceded by preliminary assessment of the nominal return of the real estate stock. Determining stock's nominal rate of return ( $R_i$ ) follows the literature and was obtained as follows:

$$R_i = \frac{EPS}{P} \quad \dots (3)$$

Where,

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$R_i$  = Earnings yield (nominal rate of return)  
 $EPS$  = Earnings per share  
 $P$  = Market price of the subject stock (or portfolio)

$EPS$  was given by the formula,

$$EPS = \frac{\text{Net Profit (Available to Stockholders)}}{\text{Number of Ordinary Shares}} \quad \dots (4)$$

The Sharpe Ratio,  $S_R$ , was computed in line with literature as follows:

$$SR = \frac{R_i - R_f}{\sigma_{R_i}} \quad \dots (5)$$

Where,

$R_i$  = Nominal rate of return given by equation (3)

$R_f$  = Risk-free rate (Nigerian 90-day Treasury Bill rate is the risk-free rate on an annual basis)

$\delta R_i$  = Standard deviation of stock's expected return

Standard deviation is given by the square root of the variance measure,  $\delta^2$ , that is:

$$\delta R_i = \sqrt{\delta^2} = \left[ \frac{\sum (x - \bar{x})^2}{N} \right] \quad \dots (6)$$

Where,

$N$  = the number of observations or items

$\bar{x}$  = the mean values of the empirical variables

The greater an asset's  $S_R$ , the better its risk-adjusted performance. A negative  $S_R$  indicates that a risk-less asset would perform better than the real estate stock being analyzed. CAPM's *beta* coefficient was used to determine whether or not there is any significant correlation between real estate stock's return and market return during study period. Despite the model's flaws, as observed by Fama and French (2004), among others, CAPM is still widely used in the literature (Amidu *et al.* 2008; Ashamu 2009; Olowe 2008, Brealey *et al.* 2014) and was used in the present appraisal due to its simplicity and utility, especially given the developing nature of the Nigerian real estate stock market, as earlier noted in this paper. The CAPM collapses all externalities into a well-defined variable – market return and uses the *beta* coefficient to measure the relationship between risk and return in terms of its sensitivity to the market movements.

*Beta* coefficient ( $\beta_i$ ) of the real estate stock is given by the formula

$$\beta_i = \frac{\text{Cov}(R_i, R_m)}{\text{Var}(R_m)} = \frac{\frac{1}{N-1} \sum (R_i - \bar{R}_i)(R_m - \bar{R}_M)}{\delta^2(R_m)} \quad \dots (7)$$

Where,

$R_i$  = Nominal rate of return of real estate stock  $i$

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- $R_m$  = Market rate of return  
 $N$  = Number of observations  
 $\overline{R_i}$  = Average nominal rate of return of real estate stock  $i$   
 $\overline{R_m}$  = Average market rate of return

The market Return ( $R_m$ ) was determined as a derivative of market *PER* (Price-Earnings Ratio) over the study period, as follows:

$$R_m = \frac{1}{\text{Market PER}} \quad \dots (8)$$

*PER* is given by the reversal of equation (3) as applicable to the subject real estate stock or the market portfolio.

### 4. The Findings

One of the most important findings to emerge from this study was that the Nigerian real estate stock, not only outperformed the market portfolio in nominal terms, but also on risk-adjusted return basis, in consistency with earlier findings of Amidu *et al.* (2008). Further analysis of the overall results of data-gathering exercise for the study over the trading period, 2000 – 2011 present in Table 1 shows the average  $R_f$ ,  $R_i$ ,  $R_m$  as 11.34 percent, 12.25 percent, and 6.21 percent respectively. With the average rate of return performance of 12.25 percent ( $R_i$ ), the superior nominal return performance of the Nigerian real estate stock relative to the market ( $R_m$ ) and risk-free ( $R_f$ ) portfolios is evident.

**Table 1: Return performance of Nigerian real estate stock (UPDC) and market portfolio 2000 – 2011**

Data/Results	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
UPDC market price (Naira) ( $P$ )	1.52	4.62	4.00	6.60	8.90	8.75	13.8	23.4	26.8	19.86	16.51	12.00
UPDC earnings per share (EPS) (Naira)	0.49	0.57	0.74	0.91	0.45	0.77	0.88	0.97	3.23	2.21	1.69	1.48
UPDC Price-Earnings Ratio (PER)	2.41	1.75	1.35	1.10	2.22	1.30	1.14	1.03	3.10	4.52	5.92	6.76
UPDC earnings' yield, $R_i$ (%)	32.24	12.34	18.50	13.79	5.06	8.80	6.38	4.15	12.03	11.13	10.24	12.33
Market Price-Earnings Ratio (PER)	12.25	14.01	12.52	19.75	29.02	22.30	17.92	27.8	15.9	11.46	14.24	14.32
Market Return ( $R_m$ ) (%)	8.16	7.14	7.99	5.06	3.45	4.48	5.58	3.60	6.27	8.73	7.02	6.98
Nigerian Treasury Bill Rate, $R_f$ (%)	15.25	18.38	18.35	15.03	14.25	7.00	8.80	7.00	4.50	6.05	7.50	14.00

Sources: Authors' research, NSE (2012), and computation results, 2013.

In the same vein, as shown in Table 2, the highest Sharpe ratio of 0.12 recorded by UPDC evidenced the risk-adjusted performance superiority of the Nigerian property-backed stock which makes it the most desirable asset relative to the market portfolio, which recorded a negative (- 2.90) Sharpe Ratio. Thus, from the results presented in Table 2, it is deduced that the real estate asset class even appeared to be a safer investment than the risk-free asset ( $R_f$ ) during the period.

