

# Comparative Analysis of Commercial Property and Stock-Market Investments in Nigeria

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**Abstract**—The study analyzed the risk and returns of commercial-property in Southwestern Nigeria and selected stocks-market investment between 2000 and 2009; compared the inflation hedging characteristics and diversification potentials of investing in commercial-property and selected stock- market investment. Primary data were collected on characteristics, rental and capital values of commercial- properties from their property managers through the use of questionnaire. Secondary data on stock prices and dividends on banking, insurance and conglomerates sectors were sourced from the Nigerian Stock Exchange (2000-2009). The result showed that average return on all the selected stock- investments was higher than that of commercial-property. As regards risk, commercial-property indicated lower risk, compared to stocks. Also the stock-investment had better inflation hedging capacity than commercial-properties; combination of both had diversification potentials. The study concluded that stock-market investment offered attractive higher return than commercial-property although with higher risk and there could be diversification benefits in combining commercial-property with stock- investment.

**Keywords**—Commercial-Property, Return, Risk, Stock Market

## I. INTRODUCTION

GENERALLY, investment decisions are guided (though not limited) by risk characteristics and return characteristics. Any investment decision invariably involves a trade-off between risk and return Chandra, [7], therefore the process could be reduced to finding the investment opportunity with the best risk-return ratio. The assets invested may however be real or financial assets.

Among other investment choices, real estate development offers important diversification benefits as a compliment to other forms of investment, Christoffersen et.al [8]. Real estate development has especially been attractive for its low-risk attribute, its total return derived not only from current income, but also from growth possible in rental income and capital values. Comparing stock with real estate investment, Chandra [7] observed that equity shares has low current yield, high capital appreciation, high risk, fairly high marketability/liquidity and high tax shelter and convenience but real estate has moderate current yield and capital appreciation, negligible risk, low marketability/liquidity, high tax shelter and fair convenience. According to Ajibola et.al [1] real estate is unable to effectively compete with other

investment opportunities such as stocks and shares, due to its capital intensive nature, illiquidity, low yield and long pay back period and failure of conventional sources of finance to provide the required finance for real estate developments.

A lot of works have been done in the past by the real estate academics, real estate practitioners and researchers on attempt to analyze the historic profile of sectoral investment portfolio, to improve the understanding of the past investment profile. Although all these studies are valuable in the field of real estate investment performance measurements, a lot of gaps are notable in the literature on the comparative performance of investment assets in the various sectors of the stock markets and real estate markets of most emerging economies, Nigeria inclusive. Firstly, most of these studies were carried out in the developed economies and developing economies (U.S., U.K., India, Saudi Arabia, Hong Kong, Germany, Japan, Malaysia, Australia and China) with foreign derivatives and peculiarities and majority of them compared direct real estate investment with indirect real estate investment, few ones have actually compared direct residential real estate investment with a sector of stock market.

Secondly, very few works are available as local content in Nigeria. Those available include Olaleye (2000), Bello (2003), Bello (2004), Idowu (2006), Oyewole (2006) Amidu and Aluko (2006), Amidu, et.al (2008) and Ajibola et.al (2009) whose works are on comparison of direct and indirect investment in real estate in Nigeria (intra-sector investment comparative analysis). Bello [6] moves ahead to compare inter- sector investment, but here again, this was limited to residential aspects of real estate. This therefore indicates that none of the work of note in Nigeria has actually compared the historic performance of commercial real estate investment with the Nigerian stock investment. This gap is considerable enough for this work to fill by generating comparative evidence from direct commercial real estate investment in Nigerian urban centres with selected stock- market investment in Nigeria.

The main issue for consideration is how the real estate risk and return profile under the period of study relate to the risk and return of the stock market. The focus of the research will subsequently be on an examination of the inflation hedging and diversification characteristics of these two investment options. Questions that agitate the mind in this regard include: is real estate really a hedge against inflation? What correlation do stock market assets and commercial real estate have in terms of risk and return?

This research is therefore conceived to comparatively analyze the historic profile of commercial property with that

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of stocks at the time range of 2000-2009 considering selected sectors of the stock markets (Banking sector, Insurance sector and Conglomerates sector) and commercial properties from 3 state capital towns of Lagos, Ibadan and Abeokuta in the Southwestern part of Nigeria with a view to providing guidance for potential investors. The objectives are to analyze the risks and returns profiles of commercial real estate and stocks market investments between 2000 and 2009; examine the inflation hedging characteristics of commercial real estate and stocks investment in Nigeria; and investigate the diversification potentials of investing in commercial real estate and stocks in Nigeria.

