

REIT Financing of Real Estate Development Projects in Nigeria: Why Not?

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This study appraised the investment option of REITs directly financing real estate developments within the REIT investment guidelines in Nigeria. The focus is to grow the real estate sector of the emerging Nigeria REIT market, especially where there exists a low stock of real estate assets. Asset allocation strategy of the modern portfolio theory anchored on the Markowitz's efficient frontier model was adopted taking into consideration the REIT regulations in Nigeria. The study found that Nigeria REIT can adapt real estate financing as an option of investment diversification because of the potential return benefit exhibited with an efficient REIT portfolio of 70% real estate acquisition, 20% construction finance and 10% financial deposit asset allocation strategy, yielding a return of 8%, which was 89% higher than the 4.23% maximum return of 100% asset in real estate alone. The study provides an insight into the developing Nigeria REIT market and recommends a review of REIT law to encourage REIT investment into direct construction financing in other to grow property stock in the emerging real estate markets to a sustainable level.

Keywords: *Efficient Frontier, Real Estate, Real Estate Finance, REIT, Return.*

1. INTRODUCTION

The place of effective and efficient financing and its importance in a thriving real estate market for sustainable real estate investment and development cannot be overemphasised. The finance available to the property market is in various forms and terms that vary from one source/agency to another. Since real estate development involves a commitment of substantial capital expenditures, finance is critical while the availability of funds at reasonably low costs is vital for the real estate sector to operate commercially and successfully. It has become apparent that in Nigeria and many African countries alike, there is lack of adequate funding for the development of real estate assets and its associated facilities and services. Despite the importance of finance to real estate development, there is a paucity of information with regard to how much money is available for real estate development, how much funding that has gone into it, a method of funding and by whom in Nigeria (Odunsi, 2011 and Ogunba, 2009). In the past, the focus had centred on mortgages towards home ownership and the development loans for home creation as

well as commercial properties including tourism and hospitality properties, left in the hands of commercial banks. Ogunba (2009) emphasised that a considerable sum of money in the realm of billions of Naira (Nigerian currency), contributed to the National Housing Fund through the mandatory 2.5% of income contribution by all workers, have remained inaccessible due to requirement bottlenecks and therefore unutilized for the purpose of its creation which is easy access to funds for home acquisition for the contributors. The Pension Act of 2004 is intended to channel long-term funds to the real estate sector through the indirect real estate investment like REIT, but in reality, trillions of Naira that has been accumulated could not find its way into real estate sector as proposed. This is because the Pension Act of 2004 did not provide any guidelines to facilitate the mobilisation of the accumulated pension fund to the real estate sector (Odunsi, 2011).

Oreagba (2010) reiterated the consensus of the Nigerian Stock Exchange (NSE) and the Securities and Exchange Commission (SEC), the two key stakeholders to have "*identified*

REIT as a suitable product (investment outlet) to deploy the much needed fund into real estate sector through the channel of the Pension Fund assets and also in order to further deepen the Nigerian Capital Market". However, REITs laws and regulations restrict asset options on which REITs can invest their fund and the size of REIT fund allocations to the tolerable investment asset classes. Most REIT markets studied reveal that a minimum of 70% of a REIT fund is to be invested in real estate assets (both direct and indirect). However, Nigeria REIT regulation pitched a tent with 75% minimum REIT fund investment in direct real estate asset, with a maximum of 10% of asset investable in non-real estate securities, indirectly providing for about 90% asset investment in both direct and indirect real estate asset classes. Interestingly, with the vast gap of about 16million housing deficiency in Nigeria intertwine with a shortage of retail properties, where is the property to be acquired with 75% REIT fund? Thus, this study argued that REITs will need to partake in the creation of real estate asset through funding of the process of construction or property development albeit with new risks if only to create property assets in their investment portfolios.

Earlier studies have examined REIT in a mixed portfolio and found it to be a portfolio diversifier in most markets. These studies had relied on mean-variance approach and correlation analysis to study diversification. No study is found that focused on REIT diversifying into the direct construction of real estate products. Perhaps the existence of Mortgage REIT in the developed markets with a focus on mortgage securitisation creates no necessity for REIT to directly finance construction in such markets. The only report was the involvement of Mortgage REIT in direct financing of real estate activities in the

period 1968-1970 as reported by Chan et al. (2003). In the absence of literature on the focus of this paper, this study proposes a new N-REIT investment options including of property development finance to property acquisition and time deposit in the REIT portfolio taking into consideration the provision of existing REIT law. This way, the study contributes to literature to fill the gap of REIT fund allocation model beyond property type and geographical diversification. It also calls into focus, the awareness of policymakers and regulators to the peculiarity of each market in order to encourage REIT growth in line with economic and social realities of each market. The rest of this paper is discussed in sections. Section 2 briefly reviews some literature and earlier studies on Nigeria real estate market, sources of finance and the role of REIT in direct real estate development financing as well as asset allocation strategy. Section 3 presents the methodology and data set, while empirical results are presented in section 4. The last section 5 discusses the study findings and conclusion is presented in section 6 highlighting limitation.

2. LITERATURE REVIEW

2.1. NIGERIA PROPERTY MARKET

Graaskamp (1989) identified the complexity of the real estate system with its interconnectivity with the process of real estate development including the need and conceptualisation, an investment that has to do with capital deployment and consumption which is the utilisation of the finished product. Central to these three interwoven relationship of real estate life is the problem of finance. The tripartite relationship includes the developer, the user and the public as shown in figure 1 – therefore, real estate system could be regarded as a cash cycle enterprise.

