

Equity Risk Premium in an Emerging Market Economy

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Abstract : *The finance literature suggests that in almost any kind of investing, returns would at least have some relationship with risk-free rate of return (R_f), with investors demanding higher returns for greater risk. Risk-free asset is regarded as one where the investor knows the expected return with certainty. This leads to the notion of Equity Risk Premium (ERP), the extra return that, as compensation for the additional borne risk, the investor earns over the R_f , typically taken as 91-day Treasury bills (TB) rate of return. While similar studies have been performed in the past, the applicability of the ERP concept across financial markets and its economic implications as a risk measure has remained a contentious issue in the field, particular in emerging markets. The present study seeks to revisit the issue in the Nigerian context based on secondary data spanning 2000-2011. The statistical analysis based on the capital asset pricing model shows that the country's R_f proxied by TBs, had over the years traded at significantly higher levels of return than obtainable from market portfolio, thus creating a negative ERP phenomenon. The implications of this peculiarity for sustainable wealth creation, business development and valuation practice, are highlighted. Recent changes in the country's Administration makes this study even more relevant, thus, the paper also renews the call for creating a more pro-industry fiscal policy climate if the national aspiration for sustainable inclusive growth is to be attained.*

Keywords – Capital Asset Pricing Model, ERP, Nigeria, Real estate securities, Sharpe ratio

JEL codes: C58, E62, G11, I2.

I. Introduction

The concept of Equity Risk Premium (ERP) is pivotal to asset pricing – estimating the intrinsic value of assets – and is at the core of several aspects of finance such as portfolio management, corporate finance, mergers and acquisitions, and strategic management. Robust asset pricing is premised upon the assumption that an intelligent investor will not pay more for an asset's true worth in a dynamic and efficient market. However, given the reality of uncertainty in the business environment, a recurring problem in valuation is how to make the best judgment about an uncertain future, not only with respect to the specific asset, but perhaps more importantly, the uncontrollable changes in the macroeconomic environment. While there are many approaches to asset valuation, the discounted cash flow (DCF) model, which explicitly relates the value of an asset to the present value of the expected future cash flows on that asset, has remained a core valuation tool in corporate finance and investment, because the DCF approach permits the use of a discount rate to reflect the riskiness of an investment, with higher-risk cash flows having higher discount rates. In other words, an investor can get higher return (reward or income from investment) if the investor or analyst is willing to assume higher level of risk. Thus, finance theory suggests that in any investment, returns would have some relationship with risk-free rate of return (R_f), with investors demanding higher returns for greater risk. Risk-free asset is regarded as one where the investor knows the expected return with certainty, hence the concept of equity risk premium (ERP), the extra return that the investor earns over the R_f , as compensation for the additional borne risk.

The question as to whether a given risk premium provides adequate compensation for the investment's risk is age-old. Indeed, one of the central concerns of finance theory is the measurement of risk and the determination of the risk premium that investors can expect of risk assets in well-functioning capital markets^[1]. While similar studies have been performed in the past, the applicability of the ERP concept across financial markets and its economic implications as a risk measure has remained a contentious issue in the field, particular in emerging markets. Specifically, the overriding valuation challenge remains as to the choice of the appropriate discount rate, hence the continuity of research in asset pricing, particularly in real estate securities market where asset-backed valuation is most prominent and real estate seen as a veritable asset class for diversification purposes in global wealth distribution^[2].

Performance measures for real estate securities may be well-developed in the matured economies but the same cannot be said of the emerging market economies like Nigeria^{[3][4][5]}. For instance, the idea of risk-free rate predicated upon the assumption that governments cannot default when they borrow has been questioned just as also the acclaimed uniqueness of real estate securities which are canonically thought to 'behave' in contradiction to the risk-return trade-off assumption of finance^{[6][7]}. Does real estate securities outperform the stock market in risk-adjusted return terms, and if so, to what extent? What is the aggregate average equity risk premium in the Nigerian capital market and its implications for sustainable investment and economic growth? It

is pertinent to note that though a good number of research studies focused towards investigating the nature of the Nigerian capital market, and those of other similar emerging markets, but hardly there are any significant research contributions empirically analyzing the exact nature of risk-free portfolio and the stock-market in the Nigerian financial landscape from the perspective of the real estate segment, hence the motivation for the present study to try to fill this vacuum.