## II. LITERATURE REVIEW

Much has been written on comparative performance of direct and indirect real estate performance by various authors the world over with their regional perspectives. Some of these works shall be reviewed.

In Malaysia an emerging economy, Hwa [13] examined the performance of Malaysia residential property sectors between 1989 to 2001. The study focused on risk-return comparison of residential risk-adjusted performance with equity investments. It also evaluated the diversification benefits of the investment media through correlation analysis. Findings from the study among others indicate that detached houses provided higher capital appreciation compare to other forms of housing. The study concluded that the population growth rate and location are the major drivers of residential property performance in Malaysia. This study lacked enough data points to test for time trend differences across locations within each region and also failed to consider other property types particularly commercial properties in its analysis.

Liu et.al [16] investigated whether real estate securities continue to act as a perverse inflation hedge in foreign countries given security design differences. Both a stationary and a non stationary risk free rate are alternatively used. The study discovers that real estate securities provide a worse hedge against inflation relative to common stocks in some countries and are comparable to stocks in other countries. These works limited its focus on inflation hedging characteristics of investment; it did not cover the other characteristics of investment. Neaime [17] study was on the properties and characteristics of the Middle East and North African (MENA) stock markets, and the prospects and implications of enhanced financial liberalization in the region. It also explores whether these markets can offer international investors unique risk and returns characteristics to diversify international and regional portfolios.

Johansen co-integration tests reveal that the Gulf Cooperation Council equity markets still offer international investors the portfolio diversification potentials mainly through mutual funds, while other emerging MENA stock markets like those of Turkey, Egypt, Morocco, and to a lesser extent Jordan have matured, and are now integrated with the world financial markets. The work was limited to stock market only; it failed to compare stock market with other available investment options.

Nidal [18] explored the new features of emerging stock markets, in order to point out the most associated indicators of increasing stock return volatility, which may lead to instability of emerging markets including Mexico, Korea, South Africa, Turkey, and Malaysia. The study covered monthly data for a period of forty-eight months from January 1997 to December 2000. The study apart from being out of date does not compare stock with other investment options.

Ralph [22] referred to a correlation completed by Ibbotson Associates in 2001 and 2003 with a conclusion that the correlation of REITs stock returns with other investments has declined significantly when measured over various time periods since 1972 when NAREIT first began to compile REITs industry performance data. According to Ralph [22], REITs correlation with large-cap stocks as measured by the S&P 500 was 0.55 during 1972 and 2000 but was 0.27 during 1999 and 2003. The difference in return amounted to approximately 0.6% points annually and reduced portfolio risk by 0.7% annually. Also, between 1984 and 2004, equity REITs have delivered an average annual total returns of 12.7% to their investors. Ralph work apart from being a secondary work of Ibbotson Associates, was limited to stock returns and return only can not measure the general performance of investment. Moreover the time of study has been long for update approximately 9 years ago.

In the stock market literature, Collett et.al [9] was of the opinion that holding periods for commercial property would be much greater than for stocks and bonds and that high transaction costs are associated with commercial real estate relative to other capital market assets and the perceived illiquidity of the market, in part due to entry barriers. The holding period is typically defined as shares outstanding in that period divided by the trade volume (Atkins and Dyl 1997) In comparing the holding period of real estate with that of equities, Collett et al [9] were of the opinion that the holding period of real estate may be significantly longer than that of equities or bonds because of the less liquid market and the higher transaction costs. They were also of the opinion that holding periods would be expected to be associated with returns, declining during periods of greater liquidity and rising during periods of less liquidity; volatility and holding period should exhibits a negative correlation. This work has so much relied on information on actual sales of property from the Investment Property Databank in the United Kingdom institutional property market which may not fit into Nigeria local content.

Daniel & Sheridan [10] extends earlier studies which examine the relation between stock returns and price changes of commercial real estate in individual countries. Their research suggests that in the US, real estate returns and stock returns are not highly correlated and that the relation may in fact be negative. It was found that only U.S. real estate returns and stock returns are not correlated but all the remaining 16 countries have correlation in the returns of real estate and stocks. This work fail to determine why the relationship between real estate and stock prices are significant in some (12) countries and not in other (5) countries.