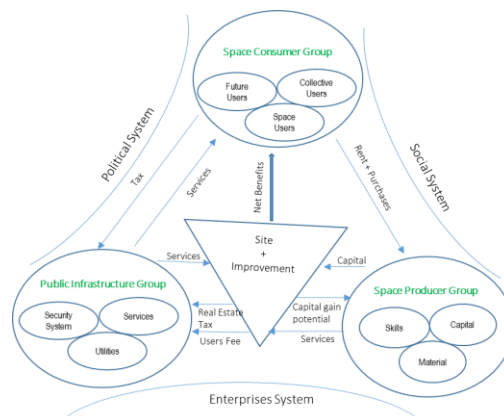


Figure 1: Real estate system
Resources: Adapted from Graaskamp, 1989

Nigeria, the most populous African nation and the 9th in the world, became the lead economy in Africa in 2014 recording a growth rate of 8.5% (Khan, 2014). Creating required attraction, the country was also declared a potential destination for the investment diversification through Foreign Direct Investment (FDI) (Baum, 2006, 2008). Over US\$20 billion capital flight into Nigeria through FDI was recorded between 2010 and 2013 (David, 2014). However, there is no trace of any fraction of this amount in the real estate sector. Despite, Nigeria with its estimated population of 180 million people and 16 million housing shortage will doubtlessly support investment in real estate sector both residential and retail. The present yearly expansion of ShopRite, a South Africa based retail shopping outlet across the big cities of Nigeria is a testimony to the real estate opportunity in Nigeria. The aftermath of the presidential election of 2015 with the fall in global prices of oil (the Nigeria primary revenue source) plunged the country into recession in 2016 of which Nigeria is just coming out after a lot of policies redirection and economic diversification. This has a little devastating impact in the real estate sector with more yearning for finance to complete the ongoing projects. Today, the economy is engaging with the improvement of macroeconomic variables, improved rating of Nigeria in the ease of doing business as recorded in the current year (moving up by 24 positions to 145 from 169 in the previous year).

African property markets have received low participation from international property investors and Nigeria market is no exception. Only South Africa market has featured in the global property (REIT) reports consecutively. Dugeri (2012) and Akinbogun *et al.* (2014) in their different studies of Nigeria property market maturity, found the immaturity of the property market in terms of market transparency, professionalism, land and property right, land use and planning, market knowledge and access to loan capital. Akinbogun *et al.* (2014) emphasised property right documentation being the primary challenge leading to market inefficiency in Nigeria. While there have been studies on Nigeria property market in terms of growth, performance and financing, little studies exist on REIT subsector and how REIT can revolutionise the real estate financing. Amidu *et al.* (2008) found Nigeria real estate securities outperforming the stock market on a nominal

basis, but have an underperformance on a risk-adjusted basis. The study further found that real estate security did not provide a hedge against inflation and will not provide a substitute for direct property investment. Olaleye and Ekemode (2014) reported a similar finding of real estate equities outperforming the stock market on the nominal basis with a higher level of risk resulting in a slightly lower performance on return-risk ratio analysis. Nevertheless, Nigerian banks were found to have a substantial investment in real estate holdings in place of real estate financing role they are supposed to play in the economy through mortgage creations. The banks created real estate units that invest in properties both directly and indirectly under their asset management department (Oladokun & Aluko, 2012). Nevertheless, Nigeria real estate sector has a significant role in the Nigerian economy. In the words of Oreagba (2010) “*real estate is the largest asset class in the world (comprising more than 54% of global financial wealth) and in Nigeria, it has consistently shown significant growth over the years*”. In 2015, National Bureau of Statistics (NBS) reported 8.01% (NGN6.677tn) contribution of the real estate sector to the 2013 Gross Domestic Products (GDP) which indicated an increase over 7.56% (NGN4.9tn) contribution in 2010.

Nigeria REIT belongs to the construction/real/estate sub-sector of the Nigerian Stock Exchange with 3 REIT companies (Skye Shelter Fund Plc, Union Homes REIT and UPDC REIT); one (1) property company (UACN Property Development Company – UPDC Plc) and 5 construction companies (ARBICO Plc, Costain West Africa Plc, G. Cappa Plc, Julius Berger Plc and Roads Nigeria Plc) listed in the Nigeria stock exchange. The size of N-REIT in term of capitalisation is NGN39.99bn (US\$127m) representing 0.41% of the stock market capitalisation as of May, 2017 (Adeleye, 2017). The 3 REITs in Nigeria have invested more in the residential property sector (Table 1). This is unexpected as the early reason to establish REIT in Nigeria is to create a fund for development of homes towards solving the housing deficiency of 16million units in Nigeria. However, the houses available are far lower in a number of units and beyond the affordability range of the low and medium income earners of the Nigeria citizens. The Nigeria REIT regulatory structure is presented in Table 2.

Table 1: Nigeria REIT Profile as at 31st December, 2015

REIT/TYPE	Year Listed	Units	Price (NGN)	Capitalisation (NGN'm)	Sector Share (%)	Property Types
Skye Shelter (Equity)	2007	20,000,000	100	2,000	5.00	Residential and Commercial
Union Homes (Hybrid)	2008	250,000,000	45.22	11,306	28.27	Residential and Commercial
UPDC (Equity)	2013	2,658,000,000	9	26, 682.7	66.73	Residential, Commercial and Hotel

Source: Authors Compilation from Nigerian Stock Exchange Weekly Report and N-REIT Annual Reports of 2015

Table 2: Nigeria REIT Regulatory Structure and Characteristics

Features	Regulations
Management	Internal Management
Property Investment	At least 75% on real estate assets for close end and 70% on real estate assets for open end.
Overseas investment	No
Property Development	Yes, only for inclusion in portfolio
Gearing	25% of fund
Distribution	At least 90%
Capital gain tax	Exempted
Stamp duty	15%
Unit Holder	Minimum of 100
Market transparency	Opaque
Withholding tax	10% in the hand of unitholders
Listing	Nigerian Stock Exchange (NSE)
Regulatory body	Securities and Exchange Commission (SEC)
Legislation	Investment and Securities Act (ISA) 2007