Need for the study

The need for the present study can be explained from three perspectives. First, there is the dearth of empirical data on the exact nature of risk-free investment relative to the stock-market in the emerging Nigerian financial landscape, especially from the perspective of the real estate segment as a veritable proxy for the real sector. Second, the present study provides further evidence on the overreaching role of the real estate in economic development; the potentialities of real estate investment in terms of inherent capital appreciation, superior rental yield performance, taxation benefits and overall financial leverage are documented ^{[8][9][10][11]}. Third, risk-free investment, the key asset investigated in the present study, is a significant input to assessing ERP that is crucial to the entire asset pricing models for many purposes in the financial market – corporate finance, mergers and acquisitions, portfolio management, and strategy ^[6]. For instance, ERP is a crucial metric for DCF valuation used in deriving portfolios' true values. As earlier noted, in DCF-based asset pricing, the asset's value is the present value of the expected cash flows on the asset, discounted back at a rate that reflects the riskiness of these cash flows. Specifically, the cost of equity - what investors in the equity in a business expect to make on their investment - has to include a risk premium for equity risk. Problems are encountered in practice regarding reliable determination of discount rate which the result of this study could go some way to resolving. Thus, new evidence emanating from the present study is expected to help financial managers, property valuers, analysts, investors, government officials and regulators to develop improved understanding of real estate securities and ERP in the Nigerian context while also pointing directions to further possible areas of research in the field.

Organization of the paper

The rest of the paper is as follows: Section 2 reviews conceptual and empirical literature on the subject with empirical emphasis on Nigeria's nascent real estate securities market. Section 3 highlights the adopted methodology, while Section 4 discusses the results and some of the implications. Section 5 concludes the paper and highlights the scope for future research.

II. Literature Review

Conceptual framework

There are two major issues involved in portfolio risk analytics, namely (i) calculation of assets' risks and returns and (ii) the relationship between the two (Graham & Dodd, 2009). Rate of return on capital measures the yield on capital typically over the course of a year expressed as a percentage of the value of capital invested ^[13]. Differences or variations between actual and expected returns constitute 'risk' in finance and the numerous reasons for this risk is generally categorized into two: firm-specific risk and market-wide risk. The default model for measuring market risk is the capital asset pricing model (CAPM) which describes the relationship between an asset's returns and returns on the market portfolio which theoretically include all traded assets in the market place. The market portfolio as the most representative set of securities in a particular financial system is often used a proxy for the economy ^{[14][5]}. The CAPM postulates that most investors will want to avoid risk when they can do it without sacrificing return. In other words, as noted earlier, an investor can get higher return (reward or income from investment) if the investor or analyst is willing to assume higher level of risk, an idea that conceptualized in finance as risk-adjusted return, a widely used risk management and performance evaluation concept. Under Capital Asset Pricing Model, only market risk is rewarded, and the beta of the asset in one number, β_i , is widely used to measure the extent of that risk, that is,

$$\beta_i = \frac{COV_{R_i R_m}}{\sigma_{R_m}^2} \quad \dots (1)$$

where $COV_{R_i R_m}$ denotes the covariance of asset i with market portfolio, and σ_m^2 is the variance of the market portfolio. The beta of the market portfolio will, of course, be 1, while riskier asset will be greater than 1 and safer assets will be less than 1. The risk-free asset will have zero beta. Thus, under the CAPM, the expected return on an asset i , $E(R_i)$, can be written as:

$$E(R_i) = R_f + \beta_i [E(R_i) - R_f] \quad \dots (2)$$

where R_f is the risk-free rate like a 91-day Treasury bill rate and $[E(R_i) - R_f]$ is the risk premium for investing in the risky asset i . The risk-free rate is defined as one with zero default risk, that is, where the investor is 100 percent certain of the expected return ^[6]. The risk premium is theoretically positive, being the *extra* return demanded by investors for moving funds away from a risk-free investment to a risky one. Actual equity risk

premiums earned can be obtained from historical data with the belief that past returns are indicative of future return performance.