And in addition this work is limited to developed countries and not African nations and it must have been outdated with study duration of 1988-1994.

Piers [21] discusses the performance of equities, direct property and property shares and provides a background for comparing the advantages and disadvantages of these two distinct types of property investments and eventually highlights the similarities and differences between property shares and direct property investment.

Goslings and Petri [12] examine the risk/return characteristics of real estate on the basis of both appraisal and market values. They broaden this analysis to include inflation, makes a series of observations about the role of real estate in efficient investment portfolios before concluding that as long as direct real estate is valued at appraisal value it is unmistakably a solid inflation hedge. This work limited itself to real estate risk/return, it do not compare real estate investment with other forms of investment.

Kim [15] examines the investment performance and evaluation of Singapore real estate and property stocks over the past 25 years (1976-2001). Results indicate that risk-adjusted investment performance for residential properties remained superior to performance for other real estate types and property stocks. This study is faulted on the ground that it is restricted to intra-real estate investment sector, it do not compare real estate investment with other investment sector.

By and large, most of these works are foreign based which may not fit the peculiar situation of Nigeria. In Nigeria context, there is virtually less empirical work on the comparative analysis of direct commercial property investment with stock market investment. Idowu [14] studied returns from residential properties in Lagos Metropolis between 1991 and 2004 and revealed that returns in real term depict unstable pattern, but rental and capital value were both showing upward growth. This work was not comparative, and limited its focus on residential property as direct real estate investment.

Amidu and Aluko [2] was another notable indigenous (Nigeria) study, though comparative work. The study sought primarily to examine the performance of listed construction companies and only listed real estate Company in Nigeria (UACN) and all share index (used as a proxy for the performance of stocks within the period of 1998 to 2005). The risk adjusted performance of the companies, assessed through sharp ratio, showed that both listed property and construction companies performed worse than stocks, but nevertheless offered diversification possibilities due to their low correlation with the stock market. The shortcoming of this study is that it limits itself to indirect real estate investment and use only secondary data as a proxy for the performance of stocks. It is purely a comparative work on securitization and unitization of real estate but does not involve direct investment in real estate.

Amidu et.al [3] provided empirical evidence of the investment characteristic of indirect real estate investment in Nigeria, they utilized annual open and closing market prices of shares and dividend of sampled listed companies in addition to data on all share index (ASI), consumer price index (CPI) and

yield on 90-days T-Bill were obtained for the period 1999-2005. These were then analyzed using descriptive, risk-adjusted measures and regression models. Although this work provides the empirical evidence that extended it beyond the work of Amidu and Aluko [2] but it does not involve direct real estate investment in its investment comparison.

Olaleye [19] examined portfolio management practice and performance of property portfolio in Lagos. He evaluated the performance of property in terms of mean return measure, the standard deviation measure, the sharp index and the differential return measure. The study showed that portfolio of different areas within the same urban centres varies. The study has helped to define some critical issues relating to portfolio management and property performance. The identified shortcoming of this study is that it laid emphasis on the performance of management and not on the investment performance with small sample size which can affect the overall result of its findings.

Still on Lagos, Bello [5] study the relative performance of residential property investment and securities in terms of average annual return, risk adjusted return, income growth and capital growth. The results of the study rank investment in ordinary share above that of the residential property in absolute terms and risk adjusted return. The finding of the research also indicates that the risk associated with residential property is lower than that of ordinary shares. But this study was limited to residential properties but did not consider the commercial property.

Towards the same direction, Bello [6] study the validity of the widely belief inflation hedge characteristics of residential property investment in Nigeria using Fama and Schwert [11] methodology of splitting inflation into; actual, expected and unexpected.

He employed static regression analysis to assess the inflation hedging characteristics of residential property, ordinary shares and saving account for the period of 1996 – 2000. The study observed that actual inflation hedging characteristics was high for ordinary shares and low in saving account, whereas the residential property does not have hedge against actual but expected inflation. The study does not take cognizance of the fact that share bonuses form part of overall return on stock; moreover the period of study has been outdated because of the effect of recent global economic melt down.

Oyewole [20] study of direct property and indirect property investments in Lagos, extended the work of Amidu and Aluko [2] in the sense that it identified the comparative performance of direct real estate with indirect real estate investment.

It considered direct property of eight non-listed property companies, and UACN property development company (the only listed property company in Nigeria) shares within the period of 1999 to 2004. The study on the performance level of the media showed that commercial property performed better at direct property intra-media level. The results also showed that indirect property performed better in terms of rate of return and capital appreciation, while direct property performed better in terms of risk adjusted return.