Source: Author's compilation from guidelines from SEC, NSE and ISA 2007

2.2. REAL ESTATE DEVELOPMENT FINANCE IN NIGERIA

In Nigeria, the various financial sources to real estate development existed as it is in another economy through building societies, savings and loans companies, commercial banks, development banks, mortgage institutions, and other financial institutions like insurance companies and pension funds. Lately is the creation of special purpose vehicles (SPVs) like

REIT. However, the degree of inefficiency and ineffectiveness in the Nigeria real estate sector is worrisome. The market has been found to be immature (Dugeri, 2012 and Akinbogun *et al.*, 2014). The pension fund has not been active in real estate financing in past years. Odunsi (2011) asserted that the Nigerian Pension Reform Act of 2004 which was fashioned similar to the Chilean Pension Law restricts investment of pension fund on direct real estate assets and with no apparent guidelines on indirect investment

strategy. The accumulated fund to the pension through contributory pension scheme had amounted to above N4tn (Four trillion Naira). Section 73 of the Nigerian Pension Reform Act 2004 is the section that permits the Pension Fund Administrators (PFAs) to engage in real estate investment and by the end of October 2010, N170.52bn (5.6% of the accumulated fund) had been invested in the real estate sector. The aggregate loan and advances to mortgage banks, however, decline to N126.6bn (4.2%) in December 2011 (Kama *et al.*, 2013). Between 2007 and 2014, the yearly mortgage loan to total bank assets ratio averaged 35% which is less than the regulatory requirement of 50% (CBN, 2014).

In contrast with the mortgage/housing finance, real estate development financing is geared towards creating the real estate asset by a developer upon which a mortgage can be secured for home ownership or business occupation as the case may be. At the heart of the creation of real estate assets is adequate funding for the construction. A short-term finance arrangement for construction is referred to as 'Construction Loan'. Developers usually approach commercial, merchant and/or development banks or other financial institutions for the construction/development loan (also known as 'Bridging Finance'). Big project financing usually takes two forms of (i) Line of Credit and (ii) mortgage secured construction loan otherwise known as "Trust Deed" (Bond *et al.*, 2011). Cumming (2008) emphasised borrowers' good relationship with their lender in order to secure a favourable deal. A construction loan is short-term bridging finance for building project purposes, usually within a year for a single-family residence, and a maximum of two years for apartment house constructions (Bond *et al.*, 2011). It can extend to three years for massive commercial developments (Cummings, 2008). A construction loan is an advance on instalment basis according to the progress of work during construction as may be certified by the appropriate professional officer. The loan attracts periodic payment of accrued interest.

2.3. THE ROLE OF REIT IN REAL ESTATE DEVELOPMENT

At the time of different financial crises, availability of funds is very limited to be deployed to the mortgage sector heralding high interest rate on the few mortgage finance available. The default rate in the mortgage sector led to the global financial crises of 2007/2008. The illiquidity of real estate asset especially in

terms of the emergency need for cash makes it more difficult for lenders to foreclose mortgage loan in a short time. This led to the emergence of a market where loans can be sold and funds raised prior to their various maturity dates (Watanabe, 1998). The platform to meet this need is presented by the secondary mortgage market (Cumming, 2008 and Bond *et al.*, 2011). A Special Purpose Vehicle (SPV) is created in the secondary mortgage market to unitise loan originated by a lender (Mortgage bank), the units are sold to investors or unitholders and the loan originator gets back its money for business continuity. The primary function of the secondary market is to re-allocate fund from areas of less need to the sector that require funding thereby providing the needed capital for primary mortgage sector and in turn to real estate development (Bond *et al.*, 2011). Quite a number of investors, both private and institutional, lenders and funds inclusive of foreign direct investment (FDI) are participants in the secondary market.

REIT follows the process of SPV and unit's allotment to unitholders where the fund raised is invested in real estate asset acquisition, thereby serving the (indirect) real estate financing purpose and function. It is seen to give succour to the shortage of funds for the real estate sector. Even in developed economies where their mortgage systems are fully operational and had been successful, the discovery of contemporary sources has revealed that a less costly source of funding will foster real estate development activities. Again, the idea is to pool together small resources from individuals into funds that are sizeable for real estate acquisition and development. The primary goal of REIT is on property asset acquisition, property company shares and mortgage instruments.

As a response to the importance of short-term loan to real estate development and acquisition in the USA, many Mortgage REITs were established between 1968 and 1970; these REITs invested 75% of their fund in the direct mortgage as well as short-term loans to finance property construction (Chan *et al.*, 2003). Some countries where there is efficient mortgage sector to provide capital for property developments at reasonable interest rates do not have the problem of financing real estate asset creation. However, there is a need for fund provision to buy the final products so that developers can recover the money spent and profit to sustain their business venture, liquidate their construction loans (together with interest) to the financier(s) and move on with their

property development business. Also, developers (both in developed and developing economies), generally do not have access to long-term loans that can span the period to recoup their investment through income earnings. This often leaves them with little option but to sell out the development products immediately upon completion. This is where REITs (Equity) serve as off-takers with the mandatory minimum of 70% of a REIT fund in real estate assets. REITs are expected to manage the purchased assets, get periodic income in the form of rents and make distributions to investors from the net income. In this way, REIT operates in a similar way to fund unitisation, affording rescue to the mortgage originator(s).