The *beta* theory is not without its criticisms, nonetheless, it is contended that CAPM's accuracy would suffice for many important applications^[1]. The often-cited alternative approach called Arbitrage Pricing Model, as a multi-beta model, is rather prone to a lot of practical difficulties in its usage, due to the fact there is no consensus among scholars as regards its testability, the appropriate methodology, and which factors should be employed, if it is testable. In the context of modern portfolio theory, the Sharpe Ratio is one of the widely used mathematical tools for evaluating risk-adjusted return of assets in the capital markets. The model is designed to measure how many excess units of returns an investor can be achieved over the risk-free rate for each risk taken^[16]. It adjusts returns by both the risk-free rate of return and the standard deviations of the returns, thereby evaluating stock behaviour on the basis of total risk; that is, rate of return performance and degree of diversification.

In essence, CAPM models the cost of capital for any security or portfolio of stocks as the risk-free rate plus a risk premium that is proportionate to the market risk of the security or portfolio^{[15][17][18]}. Therefore, an attempt is made in this paper, to subject the CAPM to further empirical test in the Nigerian emerging market economy context.

Emergent real estate securities and capital market development

Due to its acknowledged role in capital market and economic growth especially in emerging economies^{[8][9]}, the Nigerian real estate securities market (RESM), was used as a contextual case for the present research study. The evolving Nigerian publicly traded RESM, comprising mostly REOC and REIT equities, is estimated to have an aggregate market capitalisation of US\$ 300 million (N60 billion) out which REITs account for some 70 percent as at August 2014^{[19][20]}. The size of the Nigerian RESM is infinitesimal in a US\$900 trillion global financial market^[21]; nevertheless, the current status is indicative of the humongous potentialities for investment in Africa's largest economy and most populous nation. The Nigerian stock market is attractive enough to have been dominated by foreign investors up to 81.43 percent as of August 2014, notwithstanding the decline in recent times to 54.36 percent as of August 2015^[22]. Real estate operating companies (REOCs) are solely engaged in direct property development operations in contradistinction from other real estate-based businesses like REITs who may be involved in the real estate industry indirectly. A REIT is a business that raises money by selling shares to the public, much in the same manner as an investment trust, and owns property or provides mortgage lending to developers. Publicly traded REITs are relatively new investment vehicles in the country for which the Securities and Exchange Commission (SEC) has provided some regulatory. After the Skye Shelter Fund was introduced as the first REIT publicly listed on the Nigerian Stock Exchange on 28 February 2008, the REIT market received further boost with N50 billion Union Homes Hybrid REIT launched in September 2008 as a vehicle to an alternative investment outlet, within a transparent and tradable structure to investors having a medium to long-term appetite for real estate. Currently, the third N-REIT is the UPDC REIT with approximately \$145 million capitalization.

In 2007, Securities and Exchange Commission of Nigeria (SEC Nigeria) issued the first set of guidelines of the registration and issuance requirements for the operation of REITs in Nigeria as detailed in Investment and Securities Act (ISA), 2007^[23]. According to ISA (2007)^[23], REITs are incorporated companies for "the sole purpose of acquiring intermediate or long term interests in real estate or property developments" (Section 193).

In order to distinguish them from other trust funds, it should be stressed that REITs are businesses conducted as collective investment schemes, "solely in properties" (Section 194 of ISA, 2007^[23]). In order to ensure transparency in the management of REITs in Nigeria, the SEC included in its rules: that a rating report by a registered rating company should be filed with the Commission every two years; for close-ended real estate investment fund, at least 75 percent of the fund's total assets should be in real estate (70 percent for open-ended real estate investment fund); the remaining 25 percent could be in real estate related assets, provided that not more than 10 percent should be in liquid assets; that the level of development activity by the fund manager should not exceed 20 percent of Fund's gross asset value; the fund manager is expected to hold on to any development for a minimum of 2 years before disposing off; and that the assets of REITs, whether close-ended or open-ended, shall not be invested outside Nigeria. Notably, Pension Funds' in Nigeria are permitted to invest in REITs to the tune of 35 percent of their total assets^[4].

