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Investigating the Impact of Firm Specific Determinants of Non-Pension Fund on Property Investment Decisions: An Evidence from Zanzibar Social Security Fund in Tanzania

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Author's contribution

The sole author designed, analyzed, interpreted and prepared the manuscript.

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ABSTRACT

The aim of this study was to look at the impact of firm specific determinants of non-pension fund on property investment decisions, a case study of Zanzibar Social Security Fund (ZSSF) in Tanzania. The unit root test, co-integration, and vector error correction model (VECM) were used for estimation in the linear econometric model equation, which looked at the impact of three firm specific determinants of non-pension fund on property investment decisions: urbanization (URB), inflation rate (INF) and interest rate (IR). The estimated result showed that, there was presence of long-run relationship at equilibrium between property investment decisions (PID) in ZSSF and all tested determinants of property investment decisions. The results revealed that urbanization (URB) had positive significant long run relationship with property investment decisions in ZSSF. But it was further revealed that the inflation rate (INF) and interest rate (IR) had negative relationship with PID at ZSSF, though they were statistically significant. The results also revealed unidirectional causality relationship whereby PID causes IR. Furthermore, the results revealed unidirectional causal relationship from URB to PID at 5% level of significant. However, the result revealed that PID and INF were not granger cause each other in a short run. The study then recommends among others,

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that management of ZSSF has to consider these determinants when they make property investment decisions, this including, the need for management of Zanzibar Social Security Fund to work together with financial institutions like banks to develop a working formula on how they can facilitate mortgage facility at reasonable rate for residential and commercial properties, this will help to increase demand for real estate to society.

Keywords: Property investment decisions; Granger causality; Vector Error Correction Model (VECM); and Zanzibar Social Security Fund (ZSSF).

1. BACKGROUND OF THE STUDY

The property investment is the one among the investment that generate massive return for investors all around the world [1]. Based on Natasha and Hassan [2], the highest investment sector in Malaysia is property investment. In Europe, property investment contributed approximately 10% to the European economy in 2018 [3]. USA is a top leader of property investment in the world with almost about 461 real estate property companies [4]. In Africa property investment is a new concept especially for East African Countries. Kenya has more than 49 real estate property companies [5]. The world demand for commercial and residential property increases every day due to increase world population [6] The study on the investor's interest on the property investment decisions can be very crucial especial for managers in pension funds and real estate investment trusts (REIT's) who are the main investors in property investment in East Africa since it can improve knowledge on the investors preferences and also to enables managers to have great ideas to make their assets as driven tools for property investment. This can help managers to overcome a big mistake in making choice of the property investment as their driven investment tools.

1.1 Property Investment in Zanzibar

The demand for residential, industrial, and commercial properties has increased in Zanzibar throughout the years as a result cause a rise in real estate property investment (ZIPA, Zanzibar Investment guide 2018-2019). Between 1968 and 1972, the revolutionary Government of Zanzibar implemented the strategy of providing the quality accommodation to its citizen, this strategy was championed under the leadership of the first president of Zanzibar (Hon. Abeid Amani Karume) who died in 1972. The strategy includes provision of free residential house to Zanzibar Citizen at Kilimani, Michenzani, Gamba, Makunduchi, Mpapa for Unguja and other area in Pemba like Machomane and Madungu, but after the death of first president of Zanzibar the government strategy of providing houses began to slow down, largely due to economic crisis prevailing at that time. In response to this situation, the Government of Zanzibar decided to establish Zanzibar Housing Corporation (ZHC) in September 2015 to strengthen the property sector so as to foster economic growth.

Before establishment of ZHC the housing sector in Zanzibar was supervised and operated by the Department of Housing, Settlement and Development under the Ministry of Land, Water, Energy and Environment since 2000 up to August 2015. Through that time, the sector was relatively not capable of providing reasonable contribution to GDP. In the recent years, Zanzibar has witnessed to have great number of property investors as compared to 54 years since independence, more than ten (10) private companies have been invested in property investment and 4 government institutions also have been invested in the property business, that private companies includes Corporate Property Solution Live Limited (CPS Live Ltd) invested at Fumba, Tessan Investment Group Limited invested at Mbweni, Livable Home (Volks House Ltd) invested at Fumba, Spot on Warehouse invested at Fumba, Abdul-Aziz Real Estate invested at Magomeni, Mahfoudh Real estate at Kiembe Samaki, Fumba Uptown Living at Fumba and so on. Also in case of Governmental parastatals who deal with property investment includes ZSSF, ZSTC, ZHC and ZIC [7-13]. Different competing factors, such as rural to urban migration, the urge to own home, increase foreign investment, increase of hotel workers migrated from Tanzania Mainland to Zanzibar, increase infrastructure development among others have contributed to the increase in commercial and residential property investment in Zanzibar. As a result of these factors, property prices in Zanzibar's urban west and surrounding areas have been steadily rising [34-16].