In Nigeria, there is an absolute shortage of funds for property development with rigid requirements that either make them infeasible to secure (Omirin, 2002; Onyiuke, 2002). As an example, loans are subjected to prohibitive interest rates (double digit) and shorter repayment period during which construction is still in progress. Therefore, REIT will help in a long way to provide funds for real estate development as it does in the United States by most mortgage REITs in 1968-1970 as reported by Chan et al. (2003). REIT was conceived in Nigeria as a suitable investment outlet for the deployment of required capital into property construction from the accumulated Pension Fund assets and also geared towards deepening of the Capital Market (Oreagba, 2010). The challenge in the Nigeria REIT market is the fact that only three (3) REITs are existing out of which two (2) are equity REITs and one hybrid REIT (Table 1). The obstacles to N-REITs financing of real estate development lie within the existing operational rules and regulations. N-REIT is mandated to invest a minimum of 70% of its

funds in direct real estate acquisition and a maximum gearing of 25% of its asset (Table 3). This paper, therefore, advocates that REIT fund, even in the face of the existing regulations can be invested in financing real estate projects at a discount to current financing cost and still enjoy improved income from the high interest rate on financing. Then the next challenge may be on the allocation of remaining 30% of the N-REIT asset for optimum return and performance. The next section reviews the asset allocation strategies of investment portfolios.

2.4 ASSET ALLOCATION

Asset allocation function is the first requirement in portfolio diversification. It determines the size of the defined fund that goes to the different asset in the portfolio in an efficient manner (Avramov & Zhou, 2009). The modern portfolio theory of Markowitz (1952) has been the foundation of portfolio analysis where the asset is considered with references to the return – risk analysis of each investment (mean-variance paradigm). The Markowitz efficient portfolio is created by searching through all possible combinations of the investment options available, in order to find the combination that maximises expected return at any minimum level of risk. The efficient frontier is concave because portfolio risk is a function of the correlation of the component assets which changes in a non-linear fashion as the weightings of the component asset changes (McWhinney, 2012). Therefore, asset allocation depends on correlations of returns and return risk characteristics (Hoesli & Lizieri, 2007 and Webb & Liow, 2009). The smaller the correlation, the greater the benefit from diversification (Fig. 2).

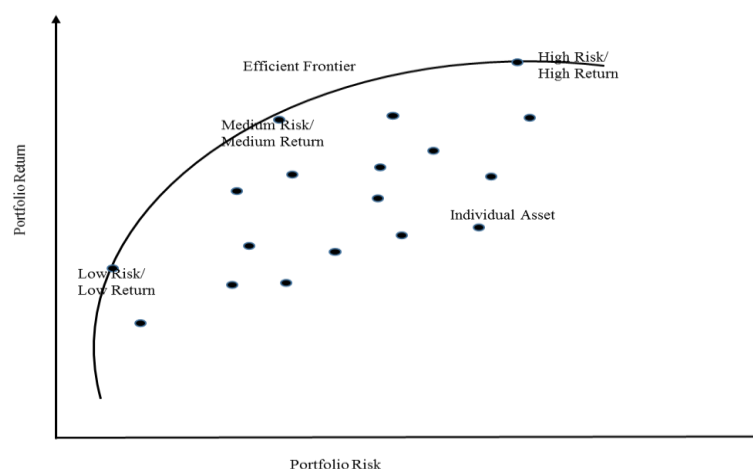


Figure 2: Hypothetical Mean-Variance Efficient Frontier (Source: Pham, 2013)

Avramov and Zhou (2010) asserted that portfolio selection is one of the most critical problems in practical investment management. The mean-variance paradigm of Markowitz efficient portfolio model (1952) which analytically formalises the risk-return trade-off is widely adopted in the selection of optimal

portfolio. An expansion of the Markowitz work is the added concept of a risk-free asset, a super profit efficient portfolio and capital market line to the process of portfolio construction – Sharpe Ratio concept. This makes possible construction of portfolio with superior risk-return to a portfolio of efficient frontier (Fig. 3).

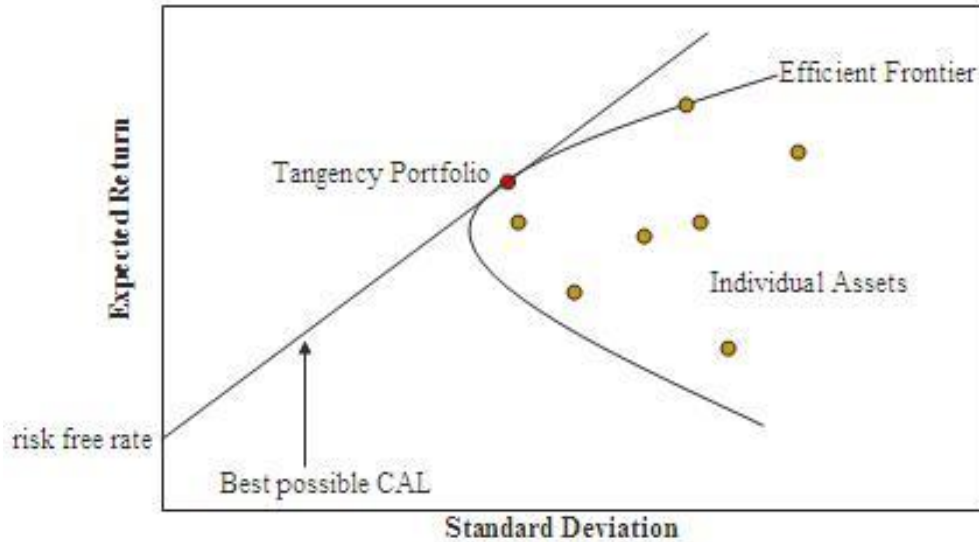


Figure 3: Efficient Frontier with Capital Asset Line of Risk-Free Asset

There is no available literature on the asset allocation of REITs to property development financing. The earlier studies on asset allocation have considered REIT as a mixed-asset portfolio diversifier in an investment portfolio rather than looking for REIT asset allocation to financing (Conover *et al.*, 2002; Newell *et al.*, 2013, 2015; and Webb and Liow, 2009). This could be due to the existence of a working property finance systems in most REIT markets and the availability of developed properties to be acquired by REITs. Also, there is well developed mortgage debt securitisation through Mortgage Backed Securities (MBS) where Mortgage REIT plays an important role. Contrarily, Nigeria market lacks efficient mortgage system and presents an inefficient property development financing system amidst paucity of property stock. Parker (2014) investigated the property investment decisions of Australian REITs. The focus was on the strategic allocations of REIT assets to property types and geographical spread which are the diversification possibilities of an Equity REIT in order to create a desiring portfolio. However, there are Mortgage REITs of which primary investment option is indirect on securitised mortgages (and by extension) in property development financing in the developed market like United States (US). This paper did not analyse the asset allocation of mortgage REITs because larger percentage of a mortgage REIT

fund is expected to be in securitised mortgages. However, the novelty of this study is in it being the first to assess the possibility of equity REITs directly financing property development project. This stem from the lack of property stock and the high financing cost (double digits) in the Nigeria property market.