Empirical Evidence

With particular respect to the Nigerian financial landscape, hardly there is any significant (post-2007) empirical research contribution that has addressed the crucial issue of Nigeria's equity risk premium from the perspective of the country's emergent real estate securities. Phenomenon of ERP is regarded as a puzzle in the Nigerian financial market^[24], pointing to the need for further academic research to try and resolve the dilemma.

In the context of the emergent secondary real estate investment industry, mixed findings on the risk-adjusted return performance nature of the Nigerian real estate securities appear to have dominated the studies so far. Notably, a study^[25] which focuses largely on pre-2007 historical performance analysis of N-REOC in comparison with other securities in the Nigerian capital market provides a basis for further empirical work to extend data beyond the 2007-2008 global financial crises to include new samples like REITs and other risk-return parameters. For example, contributions like those of^{[26][27]} observe the tendency of real estate securities to under-perform the market on nominal and risk-adjusted basis, but some subsequent studies like^[28] have produced different results. The author^[28] compared equity-REIT index to 10-year US Treasury bond and found that the median yields among all REITs was about 5.5 per cent, only slightly higher than the yield on long-term United States government treasuries of less than 5 per cent.

It is pertinent to note that, there seems to be some growing commonality with using the Sharpe Ratio (SR) device to conduct the requisite risk-adjusted portfolio analysis, as evidenced in India and Nigeria^{[29][30]}. However, the apparent methodological consensus for SR has not necessarily yielded intellectual consensus on the actual risk-adjusted return nature of real estate securities in many markets including Nigeria; rather, research studies, as noted earlier, have produced mixed results regarding the empirical investment performance of property-backed securities across global markets. The question remains whether the superior risk-adjusted return performance, and, by extension, equity risk premium associated with the average risk-asset like real estate security, is obtainable in emerging market economies like Nigeria, an enquiry that forms part of the present attempt in filling the gap.

Research gap

Based on the review of the literature presented above, it would be observed that though a good number of research studies focused on the return performance of portfolios in Nigeria, hardly there are any significant research contributions empirically determine the impact of risk-free rate of return on asset pricing as theoretically encapsulated in equity risk premium. Therefore, the present paper is an attempt in filling this vacuum in the context of the nascent real estate securities market in Nigeria.

Objectives

The main objective of this study is to investigate the trend in risk-free investment rate of return in the Nigerian capital market and its impact on cost of capital. The specific objectives are:

- i. To assess the risk-adjusted return performance of emergent real estate securities relative to the market portfolio.
- ii. To investigate the presence or otherwise of equity risk premium in the Nigerian capital market.

The results from the two enquiries are expected to lead to some brief discussions on the policy implications for sustainable economic growth and development in an emerging market like Nigeria.

III. Methodology

Research hypotheses

The following hypotheses are developed to help in properly addressing the research questions:

- (i) $H_1: SR_t > SR_{Rm}$: Real estate securities outperform the stock market in risk-adjusted return terms.
- (ii) $H_2: R_m - R_f > 0$: the average equity premium in the Nigerian capital market is positive.

H_1 , and H_2 , being *ex-post-facto*, are not testable, the evidence simply illustrates the hypotheses^[32].

Data sources and analytical techniques

In this paper, published annual data for the period 1998 to 2011 were used for the analysis. Data were obtained from the Nigerian Stock Exchange (NSE)-quoted securities published audited accounts as well as the NSE's various statutory publications. Some highlights of the key statistics are given below.