This is another work that limits itself to real estate intra sectoral investment, it is not inter sectoral in its approach.

Ajibola, et al [1] examined the suitability of real estate investment trusts (REITs) in financing real estate development in Nigeria. The study found out among others that there is a large real estate market in Nigeria to support the application of REITs, but REITs that always meet large capital requirement in developed countries is still unpopular in Nigeria and that improvement on legal and institutional framework on the part of Government will make REITs flourish in both the Nigerian Real estate development and capital market investment. This work focus is on financing of indirect real estate investment, it does not cover the direct real estate investment in its scope.

From all the above, none of the works has actually compared real estate investment with other investment sector like general stock market investment. Hence there is a need for a work of this nature that will bridge the gap noticed in the literatures.

### III. DATA AND METHODOLOGY

Survey research design and survey of literature on the subject matter was explored through questionnaire administration, survey of journals, textbooks and internet. The study population was the managing agents/owners of the 745 commercial properties in the study areas (Annual Progress Report of Nigerian Urban & Regional Planning Boards, 2008). The questionnaire solicited data such as: city of location of property, description, management responsibility, state of repair, applicable outgoing, % of outgoing on total income and rental history on the property. The data on opening price, closing price, dividends and bonuses of the selected stocks was solicited at secondary data level through Nigerian Stock Exchange Library, Stock Market Watch and prospectus of selected stocks (2000-2009). In this study, the target population for direct property investment was all commercial properties in Lagos, Ibadan and Abeokuta while the sample frame adopted were all purpose-built commercial properties (office and shopping complexes) within the study areas. From the total sample frame of 745 (354,262 and 129) commercial properties in Lagos, Ibadan and Abeokuta respectively, 20 percentages representing 154 were taken from the sample frame (representing 72, 54 and 28 for Lagos, Ibadan and Abeokuta respectively) to represent the sample size. The secondary data were however collected on the selected sectors of the stock market (Banking sector, Insurance sector and Conglomerates sector) to represent the whole stock market. Information gathered from the administration of the questionnaires and interview sessions on the commercial property investors and property managers in the study areas were analyzed using both descriptive and inferential statistics.

The researcher used the closing year net income and capital value to get the yield for the property:

$$Y = \frac{NI}{CV} \quad (1)$$

Y represents the yield; NI represent the net income while CV represents the capital value. The yield was then converted to year's purchase:

$$YP = \frac{1}{Y} \quad (2)$$

This was then adopted to capitalize other years net rent to determine capital value for each year. This duo of capital value and net income are used to get the annual return for each property using the following formular:

$$PNAR = \frac{Cve - CVb + NI}{CVb} \quad (3)$$

PNAR represents the property nominal annual return, Cve represents the capital value of property at the end of the year, CVb represents the capital value of property at the beginning of the year, NI represents the net income on the property. Using the above formular, the nominal annual return for each year was derived.

As regards the general data on return of commercial property, the change in capital value was arrived at by subtracting opening capital value from the closing capital value and change got there from was expressed in percentage i.e. change in capital value divided by opening capital value. In the same vain, the change in net income was arrived at by subtracting opening year net income from the closing year net income and change got there from was expressed in percentage i.e. change in net income divided by opening year net income.

Cumulative income was calculated by dividing all the yearly income generated on the property from year 2000-2009 as gathered from the administered questionnaires. Average income was calculated by dividing the cumulative income with number of year being considered.

The yield was calculated by dividing the closing year net income with closing year capital value, while Y.P. (years' purchase) was calculated by dividing the yield with 1 (one)

The periodic return was calculated with the following formula:

$$PR = \frac{CCV - OCV + CI}{OCV} \quad (4)$$

where CCV represent closing capital value, OCV represent opening capital value, CI represent cumulative net income. The mean of the nominal return was derived with formular:

$$\bar{X} = \frac{\sum xi}{n} \quad (5)$$

The mean so established is then subtracted from each PANR to get the variance; this variance is then squared to get the square of the variance. The mean of all the individual square variance is then squared to get the standard deviation (a measure of risk) with the following formular:

$$SD = \sqrt{\sum_{i=1}^n (Xi - \bar{x})^2} \quad (6)$$

where SD represents the standard deviation, formular 3 and 5 above are used to accomplish the first objective of examining the return and risk profile of commercial property.