3 DATA AND METHODOLOGY

3.1. DATA

Secondary data for the asset in this study were collected through the respective websites of government departments and companies' websites. Return on direct real estate property investment in Nigeria for the period 2008 – 2015 was extracted from the annual report of the UPDC Plc, a leading and dominating property company in Nigeria. The annual report covers the entire property assets of residential and commercial properties of UPDC plc spanning across the country with more concentration in major cities of Lagos, Abuja, Kaduna, Enugu and Portharcourt. The returns are from real estate transactions involving leases and sales of properties developed by the bank.

Lending rates (real estate and construction) for all the Nigerian banks were collected from the Central Bank of Nigeria (CBN). The average of

prime and maximum lending rate of all banks is adopted for this study. Interest rates of the commercial banks' Time Deposit were also collected to arrive at the average interest rate from the CBN (appendix 1). The stock return is calculated from the extracted annual all share index (ASI) of the Nigerian Stock Exchange (NSE) with 2008 as the base year. This is because the REIT entered the Nigeria stock market in 2008. The CBN year to year inflation rate is 9.62% and free risk rate of return of the Nigeria Treasury Bill (TB) is 8.04%.

3.2. METHODOLOGY

The adopted model is the return-risk approach of Markowitz which estimates the portfolio return and portfolio risk of both the existing investment option and the proposed investment diversification. The use of standard deviation was employed to measure investment risk. For each investment option, the expected average return is calculated and different fund allocation weights (based on percentage) were applied to respective average return from each asset class and added together to arrive at the portfolio return. This exercise is performed with varying weights combinations until the return is maximised. The formula is:

$$R_p = \sum_{i=1}^N W_i R_i \quad (1)$$

Where R_p = Portfolio Return, W = Asset Weight, R = average return and i = investment options ranging from 1 to n.

For two investments options of real estate (A) and real estate development financing (B).

$$R_p = W_A R_A + W_B R_B$$

To adjust for the corporate tax on investment B based on the existing legislation, the formula is modified as

$$R_p = W_A R_A + W_B R_B - T_B$$

Where T_B is tax on return from investment B. Thus:

$$R_p = W_A R_A + W_B R_B - (W_B R_B * \text{Tax rate}) \quad (2)$$

To calculate the portfolio risk, having known the individual investment risk nature in the form of standard deviation, the portfolio risk formula is applied as:

$$R_p = \sqrt{\sum_{i=1}^N \sum_{j=1}^N W_i W_j \rho_{ij} R_{ij}} \quad (3)$$

in an expanded form using three investments options as contained in this paper.

$$\beta_p = ((W_A^2 \beta_A^2 + W_B^2 \beta_B^2 + W_C^2 \beta_C^2 + 2W_A W_B \beta_A \beta_B * PAB + 2W_A W_C \beta_A \beta_C * PAC + 2W_B W_C \beta_B \beta_C * PBC))^{0.5} \quad (4)$$

This paper considers a REIT portfolio of three (3) assets within the existing regulation of real estate, deposit and real estate financing. The stock market is added to know how the three assets perform in comparison with the stock market return. The Weight allocated to each investment option is hypothetical (expressed in percentages) but can be applied as a proposed asset allocation for the raised fund by the N-REITs from the capital market at their initial public offers (IPOs).

4. ANALYSIS AND RESULT

Table 3 shows the descriptive statistics of the average return of the four investment options (assets) in this study. Real estate finance gives an average return of 22.57%, with the volatility of 3.26%. The minimum lending rate is 14.5% while the maximum is 27%. Time deposit has an average return of 9.76% with 1.5% volatility, a minimum interest rate of 6.23% and a maximum of 11.5%. Real estate yield is 4.23% and standard deviation of 1.49% with a range of 2.52% to 6.36%. The Nigeria stock market return is 2.56% having the highest volatility of 29.57%, maximum and minimum index return is -32.22% and 44.37%, respectively.

Table 3: Descriptive Statistics Return on Assets (%)

	N	Minimum	Maximum	Mean	Std. Deviation
Time Deposit	21	6.23	11.50	9.76	1.50
Real Estate Finance	21	14.50	27.00	22.57	3.26
Real Estate	7	2.52	6.36	4.22	1.49
Nigeria Stock Market	7	-32.22	44.37	2.56	29.57

Table 4 presents the return risk analysis of the assets. Real estate finance has the highest return in terms of both return-risk ratio (6.92%)

and risk-adjusted return-Sharpe Ratio (4.46%). This is followed by Time Deposit (6.51% & 1.15%).

Real estate return posits a higher return-risk ratio (2.84%) over the stock market (0.09%) but the stock market outperformed the real estate on

risk-adjusted return basis (-0.18% against -2.56%), though both on negative signs.