Measuring competitiveness of asset's risk-adjusted return performance

This requires that the nominal returns should first be determined. Consequently, the returns, R_t , are calculated as

$$R_t = \frac{P_t - P_{t-1}}{P_{t-1}} \quad \dots (3)$$

where, P_t is the price of the stock at the end of the year and P_{t-1} denotes the price at the end of the prior month. If multiplied by 100, the return is the percentage change in the value of the stock during the year. The returns given in this paper have been adjusted for accounting activities such as taxes that would otherwise produce misleading results. P was annualized data extracted from the Nigerian Stock Exchange Daily Official

List published by the Exchange. Following Durand *et al* (2010), optimality property of a maximum SR portfolio, that is, a portfolio that achieves the maximum value in equation:

$$SR_{(x)} = \frac{(R_x - R_f)}{\delta_{(x)}} \quad \dots (4)$$

Where,

x is asset

R_x is the average rate of return for asset x

R_f is the average rate of return of a 'risk-free' security, that is the Nigerian 91-day Treasury Bills

δ is the standard deviation of R_x

The greater an asset's SR, the better its risk-adjusted return performance.

Equity risk premium

This was computed in line with the arithmetic of ERP as specified in equation (2).

Models validity and reliability

As a widely used spreadsheet analysis tool in global financial markets, the Microsoft Excel software was deployed for the statistical analysis in the present study ^{[15][32]}. (Spiegel & Stephens, 2011; Parasuraman, 2014). The CAPM's major parameters, R_f , and R_m , r , and SR , are consistent with contemporary theoretical and empirical literature, while R_f and R_m are particularly regarded as best practice benchmarks for measuring superior performance of investments as business environment changes ^{[6][24][33][34]}.

Population and sampling

The real estate common stocks in the REOC/REIT sub-sectors traded in the Nigerian Stock Exchange (NSE) within a study period of 14 years (December 1998 – December 2011) constitute the population for study. All the listed real estate-backed companies on the Nigerian Stock Exchange were stratified into N-REOCs and N-REITs and the top rated stocks (in terms of length of trading of their shares) were selected as samples for the study, using annual opening and closing market prices of shares, as well as the related year-end Earnings per Share (EPS).

The resultant samples for analysis comprise the following:

- UACN Property Development Company Plc: N-REOC
- Skye Shelter Funds Plc: N-REIT

IV. Results and Discussion

Appendix 1 displays the rates of return of risk-free investment, market portfolio and real estate securities in the Nigerian capital market from 2000 to 2011. Following the requisite statistical analysis, TABLE 1 displays the resultant nominal return and risk-adjusted return performance of real estate securities along with market portfolio averages in the Nigerian capital market which covers the study period, 2000 to 2011. The H_1 on asset risk-adjusted (Sharpe Ratio) return performance is accepted for N-REOC (2.15), but rejected in the case of N-REIT (-1.29) which underperformed the market portfolio (-0.86) during the same period. This means that the direct property development sub-sector, mostly comprising the REOCs, remains relatively superior on risk-adjusted performance basis as predicted in the literature ^{[27][35]}. Perhaps, N-REIT's nominal underperformance performance (8.08 percent) relative to N-REOC's 13.49% may be explained by REITs' structured difficulties in sustainably funding growth strategies with retained earnings, which REOCs could find easier to achieve by issuing new securities.

In essence, in nominal terms, the results of the analysis demonstrate that *both* N-REOC (13.49%) and N-REIT (8.08%) outperformed the market portfolio having 6.21 percent and 8.01 percent respectively, which provides a good basis for encouraging capital market development in the country and for introducing appropriate policy initiatives aimed at strengthening an increased linkage of real estate markets to the capital market for inclusive growth and entrepreneurial development.

Table 1: Nominal return and risk-adjusted return performance of real estate securities in the Nigerian Capital Market (2000 – 2011)

S/NO	ASSET	NOMINAL RATE OF RETURN (%)	SHARPE RATIO (SR)
1	N-REOC	13.49 *(6.21)	2.15 *(-0.02)
2	N-REIT	8.08 *(8.01)	-1.29 *(-0.86)
3	Risk-free investment	11.34	0.00

Source: MS Excel software analysis (2015)

*(Market portfolio yield and SR for the same period are shown in parentheses)

It is noteworthy that the superior return performance associated with Nigerian real estate-backed securities (8-13 percent) in nominal terms indicates that N-REOC provides competitive returns better than direct prime property investments (Ikoyi/VI, Lagos) whose rental yield currently averages 5.30-6.50%^[36]. With Nigeria's huge housing deficit of 17.45 million units, the superior performance is in itself a reflection of the supply and demand dynamics reflected in the generally shortage of accommodation and high property prices particularly in biggish cities of Lagos, Port Harcourt, Kano, and Abuja^{[9][37]}.