1.2 Overview of the Zanzibar Social Security Fund

Social Security is a fundamental right for human being in his/her life in a way that agrees with the United Nation Human Right Declaration of 1948. It is execution was followed up with ILO social security No. 102 Declaration of 1952. In understanding the importance of social security to the peoples life, the Revolutionary Government of Zanzibar has been implemented this great responsibility by establishing Zanzibar Social Security Fund (ZSSF). ZSSF was created by the Zanzibar Security Fund Act No. 2 of 1998, which was later updated by the Zanzibar Social Security Fund Act No. 9 of 2002 and re-enacted by the Zanzibar Social Security Fund Act No. 2 of 2005. ZSSF began operations in July 1998, with the primary goal of replacing members' income in the case of unforeseen circumstances such as old age, sickness, maternity, invalidity, or death [17].

ZSSF is a member of International Social Security Association (ISSA) and East and Central African Social Security Association (ECASSA). ZSSF has its headquarters at Kilimani-Mnarawambao, Zanzibar and one branch at Tibirinzi-Chakechake, Pemba. Currently ZSSF own property investment at Mbweni apartment, Kariakoo Uhuru Amusement park, Mwanakwerekwe shopping centre, Mapinduzi Square park (memorial Tower) and Chawal Building shop, all are located at Zanzibar. ZSSF has become a good investor in residential and commercial property in Zanzibar owning the mentioned property investment.

1.3 Investment Decisions in Zanzibar Social Security Fund (ZSSF)

Pension Funds are one among the big investors in commercial and residential property business especially in East African countries, large percentage of major commercial and residential property project conducted in Tanzania are owned by pension funds, such as NSSF, ZSSF, LAPF, PSPF, NHIF etc and small percentage owned by private individuals and Real Estate Investment Trusts (REITs) such as Watumishi Housing Company (WHC-REITs). ZSSF is the only pension fund operates in Zanzibar and has invested a lot of money in commercial and residential property business. Investment management policy Section 5 (d) of the Zanzibar Social Security Fund Act Number 2 of 2005 prescribes one of the core functions of ZSSF as being "To collected money from members and to invest in any business that Board may believe suitable". In order to carry out this function, the Fund developed a comprehensive Investment Policy as the guideline for undertaking its various investments.

1.3.1 ZSSF investment portfolio trend

ZSSF has maintained its investment strategy, which mandates it to set aside at least 70% of its yearly revenue for investment purpose. All of the investible funds available during the period were invested in the traditional investment avenues namely Government Securities, Fixed Deposits/Calls Account, Corporate Bonds, Loans, Equities and property investment. Investment Portfolio of ZSSF also contains Work in Progress for real estate project. According to Thomsett [18]. Real estate properties do not include the work in progress projects.

1.4 Statement of the Problem

Zanzibar where there is existence of only one pension fund, namely Zanzibar Social Security Fund (ZSSF) faces similar challenges like other pension funds on commercial and residential property investment decisions. It has been noticed that although there is good investment policy several residential and commercial property that ZSSF has invested fails to give desired returns. Example ZSSF lose a lot of return from Mwanakwerekwe Shopping Centre simply because of the nature of retail shops constructed does not meet the preference and habits of most retail traders in Zanzibar (ZSSF Financial Reports, 2010/11-2017/18). Kyaruzi, (2015) emphasized that Investment income realized by pension Funds if is not sufficient it might not be able to cover pension liabilities as they fall due and management abilities in making investment decisions will be questionable. Mugweru [19] suggested that pension fund's investment managers be made up of experts who follow correct investment rules and processes and, as a result, make sound investment judgments.

Practical, investment of pension funds is critical in order to protect the interests of pension funds members. Based on the empirical literature and the researcher knowledge, there is no study on determinants of the property investment decisions conducted specifically on pension

Funds, instead many studies related to pension funds have been done on the factors that determine investment performance in other countries like Oluoch, [20], Tijjani, [21] and in Tanzania a similar study done by Shola (2013) however little is known about Zanzibar, therefore the finding cannot be generalized. Zanzibar Social Security Fund (ZSSF) is growing and according to Fig. 1. property investments have been increasing since 2010 to 2018. Also More importantly, this study will be unique as most of the studies conducted in the developed countries and some in the middle class economy countries. It is these substantial evidences that trigger the researcher to conduct a research on that area to fill that gap. The question is which factors specifically influencing property investment decisions in Zanzibar. As a result, the focus of this research was on the aspects that guide the property investment decisions at pension Funds in Zanzibar specifically at ZSSF. This study is reliable to be conducted in Zanzibar because there is great number of commercial and residential property project implemented by ZSSF but there is limited number of studies conducted.

1.4.1 Study objectives

(i) The central goal of this research was to look into the pension fund determinants of property investment decisions in Zanzibar Social Security Fund. But the main concentration is the impact of firm specific determinants of non-pension fund on the property Investment decisions.