As regards the examination of return and risk of stock while the same formular used for the commercial property

measurement of risk was adopted, there was a slight change in the formula for return because of the bonus element (an integral part of stock return). The annual return of stock was calculated by finding the difference between the closing and opening prices of the stock to determine its capital appreciation or depreciation. Also the dividend(s) declared on the stock for the year is added to the capital appreciation or depreciation. Bonus which is always declared in ratio e.g. 1:4 is calculated by finding the fraction of the ratio  $\frac{1}{4}=0.025$  and multiplies by the closing year price for the stock. This is illustrated thus:

$$SNAR = \frac{Cp - Op + D + B}{Op} \quad (7)$$

where SNAR represents the stock nominal annual return, Cp represents the closing price of the stock for the year of consideration, Op represents the opening price of the stock for the year in consideration, D represents the dividend and B represents the bonus. As done for commercial property, the mean of all individual SNAR is found to get the deviations and eventually the square of the mean of all the square deviation. With this the first objective of examination of return and risk of the stock investment was achieved.

The second objective is to compare the inflation hedging potentials of commercial property and stock investment. The inflation hedging is the ability of an asset to protect against an increase in prices (Bello, 2004). This objective was achieved by comparing the nominal return of individual investment with its real return and comparing of real return with risk as an improvement of comparing the nominal return with standard deviation (risk). Nominal return was converted to real return through the introduction of inflation element- survey based inflation forecast (Newell 1995). For this work only actual inflation hedging was measured, but not expected or unexpected. Table I indicates the average annual inflation rate of Nigeria between 2000-2009 in percentage, the mean of these average was found and converted to fraction to get 0.026 utilized as a substitute in the following formula to determine the real return:

$$RR = \frac{1 + NAR}{1 + IFR} \quad (8)$$

RR represents the real return; NAR represents the nominal return, while IFR represents the inflation rate.

TABLE I  
NIGERIAN AVERAGE INFLATION RATE (2000-2009)

R	A	EB	AR	PR	AY	UN	UL	UG	EP	CT	OV	EC	VERA
N						E	Y		T				GE
0	.7	.2	.8	.1	.2	.7	.7	.4	.5	.4	.4	.4	.4
1	.7	.5	.9	.3	.6	.2	.7	.7	.6	.1	.9	.6	.8
2	.1	.1	.5	.6	.2	.1	.5	.8	.5	.2	.2	.4	.6
3	.6	.3	.3	.2	.1	.1	.1	.2	.3	.2	.8	.9	.3
4	.9	.7	.7	.3	.1	.3	.3	.7	.5	.2	.5	.3	.7

5	.3	.3	.1	.5	.8	.5	.2	.6	.7	.3	.5	.4	.4
6	.4	.6	.4	.5	.2	.3	.1	.8	.1	.3	.2	.5	.2
7	.1	.4	.8	.6	.7	.7	.4	.2	.8	.5	.3	.1	.8
8	.3	.4	.4	.9	.2	.0	.6	.4	.9	.7	.1	.1	.8
9	.2	.04	.7	1.3	1.4	2.1	.5	1.3	.2	.8	.7	.04	

Overall average 2.56 % = 0.026

Source: National Bureau of Statistics (2010)

The coefficient of variation was calculated as follow:

$$CV = \frac{SD}{AAR} \quad (9)$$

where C.V. represents the Coefficient of Variation and AAR represents annual average return (nominal).

The third objective was achieved with the use of the correlation coefficient of average nominal annual returns of pair of investments for the period of 2000 to 2009.

#### IV. DATA ANALYSIS AND RESULTS INTERPRETATION

It should be noted that all calculations are presented in 3 decimal places to ensure uniformity in data presentation. In all, 185 questionnaires were distributed at Abeokuta (35), Ibadan (65) and Lagos (85) respectively, this represent 18.92%, 35.14% and 45.95% of total distributed questionnaires. Out of this, 167 questionnaires were retrieved Abeokuta; (31), Ibadan (59) and Lagos (77) this represents 18.56%, 35.33% and 46.11% of the retrieved questionnaires. The invalid questionnaires sum up to 13; Abeokuta (3), Ibadan (5) and Lagos (5) this represent 23.08%, 38.46% and 38.46% for the invalid questionnaires. Eventually, 154 questionnaires were fully administered for the work, Abeokuta (28), Ibadan (54), and Lagos (72) this represent 18.18%, 35.06% and 46.75% of the total questionnaires administered (See Table II).