TABLE 2 shows the average equity risk premium ($R_m - R_f$) in the Nigerian capital market, during the study period between 2000 and 2011 inclusive. The results show that, contrary to the prediction in the literature^[6], there has been a negative average ERP in the Nigerian market at -5.14% per annum. Relatively high, double-digit ERPs were recorded in the early 2000s; this is attributable to the debt financing obligations of the central government prior to the historic international debt-relief obtained in 2005-06.

Table 2: Average aggregate equity risk premium ($R_m - R_f$) in the Nigerian capital market, 2000 - 2011

Trading year	R_m (%)	R_f (%)	$R_m - R_f$ (%)
2000	8.16	15.25	-7.09
2001	7.14	18.38	-11.24
2002	7.99	18.35	-10.36
2003	5.06	15.03	-9.97
2004	3.45	14.25	-10.80
2005	4.48	7.00	-2.52
2006	5.58	8.80	-3.22
2007	3.60	7.00	-3.40
2008	6.29	4.50	1.79
2009	8.73	6.05	2.68
2010	7.02	7.50	-0.48
2011	6.98	14.00	-7.02
Average	6.21	11.34	-5.14

Source: Author's survey and computations (2015)

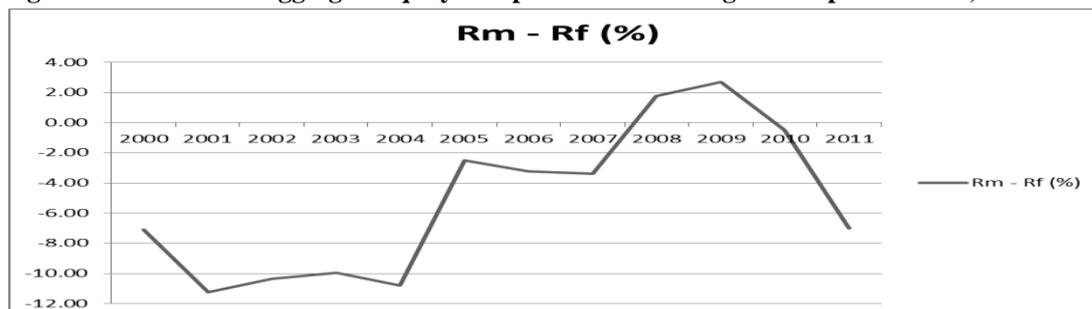
Earlier in this paper, it has been shown that, when benchmarked against the two real estate-backed securities in Nigeria, N-REOC and N-REIT, the market portfolio recorded *negative* SRs of -0.02 and -0.86 respectively during the study period. The risk premium is theoretically positive, being the *extra* return demanded by investors for moving funds away from a risk-free investment to a risky one, but, instead of a premium, what has been observed in the Nigerian case is a discount, thus validating the Nigerian ERP puzzle noted by^[24]. The negative aggregate risk-adjusted return performance (-5.14) in the Nigerian emerging market economy reinforces the increasing awareness of the economically obstructing influence of relatively high Nigerian Treasury Bill (TB) rates of return, particularly given the positive linkage between the stock market and economic development in Nigeria^{[38][39]}. Between 2000 and 2011, the average Nigerian TB yield (11.34 percent) was higher than the market portfolio's yield (6.21 percent).

Obviously, the evidence from the present study approximates the existence of a negative macroeconomic environment under which investment in government debt securities ('risk-free' asset) has become higher-yielding and attractive investment vehicle than otherwise viable economic opportunities in the real-sector represented by real estate equities. As graphically illustrated in Fig. 1, most part of the Nigerian ERP curve lies below the zero axis; the market achieved positive ERP (1.79%, 2.68%) only during the 2008-2009 global financial crisis when there was a drastic reduction in the risk-free investment rates as part of

government's Quantitative Easing measures, but the same negative ERP phenomenon in the Nigerian market was observed to have been increasing post-global crisis.