Table 4: Risk-Return Analysis

Assets	Av. Return	Risk	Free Risk Return (TB)	Return-Risk Ratio	Risk-Adjusted Return	Ranking
Real Estate	4.23	1.49	8.04	2.84	-2.56	4
Finance	22.57	3.26	8.04	6.92	4.46	1
Time Deposit	9.76	1.5	8.04	6.51	1.15	2
Stock Market	2.57	29.57	8.04	0.09	-0.18	3
Inflation (9.62%)						

Tables 5 presents an expected portfolio construction of a typical Nigeria REIT company at various asset allocations of the two legally allowed investment options of real estate and deposit under existing regulations. The REIT law specifies a minimum of 70% asset allocation to property acquisition and the remaining 30% to other investment vehicles relating to real estate (In Nigeria, 75% real estate, 25% real estate related securities, a maximum 10% allocation to financial assets

like deposits). The current asset allocation for Nigeria REIT is between property and fixed income investment (time deposit) as reflected by the Skye REIT investment portfolio of 17% allocation to deposit. The result shows a marginal and insignificant increasing portfolio return from 4.23% to 5.89%, as more fund is allocated to deposit from 0% to 30% and the portfolio risk keep decreasing. The highest Sharpe ratio is at the maximum allocation of 30% to time deposit (Table 5).

Table 5: Current N-REIT fund allocation possibilities and return analysis

Data	Asset Weight (%)		Yield (R E)	Yield (TD)	Portfolio Return	Portfolio Risk	Sharpe Ratio
	Real Estate	Deposit					
Risk Free Yield = 8.04%	100	0	4.23%	9.76%	4.23	1.49	2.78
RE = 4.23%	95	5	4.23%	9.76%	4.51	1.46	3.03
Time Deposit = 9.76%	90	10	4.23%	9.76%	4.78	1.44	3.27
SD (RE) = 1.49	85	15	4.23%	9.76%	5.06	1.42	3.52
SD (TD) = 1.50	80	20	4.23%	9.76%	5.34	1.40	3.77
Cov (RE&TD) = 1.36	75	25	4.23%	9.76%	5.61	1.38	4.01
P(RE&TD) = 0.61	70	30	4.23%	9.76%	5.89	1.36	4.26

Table 6 shows the optimum portfolio of both the current asset options and proposed asset options. The optimum portfolio using excel solver analysis and with the constraint of 70% minimum allocation to real estate is 30% to

time deposit. It also shows the optimum portfolio using excel solver to minimise variance and the condition of 70% minimum allocation to real estate as a constraint.

Table 6: Minimum Variance Optimum Portfolio

Current Fund Allocation						
ASSETS			Portfolio			
Weight	Return	Variance	Risk (STD)	Return		
RE	0.70	4.23%	1.86%	13.65%	5.89%	
TD	0.30	9.76%				
	1.00					
Proposed Fund Allocation						
ASSETS			Portfolio			
Weight	Return	Variance	Risk (STD)	Return		
RE	70%	4.23%	2.46%	15.68%	8.00%	
TD	10%	9.76%				
Finance	20.0%	22.57%				
	100%					

Table 7 shows the proposed allocation of funds to real estate development financing for various combinations in consideration of minimum allowed real estate investment of 70% of the fund to show the movements of return and risk across asset combinations in comparison to the solver analysis of optimum asset combination in Table 6. This also takes into account the assumption that any income from financing activities will be tax liable at the 10% income tax rate. The result of the analysis shows an increase in portfolio return as more fund is allocated to other two assets (real estate finance and time deposit) at various possible asset allocations, from 4.23% (100% real estate investment) to 9.05% (70% real estate and 30%

real estate finance investment options). The portfolio risk varies at different asset combinations (both above and below the risk at 100% real estate investment). Table 7 also shows the similar allocation of an asset with the optimum portfolio using excel solver to minimise variance and the condition of 70% minimum allocation to real estate as a constraint. The result suggests that the efficient frontier where the maximum return is obtained at minimum risk is 70% real estate, 20% real estate finance and 10% time deposit giving a yield of 8% at 15.55% risk level, indicating 89% increase in return with 4.7% additional risk. This is further presented in Figures 4 and 5.

Table 7: Proposed REIT asset allocation risk-return analysis

Data	Real Estate	Finance	Time Deposit	Yield (TD)	Yield (RE)	Yield (F)	Tax	Portfolio Return (%)	Portfolio Risk (%)	Sharpe Ratio
RE = 4.23%	100	0	0	9.76%	4.23%	22.57%	0.1	4.23	14.90	2.78
Time Deposit = 9.76%	95	0	5	9.76%	4.23%	22.57%	0.1	4.51	14.62	3.03
Finance = 22.57%	90	0	10	9.76%	4.23%	22.57%	0.1	4.78	14.37	3.27
SD (RE) = 1.49	95	5	0	9.76%	4.23%	22.57%	0.1	5.03	15.01	3.30
SD (TD) = 1.50	90	5	5	9.76%	4.23%	22.57%	0.1	5.31	14.72	3.55
SD (Finance) = 3.26%	85	5	10	9.76%	4.23%	22.57%	0.1	5.59	14.47	3.81
Cov (RE&TD) = 1.36	90	10	0	9.76%	4.23%	22.57%	0.1	5.84	15.25	3.78
Cov (RE & Finance) = 2.32	85	10	5	9.76%	4.23%	22.57%	0.1	6.11	14.96	4.03
Cov (Finance & TD) = 0.20	80	10	10	9.76%	4.23%	22.57%	0.1	6.39	14.70	4.29
P(RE&TD) = 0.61	85	15	0	9.76%	4.23%	22.57%	0.1	6.64	15.61	4.20
P(RE& Finance) = 0.48	80	15	5	9.76%	4.23%	22.57%	0.1	6.92	15.33	4.46
P(Finance & TD) = 0.41	75	15	10	9.76%	4.23%	22.57%	0.1	7.20	15.07	4.72
	80	20	0	9.76%	4.23%	22.57%	0.1	7.45	16.10	4.58
	75	20	5	9.76%	4.23%	22.57%	0.1	7.72	15.82	4.83
	70	20	10	9.76%	4.23%	22.57%	0.1	8.00	15.55	5.09
	75	25	0	9.76%	4.23%	22.57%	0.1	8.25	16.70	4.89
	70	25	5	9.76%	4.23%	22.57%	0.1	8.53	16.41	5.15
	70	30	0	9.76%	4.23%	22.57%	0.1	9.05	17.39	5.16

Figure 4 is the graphical representation of the analysis in Table 7 showing the risk behaviour in reaction to asset allocation to real estate. When the fund is allocated to real estate above 70%, volatility increases and when less than statutory 70% of the fund is allocated to real estate, the risk reduces which would have

been a beneficial decision to REITs in Nigeria if not for the statutory minimum allocation to real estate option. If the law could be relaxed, more fund can go to other assets that can enhance return performance at the expense of real estate (which is not giving much return).