TABLE II  
ANALYSIS OF THE DISTRIBUTION AND ADMINISTRATION OF QUESTIONNAIRES

ITEM	ABEOKUTA	of total	BADAN	of total	AGOS	of total
Copies of questionnaire distributed	35	8.92	5	5.14	5	5.95
Copies of questionnaire retrieved	31	8.56	9	5.33	7	6.11
Copies of questionnaire that are not valid	3	3.08		8.46		8.46
Copies of valid questionnaire.	28	8.18	4	5.06	2	6.75

Source: Author Field Survey (2010)

The administered copies of questionnaire for each town were serially numbered for collation and reference purpose. The questionnaires were divided into 3 sections; close ended questions section, supply of figures section and personal opinion section. As regards stock investment, historical figures were gathered and collated from yearly opening price, closing

price, dividend and bonuses of selected stock in a uniform format.

The general data collated on return of commercial property was presented in Table III:

TABLE III

GENERAL DATA ON RETURN OF COMMERCIAL PROPERTY AT STUDY AREAS

Location	% of change in capital value	% of change in net income	Yield	Y.P. years' purchase	Periodic return	Average Annual return	Standard Deviation
Lagos	101	125.24	0.048	35.4	1.682	0.158	0.164
Ibadan	161	146	0.042	39.3	2	0.163	0.133
Abeokuta	86.578	84	0.025	77.163	1	0.145	0.117

Source: Author Field Survey (2010)

The mean of all the individual return for all the 28, 54 and 72 commercial properties in Abeokuta, Ibadan and Lagos were presented in Table IV below:

TABLE IV

AVERAGE ANNUAL RETURN OF COMMERCIAL PROPERTIES

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Average
Abeokuta	.074	.135	.274	.148	.220	.131	.180	.157	.135	.093	<b>.154</b>
Lagos	.062	.114	.210	.275	.144	.145	.145	.128	.150	.174	<b>.154</b>
Ibadan	.094	.074	.230	.159	.184	.133	.240	.147	.175	.123	<b>.156</b>
<b>Average</b>	<b>.077</b>	<b>.108</b>	<b>.238</b>	<b>.194</b>	<b>.183</b>	<b>.136</b>	<b>.188</b>	<b>.144</b>	<b>.153</b>	<b>.130</b>	

Source: Author's Field Work (2010)

From Table IV, the average annual returns of commercial properties in all the locations were almost the same (0.154 for Abeokuta, 0.154 for Ibadan and 0.156 for Lagos), but the average annual return of the 3 case studies for year 2002 was the highest (0.238) while that of year 2000 was the least (0.077). In the overall average, all the commercial properties in the study area have average return of 0.155 for the period under consideration.

In the same manner, the mean of all the individual return from the 20 stocks from banking sector, 13 stocks from insurance sector and 5 stocks from conglomerates were presented in a compacted form in Table V:

TABLE V

AVERAGE ANNUAL RETURN OF STOCKS

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Average
Banking	.665	.283	.164	.421	.332	.361	.514	1.358	.024	.207	<b>.423</b>
Insurance	.315	.108	.106	.561	.476	.350	.493	1.481	.140	.243	<b>.427</b>
Conglomerat	.662	.394	.122	.742	.187	.336	.414	1.324	.022	.193	<b>.436</b>
<b>Average</b>	<b>.534</b>	<b>.262</b>	<b>.131</b>	<b>.575</b>	<b>.332</b>	<b>.349</b>	<b>.474</b>	<b>1.388</b>	<b>.062</b>	<b>.214</b>	

Source: Author's Field Work (2010)

From Table V, the average annual return for year 2007 is the highest (1.388) while that of year 2008 was the least (0.062).

In the overall average, annual return of stocks for the period of consideration is 0.432. This is seen to be higher than that of commercial properties.

Merging Table IV with Table V for comparison, we have Table VI:

TABLE VI

COMPARING RETURN OF COMMERCIAL PROPERTY WITH STOCK INVESTMENT

Item	Commercial Property	Stocks	Variation
Mean of annual return	0.155	0.432	0.277

Source: Author's Field Survey (2010)

From Table VI, average return on stocks of 0.432 is higher than the return from commercial property 0.155 on nominal basis. This interprets to mean that at nominal rate, stocks average return is higher than that of commercial property. Moreover, the variation in the returns is noted to be 0.277. In comparing the risks of the two investment options under consideration, the standard deviation of their returns were computed. The standard deviation of the stocks is 0.356 while that of commercial property is 0.044 with variation of 0.312. This is presented in Table VII.