The implication is that the persistently high TB rate regime can be a major disincentive to the much needed deepening of the capital market, not only because it would discourage sustainable development finance and entrepreneurship, but also for its obvious implications in high debt-repayment burden on the part of the government ^[40]. Admittedly, the exhibited market rate of return at 6.21 percent compares favorably with the 6-8 percent experience in many countries of the world and provides some credence to the recent rating of Nigeria as the country with 4th highest returns on investment in the world, but what does it mean to domestic output in real domestic and employment terms with the prevalent negative ERPs? ^[13].

Figure 1: Trend in the aggregate equity risk premium in the Nigerian capital market, 2000 - 2011



Source: MS Excel software analysis (2015)

Thus, notwithstanding Nigeria's increase in Gross Domestic Product (GDP) growth rate prospects in recent years (from 5.1% in 2011 to 7.4% in 2013), the presence of a pervasive negative risk-adjusted return situation in the Nigerian Capital Market provides a worrisome evidence of the structural economic imbalance in the business environment that can negatively affect the country's quest for sustainable development finance and economic transformation ^[41]. For instance, with the double digit Treasury Bill yields, banks may be inclined to forgo their financial intermediation duties and seek higher returns from risk-free assets while pension funds will also avoid real estate investment opportunities in the economy and rather go for government fixed income instruments, with the resultant crowding out effects on the real economy and equally negative effects on capital market development ^[10].

Current findings from this study may therefore serve as a basis for renewing stakeholders' call for the creation of a more pro-investor macroeconomic environment in Nigeria. The superior performance of the Nigerian real estate securities in the face of the rather burdensome business environment (rising unemployment rate, high cost of funds, unstable inflation, opaque regulatory policies, general insecurity issues, deficient public infrastructure, and so on), reveals the resilience of the real estate segment, as well as the tremendous societal prosperity waiting to be realized when these socio-economic challenges are satisfactorily resolved.

As earlier noted, the risk-free rate is benchmark information for valuation for various purposes in the financial markets and therefore its level has a wide range of implications for economic development. When the government runs a budget deficit, public saving is negative and this reduces national saving which is a key source of supply of loanable funds. Consequently, when budget deficits reduce the supply of loanable funds, there is tendency for interest rate level to rise. A generally high level of the risk-free rate will discourage borrowers and result is that private developers and other enterprises will be 'crowded-out' of the economy ^{[42][43][44][45][46]}. Nigeria has 2.6 percent of the world population but produces mere 0.7 percent of the world output; evidently, the country can achieve a higher level of productivity with improvement in the business environment that is more favourable for private entrepreneurship to thrive ^[47].

V. Summary and findings

The study was designed to investigate the trend in risk-free investment rate of return in the Nigerian capital market and to evaluate its impact on asset pricing with particular emphasis on the country's emergent real estate securities using the country's stock-market data spanning 2000 to 2011 and applying the capital asset pricing model.

After conducting series of descriptive statistical tests, the following major findings emerge from the study:

Hypothesis	Results	Decision
$H_1: SR_i > SR_{Rm}$: Real estate securities outperform the stock market in risk-adjusted return terms.	$\begin{cases} N - REOC \leftrightarrow Rm: 2.15 > -0.02 \\ N - REIT \leftrightarrow Rm: -1.29 < -0.86 \end{cases}$	N-REOC: Accepted N-REIT: Rejected
$H_2: R_m - R_f > 0$: The average equity risk premium in the Nigerian capital market is positive.	-5.14%	Rejected

In essence, the results from the present study align only in part with the theoretical and some empirical positions on risk-adjusted return behaviour of real estate securities and the presence of equity risk premium in an economy ^{[6][24][32]}.