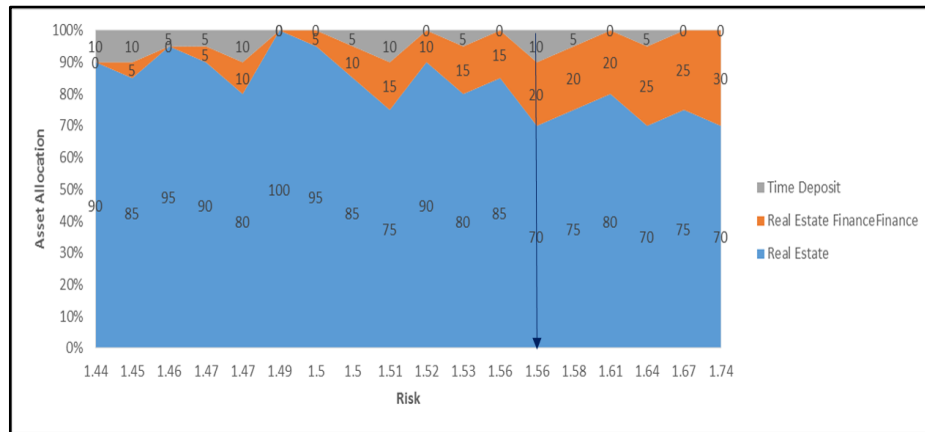


Figure 4: Proposed asset allocation between real estate and real estate financing

The risk curve, the efficient frontier as presented in Figure 5 of the proposed asset allocation, also presents the optimum return at the free risk-return of 8.04% level. The tangent line from 0% risk level reveals 3 points above the tangent line

but the optimum point has the minimum risk level. The results suggest that fund allocation to real estate financing in the portfolio of N-REIT shall be of benefit in terms of returns, although accompanied with different risk levels.

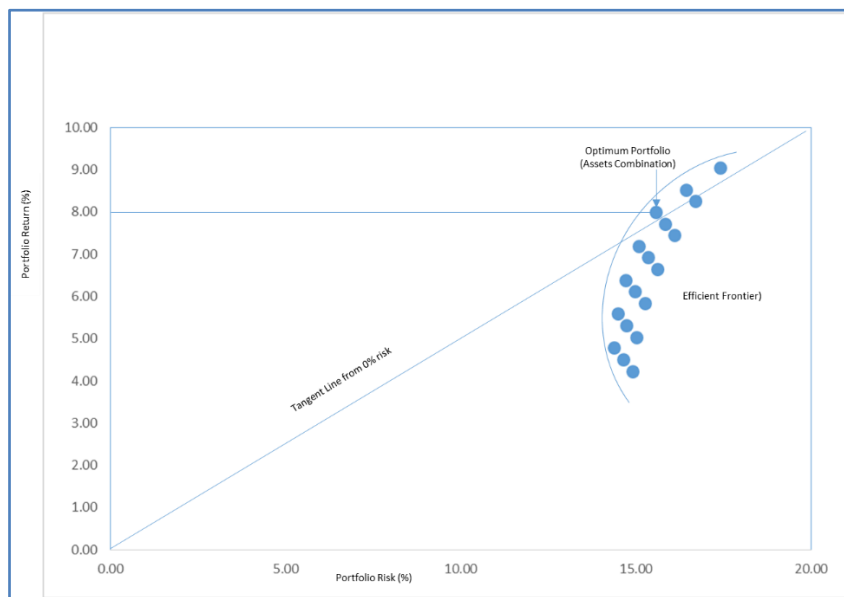


Figure 5: Efficient frontier of risk-return analysis for the proposed asset allocation

The proposed asset allocation model for Nigeria REIT inclusive of real estate financing following the mean-variance efficient model of Markowitz theory is presented as:

$$\text{REIT Fund} = 0.7\text{RE} + 0.2\text{F} + 0.1\text{D}$$

Where RE = real estate acquisition, F = real estate financing and D = Deposits.

5. DISCUSSION OF FINDINGS

The finding of this study shows that average return from real estate finance is the highest followed by time deposit, and real estate return

outperforming the stock market. In comparison with an annual inflation rate of 9.62%, real estate finance and financial deposit present better returns and could be preferred investment options. However, REIT can only invest up to a maximum of 10% of its asset on a financial asset like a deposit. The real estate and the stock market provide no hedge against inflation in Nigeria market. Previous studies have reported mixed evidence of the capability of real estate security market as a hedge against inflation. Chatrath and Liang (1998) found a cointegration between REITs and consumer price index (CPI) and concluded that REIT could provide a partial inflation hedge. Maurer and

Sebastian (2002) concluded that real estate securities provide inflation hedge in major European cities while Glascock *et al.* (2002) and Simpson *et al.* (2007) showed the positive relationship of real estate securities and inflation in the United States (US) market.