TABLE VII

COMPARING THE STANDARD DEVIATION OF COMMERCIAL PROPERTY WITH STOCK

Item	Commercial Property	Stocks	Variation
Mean standard deviation	0.044	0.356	0.312

Source: Author's Field Survey (2010)

In term of return from investment, return from stocks is higher than that of commercial property with return variation of 0.277 as shown in Table VI, while in term of risk; stocks are more risky than commercial property with risk variation of 0.312 as obtained in Table VII.

With this analysis, the first objective of comparing the return and risk profile of commercial property and stocks market has been achieved.

The return calculated in Tables IV and Table V is just a nominal one, to make the nominal return to be real return, lead to the second objective. This is to examine the inflation hedging characteristics of commercial property with stocks.

In Table VIII, AAR represents average annual return while CV represents the coefficient of variation (to measure the risk/return rate). The Table indicated that both the commercial property and stock have hedge against inflation, but stocks seem to have inflation potentials than commercial property in nominal return while commercial property hedge against inflation is 0.129 (0.155-0.026) that of stocks is 0.406 (0.432-0.026). Also in the real return, the trend is the same, both have hedge against inflation but stocks potential is higher than that of commercial property.

While the commercial property's real return hedge is 0.100 (0.126-0.026) hedge but return of stocks is 0.369 (0.0395-0.026).

TABLE VIII  
AMALGAMATION OF NOMINAL/REAL RETURN, STANDARD DEVIATION AND COEFFICIENT OF VARIATION

Investment option	AAR (nominal)	AR (real)	AAR (variation)	isk	C.V (nominal)
Commercial property	0.155	.126	0.029	.044	0.284
Stocks	0.432	.395	0.037	.356	0.824
CPI	0.026		-	-	

Source: Author's Field Survey (2010)

With this analysis, the second objective of examining inflation hedging characteristics of commercial property and stock market investment has been achieved.

Furthermore, the variation between nominal average return and real average return of stocks (0.037) is wider than that of commercial property of 0.029. The case was different at the risk/return ratio when it was adjusted. On adjustment, the variation in nominal risk/return ratio makes stocks to have the best risk/return performance at lowest figure of 0.824, lower than 0.284 of the commercial property.

The third objective is to investigate the diversification potentials of commercial property and stocks. As regards the diversification potentials, from appendix, Tables IX and X were generated.

From the Tables, investment diversification benefit is to a certain extent exploitable when commercial property in one location is mixed with another as evidenced in Table IX where diversification abound when commercial property in Ibadan and Abeokuta had positive highest correlation coefficient of

0.762. Diversification potential was also noted between Ibadan and Lagos (0.442) Abeokuta and Lagos has the least diversification potential (0.407). As regards stocks, each of the stocks sector has positive correlation coefficient with one another though at varying degree. Banking and conglomerates has the highest positive diversification potential (0.941) while conglomerates and insurance has the least (0.880). But by sectoral intermixing, commercial properties in Abeokuta, Lagos and Ibadan have no diversification benefit if any of them is mixed with Banking stock (-0.135; -0.304; -0.139); or conglomerates (-0.213; -0.095; -0.242). Only Ibadan and Abeokuta have low positive correlation with Insurance (0.049; 0.011). This implied that Lagos commercial property cannot be mixed with any stocks; it is only Ibadan and Abeokuta property investment that can be mixed with Insurance though with weak positive correlation. In general, there is diversification benefit from combining commercial property with stocks investment. This has been evidenced in Table X which exhibited coefficient matrix of -0.149 meaning that commercial property is generally correlated with stock market.

This confirmed the previous indigenous study of Amidu et.al.(2008) among other studies. With this analysis, the third objective of investigating the diversification potentials of commercial property and stock investment has been achieved.