VI. Conclusion

In this paper, an attempt was made to investigate the trend in Equity Risk Premium (ERP) in the Nigerian capital market and to evaluate its impact on asset pricing with particular emphasis on the country's emergent real estate securities. The scant attention paid to effects of government fiscal policy on asset pricing in Nigeria was a key motivation for this study. The present study shows that real estate securities, particularly the N-REOC variant outperformed the market portfolio in risk-adjusted terms; the current finding validate the superior investment value generally associated with real estate-backed securities ^[32] and offers the asset class as veritable sources of good returns to investors with high potentialities for deepening the capital market. Additionally, the Nigerian capital market reflected a system-wide negative risk-adjusted returns and a negative ERP during the study period; instead of theoretically positive ERP ^[6], the study demonstrated the presence of a negative ERP to revalidate what has been described as Nigerian ERP puzzle ^[24]. Thus, the assumption that ERP concept is universally applicable across markets cannot be justified in the Nigerian case, perhaps due to several other factors that require investigation. In the meantime, the current evidence has a number of major policy implications if Nigeria, Africa's largest emerging market economy, is to achieve its goal of sustainable inclusive growth. To mention just a few:

- i. First, the ongoing mortgage-sector reforms should be intensified to take advantage of the humongous opportunities in the country's secondary property market. Policy initiatives aimed at strengthening linkage of real estate markets with the capital market should be vigorously pursued.
- ii. Second, the high cost of borrowing represents one of the major challenges of the Nigerian business environment, especially the real sector of the economy. Therefore, appropriate fiscal initiatives such as drastically reducing the high cost of governance, should be developed and implemented to drive-down risk-free investment rates of return in order to boost the real sector for sustainable economic growth..

Third, with the empirical result of a negative equity risk premium in the Nigerian capital market, analysts and portfolio managers need to exercise greater caution in the selection of the appropriate discount rate for DCF valuations of emerging market financial assets.

Scope for further research

Public accounts are disclosed months after the year-end dates, meaning that public data used in this paper are already out of date. Future research should tackle this issue, as well as extending the investigation to other emerging markets to confirm current findings and ratify our conclusion. Also, instead of the short-term Treasury bills used as proxy for risk-free investment, the current results can be enriched with further investigations using econometric methods and 10-year Federal Government of Nigeria Bond rate or the average borrowing rate of quoted firms on Nigeria's new NSE Premium Board, or possible ERP modifications tailored to fit the rather peculiar investment environment in some emerging economies like Nigeria.

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Appendix 1

Rates of return of risk-free investment, market portfolio and real estate securities in the Nigerian capital market (2000-2011)

Trading year	Market PER (×)	Market Return R_m (%)	Nigerian Treasury Bill Rate R_f (%)	N-REOC				N-REIT			
				P (₦)	EPS (₦)	PER (×)	R_i (%)	P (₦)	EPU (₦)	PER (×)	R_i (%)
2000	12.25	8.16	15.25	1.52	0.49	3.10					
2001	14.01	7.14	18.38	4.62	0.57	8.11	37.50				
2002	12.52	7.99	18.35	4.00	0.74	5.41	16.02				
2003	19.75	5.06	15.03	6.60	0.91	7.25	22.75				
2004	29.02	3.45	14.25	8.90	0.45	19.78	6.82				
2005	22.3	4.48	7.00	8.75	0.77	11.36	8.65				
2006	17.92	5.58	8.80	13.80	0.88	15.68	10.06				
2007	27.80	3.60	7.00	23.40	0.97	24.12	7.03				
2008	15.9	6.29	4.50	26.8	3.23	8.30	13.80	111.10	5.73	19.39	
2009	11.46	8.73	6.05	19.86	2.21	8.99	8.25	100.00	8.73	11.45	7.86
2010	14.24	7.02	7.50	16.51	1.69	9.77	8.51	97.00	11.75	8.26	11.75
2011	14.32	6.98	14.00	12.00	1.48	8.11	8.96	100.00	4.48	22.32	4.62
Average	17.62	6.21	11.34	12.23	1.20	10.83	13.49	102.03	7.67	15.36	8.08

Source: Research survey, 2015