The hedging reality of real estate to inflation was found to be property type dependent and no commercial property was found to have a hedge against inflation (Wurtz bach, 1991). Yunus (2012) also found a cointegration between real estate market and key macroeconomic factors but concluded a shock to inflation would result in a positive response in real estate return while a shock to interest rates provides a negative real estate return response. The study was supported by Rovolis and Feidakis (2014). Goebel *et al.* (2013) reported REIT possessing similarities with non-equity REIT in terms of return and found a great influence of interest rates on REIT returns. This current study found no inflation hedge of real estate return as the inflation rate doubles the return from real estate in support of Wurtz bach (1991) and Yunus (2012). It can be said that the inflation hedge of real estate return and real estate securities could be market dependent, also, since European markets and US market exhibit inflation hedge capacity of REITs and real estate securities as respectively reported by Chatrath & Liang (1998), Maurer & Sebastian (2002), Glascock *et al.* (2002) and Simpson *et al.* (2007).

In terms of risk-adjusted return, real estate has the lowest and negative return of -2.56% indicating that there is a need to diversify investment to a more rewarding asset but within the acceptable investment option for REITs in Nigeria. The next option is the financial deposit up to a 10% of REIT fund. The critical question of this current study is addressing as where should the REIT invest its fund outside financial deposit (10% maximum) and in the face of lower real estate return in order to create an optimum portfolio? The answer was found in real estate financing which has higher return with slightly higher volatility. However, there is a need to check for asset correlation (Hoesli & Lizieri, 2007 and Liow & Webb, 2009). The correlation (Table 8) shows an average diversification benefit between real estate and real estate financing (0.48) as well as a financial deposit (0.41) suggesting that REIT can combine both financial deposit and real estate finance in addition to real estate in its portfolio.

The paucity of real estate assets to be acquired by REITs in Nigeria, compounded by the extremely high cost of capital for development

loans make it inevitable for REIT to consider direct real estate development financing. The result presented the typical asset allocation of the REIT currently in consideration of the existing regulation between property acquisition and financial deposit showing a marginal increase in portfolio return from 4.23% return on 100% real estate investment to 5.66% on 70% real estate and 30% deposit with reduction in risk (Table 6). This is a confirmation of the diversification benefit exhibited in the correlation analysis. Secondly, the portfolio construction proposed for N-REIT involving property acquisition, financial deposit and real estate construction financing. The analysis presents eighteen (18) possible asset combinations and reveals a fairly progressive rise in return as real estate finance gets more allocation of funds and at different risk levels. Out of the allocation choices, the one that presents an optimum portfolio of 70%, 20% and 10% real estate, real estate financing and deposit respectively, yielding 8% at 15.56% risk level (Table 7 and Figure 5). Therefore, a linear REIT asset allocation model evolves. Interestingly, past researchers have not investigated REIT diversification into real estate construction financing but only its diversification benefit for other asset class especially in a mixed-asset portfolio (Pham, 2013; Newell *et al.*, 2013; 2015; Liow & Webb, 2009; Benefield *et al.*, 2009). There is the possibility of added income and return performance of Nigeria REIT if diversification to construction financing is considered. Thus, real property financing is a business that could constitute investment option for REIT in Nigeria and the Nigeria REIT regulations should consider the accrued benefit it will give to the economy and allow REIT to partake in financing if only for a period to grow the property stock in Nigeria

REITs in Nigeria are allowed to invest 75% of their asset in real estate assets; i.e. direct property acquisition (and 70% in case of close end REIT). Other investment options are mortgages, and financial deposit (of 10% maximum). This study is guided and predicts an asset allocation model that obliged with the minimum required for close end REIT and also the maximum expected in deposits. The study is of the opinion that investing the 20% of REIT fund in financing real estate project as an investment option will not be out of place in supporting real estate sector especially in Nigeria where there is a shortage of property stock and the high cost of financing. This is capable of producing a twin effect of increased property stocks for REITs and increasing income from the high interest rate on the construction loan. Although the REIT law allows investments in

mortgage-related assets, the only secondary mortgage institution in Nigeria, Nigeria Mortgage Refinance Company (NMRC) is barely three years in existence and issued its first bond recently to raise fund in the capital market, the actual amount of fund raised is yet to be made public.

6. CONCLUSION

The study in recognition of the low real estate products (property stock) upon which REIT fund can be directly invested found that Nigeria REIT will have a dual benefit from real estate financing of increased return through the high cost of financing and increased in property stock, if allowed to partake in property development financing. Real estate asset creation is at the backdrop of a successful REIT business. The inadequate stock of real estate asset constitutes a big challenge to REIT performances, both in terms of dividend distribution and market price movement. Therefore, REIT fund will find its way to unauthorised assets or the fund becomes idle in a deposit instrument where banks will deploy such fund to any sector. The population strength of Nigeria demand for a various form of property especially in the housing sector alone, with the United Nations estimate of 16 million units. This is enough to foster the growth of the sector for the transformation of the nation's economy. The institutional investors should patronise the REIT market and by extension, the real estate sector and create an attraction for the international property investors for a possible influx of foreign direct investment to the Nigerian property market. The prohibition or REIT engaging in construction finance can be removed or relaxed possibly with new guidelines to make the real estate sector vibrant again for fast development of the REIT industry. In conclusion, REITs can divest not only on geographical or property type alone, but the REIT law/rules can also be domesticated to take into account local factors that may be favourable to growth in each economy. It is expected that policy changes will be affected as the relaxation of REIT 5/50 rule in the USA through the Revenue Reconciliation Act of 1993 and the amendment of the Tax Code in 1986 to allow for REIT internal managers, the benefit of which had been reported in earlier studies. The study used the average interest rate on a construction loan in Nigeria to represent the return from real estate financing with no consideration for default rate from borrowers which may not represent the net return from such investment option. The study also took into consideration the constraint of 70% minimum asset allocation to real estate and payment of 10% income tax on return from

financing, "an unallowed option" as it is for now. However, as a study geared towards changing of rule and policy, these limitations are acknowledged but not expected to affect the study findings.

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