TABLE IX  
SECTORAL CORRELATION MATRIX OF COMMERCIAL PROPERTY RETURN AND STOCK MARKET RETURN

ABEOKUTA LAGOS IBADAN BANKING INSURANCE						
CONGLOMERATES						
ABEOKUTA	1					
LAGOS	0.407	1				
IBADAN	0.762	0.442	1			
BANKING	-0.135	-0.304	-0.139	1		
INSURANCE	0.011	-0.044	0.049	0.920	1	
CONGLOMERATES	-0.213	-0.095	-0.242	0.941	0.880	1

Source: Author's Field Survey (2010)

TABLE X  
GENERAL CORELATION MATRIX OF COMMERCIAL PROPERTY RETURN AND STOCK RETURN

COMMERCIAL PROPERTY	STOCK MARKET
COMMERCIAL PROPERTY	1
STOCK MARKET	-0.149 1

Source: Author's Field Work (2010)

## V. SUMMARY OF FINDINGS AND CONCLUSION

From analysis of rental history of the commercial properties, it was noted that each annual yield has the same average yield if there is no capital appreciation or depreciation, but annual yield varies with average yield if capital appreciates or depreciates annually. Difference between average yield and last year of consideration yield indicates an element of depreciation or appreciation of capital invested.

The mean of yield on Abeokuta commercial property is 0.025, while that of Ibadan and Lagos is put at 0.042 and 0.048 respectively. These correspond with the mean of year's purchase of 77.163%, 39.300% and 35.400% for Abeokuta, Ibadan and Lagos respectively. In addition, the mean of percentage change in capital value are 86.578%, 161.000% and 101.000% for Abeokuta, Ibadan and Lagos respectively while the mean of percentage change in income are 83.989%, 146.000% and 125.240% for Abeokuta, Ibadan and Lagos respectively.

This research found out that the average annual return of commercial properties in Ibadan, Lagos and Abeokuta were almost the same (0.155, 0.155 & 0.156), but in the overall average, all the commercial properties in the case study have average return of 0.155 for the period under consideration. In the same manner, the mean of all the individual return from the 20 stocks from banking sector, 13 stocks from insurance sector and 5 stocks from conglomerates indicate the overall average annual return of 0.432 which is higher than that of commercial properties. It was also found out that stocks are more risky than commercial property through their standard deviations 0.356 for stocks and 0.044 for commercial property.

In term of return from investment, it was found out that return from stocks is higher than that of commercial property with return variation of 0.277 while in term of risk; stocks are more risky than commercial property with risk variation of 0.312.

Both commercial property and stock have hedge against inflation, but stocks seem to have inflation potentials than commercial property in nominal return while commercial property hedge against inflation is 0.129 (0.155-0.026) that of stocks is 0.406 (0.432-0.026). Also in the real return, the trend is the same, both have hedge against inflation but stocks potential is higher than that of commercial property.

While the commercial property's real return hedge is 0.100 (0.126-0.026) hedge but return of stocks is 0.369 (0.094-0.026). Furthermore, the variation between nominal average return and real average return of stocks (0.037) is wider than that of commercial property of 0.029. The case was different at the return/risk ratio when it was adjusted, the variation in nominal return/risk ratio makes stocks to have the best return/risk performance at lowest figure of 0.824, lower than 1.123 of the commercial property.

This study also found out that investment diversification benefit is to a certain extent exploitable when commercial property in one location is mixed with another. Diversification benefit abounds when commercial property in Ibadan and Abeokuta are mixed by virtue of positive highest correlation coefficient of 0.762, this is higher than the one noted between Ibadan and Lagos (0.442) and Abeokuta and Lagos (0.407).

As regards stocks, mixing of stock with stock has positive correlation coefficient generally higher than that available in commercial property though at varying degree.

Banking and conglomerates has the highest positive diversification potential of (0.941) while conglomerates and insurance has the least (0.880). But by inter-sectoral intermixing, commercial property either in Abeokuta, Lagos or Ibadan have no diversification benefit if any of them is mix with Banking stock (-0.135; -0.304; -0.139); or conglomerates (-0.213; -0.095; -0.242). Only Ibadan and Abeokuta have low positive correlation with Insurance at a very low level (0.049; 0.011).

By and large, there seem to be diversification benefit from combining commercial property with stocks investment, as this work found negative coefficient of -0.149 between commercial property and stocks.

This interprets that commercial property is generally correlated with stock market. Consequently this work was able to establish (contrary to what was established from past works) that commercial properties have lower nominal and real return than stocks investment, it also established that though both commercial property and stock investment have inflation hedging characteristics but not at equal proportion. Commercial property also have diversification potentials if mix with sector of stock investment.

In conclusion, this work together with its sourced data can therefore serve as data guide for intra and inter sectoral investment appraisal for its adopted case study.

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