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**Table 2: Nominal and risk-adjusted return performance matrix for Nigerian real estate stock (UPDC), market portfolio, and risk-free portfolio (2000 – 2011).**

Asset	Average Nominal Rate of Return per annum (%)	Sharpe Ratio
UPDC (Ri)	12.25	0.12
Market Portfolio (Rm)	6.21	-2.90
Nigerian Treasury Bills (TBs) (Rf)	11.34	0

Sources: Authors' research and computation results

In essence, contrary to some past findings (notably, Ooi, & Liow 2004; Amidu & Aluko 2006), the results of the present study has gone some way to demonstrate the competitiveness of the Nigerian real estate stock, given that both the nominal and risk-adjusted performance of real estate stock exceeded that of the entire market over long run.

The superior return performance of Nigerian real estate stock may be attributed to several reasons. One major factor is the country's perennial housing deficit (worsened from 7 million in 1991 to 15 million in 2008 with current estimates being in the region of 17 million, as well as the huge housing finance deficit of ₦60 trillion) which continues to drive demand in the primary property markets, particularly in the country's major urban centres like Lagos, Abuja, and Port Harcourt (Moghalu 2011). Fueled by scarcity of quality accommodation, there is a tendency for the available real estate units to appreciate in value, while the secondary real estate investment counterpart become more valuable and the stock price tend to rise steadily, as many analysts have asserted (Osamwonyi 2006; Sangosanya 2008; Mabogunje 2008; Ebie 2011; Igbinoba 2011). The finding thus provides a good basis for encouraging the integration of real estate to the capital market to further stimulate country's rapid economic growth and development (Ola 2007).

**Table 3: CAPM beta coefficients and R<sup>2</sup> Matrix of the Nigerian real estate stock (UPDC) (2000 – 2011)**

Asset Class	$\beta$	t-Test	Critical Value @ 0.05 significant level	R <sup>2</sup>
UPDC	23.12	0.00631	1.78	0.4437

Sources: MSEXcel Computation Results

The second major finding from this study was that Nigerian real estate stock has so far generally exhibited no significant correlation with the market portfolio, consistent with some previous studies, notably Amidu *et al.* (2008). The second column of Table 3 reveals information on the degree of market risk ( $\beta$ ) of the UPDC stock, while the third column shows the respective Student's t-Test statistic. The fourth column shows the critical values (t table values) at 0.05 significance level, with the R<sup>2</sup> values shown in the last column of the table. With respect to the Nigerian real estate, since the calculated t value (0.00631) is less than the t table value (1.78), the null hypothesis is accepted while the alternative hypothesis is rejected. The validity of the test result is reinforced by the relatively low R<sup>2</sup> value (0.44), which is less than the 0.70 minimum thresholds required to assure significant positive correlation. In essence, there is no significant correlation between the real estate stock return and market portfolio return, thus revalidating the risk-diversification value of the real estate asset class. The result



implies that real estate stock can serve as an effective hedge against volatile changes in stock markets.

When an understanding of real estate stock's relatively low market risk (Tables 3) is combined with the stock high-yielding performance (Tables 1 & 2) the resultant market performance of the asset class would seem to negate CAPM's trade-off assumption of higher risk for higher return, thus validating the "misbehaviour" or "special" investment character of real estate stock, as alluded to by Mandelbrot (2004), and Ebrahim and Hussain (2010), among others. The result also aligns with recent views which challenge the low allocation given by Sovereign Wealth Funds to real estate in their global portfolio (Sharma & Jeon 2010, Banerjee 2012).

### 5. Conclusions

This paper has tried to provide further evidence of the market performance of real estate stock as an emerging asset class in the Nigerian financial landscape, thus providing additional information on the market segment towards optimal investment decision-making process. Real estate stocks' significantly weak correlation with the market portfolio reveals the portfolio-risk diversification value of the real estate asset class in consistency with basic thinking of CAPM. However, when the relatively low-risk nature of the Nigerian real estate stock is combined with its superior risk-adjusted and nominal return performance, there is a 'uniqueness' that seems to negate CAPM's higher risk for higher return trade-off assumption. The study has thus shown that Nigerian real estate stock remains largely low-risk, yet high-yielding, good risk-diversifiers that investors and fund managers such as pension funds and sovereign wealth managers can leverage for building optimal portfolios, particularly during periods of heightened macroeconomic uncertainties of the kind witnessed over the recent years across the world. This has implications, not only for sustainable real estate finance, but also for strategic portfolio management practice and investor education policy reforms in terms of helping to establish real estate stock as a valuable asset class for achieving maximum portfolio return performance, stability, and growth.

Two caveats need to be noted regarding the present research study. Firstly, while the sample size used in this study might be an appreciable improvement on the previous studies, the sample size ( $N < 30$ ) researched for requisite analysis could be considered relatively small. The Nigerian real estate securities market is still at its introductory stage of development, hence the paucity of samples. Consequently, caution must be applied, as the findings might not be transferrable to some other variants of the real estate asset class such as privately traded property-backed equities, public and private bonds and derivatives. Secondly, with respect to real estate market risk, the simple R-squared tool used in this paper by itself does not tell us the entire story; further research may be necessary to compare the empirical results from this study with what is obtainable from other regression approaches.

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