(ii). To find out the causal linkages between property investment decisions and non-pension fund specific determinants of property investment decisions in Zanzibar Social Security Fund.

1.4.2 Research Questions

i. How do non-pension funds specific determinants influencing property investment decisions in Zanzibar Social Security Fund?
ii. What are the causal linkages between property investment decisions and non-pension fund specific determinants of property investment decisions in Zanzibar Social Security Fund?

1.5 Significance of the Study

This research study is of great benefit to Zanzibar Social Security Fund and other pension Funds because it may provide information on determinants of property investment decisions in pension funds. In particularly, The findings of this study provides information on impact of firm specific determinants of non-pension fund on property investment decisions in Zanzibar Social Security Fund and provide information of how those determinants can enhance property investment decisions. The findings of this study will also be used by other property investment companies and agents, as they will help them be aware on determinants of property investments.

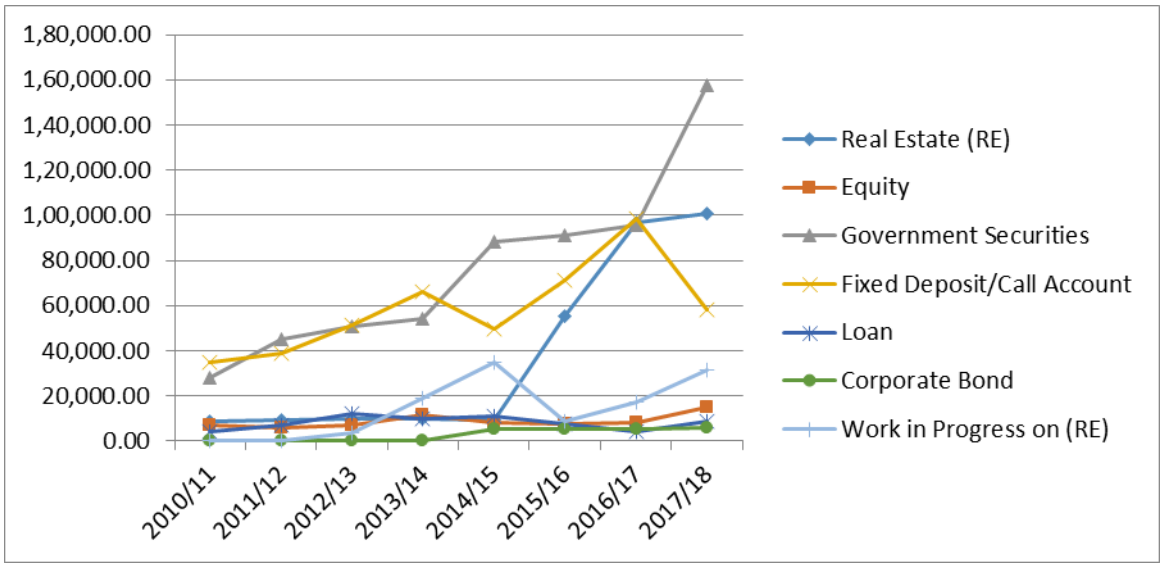

Fig. 1. ZSSF Investment Portfolio 2010/11-2017/18 (Amount in million,Tshs)

Table 1. ZSSF Investment Portfolio 2010/11-2017/18 (Amount in million, Tshs)

Investment Type/Years	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
Real Estate (RE)	8,879.62	9,148.85	9,669.68	9,591.07	9,385.39	55,057.46	96,695.50	100,899.25
Equity	6,700.27	6,054.36	6,983.69	11,613.45	8,277.45	7,409.24	8,294.89	14,801.35
Government Securities	28,045.23	45,103.09	50,823.03	53,963.72	88,162.71	91,304.73	95,764.21	157,760.48
Fixed Deposit/Call Account	34,742.53	38,600.93	51,226.54	65,974.25	49,782.21	71,008.50	98,462.24	58,365.42
Loan	3,999.15	6,855.90	12,088.88	9,679.29	10,941.78	7,574.32	4,274.80	8,627.95
Corporate Bond	-	-	-	-	5,346.47	5,290.27	5,290.23	5,872.29
Work in Progress on (RE)	-	-	3,420.08	18,925.82	34,922.97	8,640.84	17,354.74	31,153.74
Total	82,366.80	105,763.13	134,211.90	169,747.60	206,818.98	246,285.36	326,136.61	377,480.48

Source: ZSSF Audited Financial Reports

The findings act as a source of knowledge to academicians. The findings also are important to researchers to form a basis for further researches on property investment field. The study creates awareness to the Government and understanding how Government affects the commercial and residential property business. This will aid in formulating appropriate policies.

2. LITERATURE REVIEW

2. 1 Theoretical Literature Review

This area the theoretical aspects of the study is discussed. There are several theories which describe the concept of property investment decisions in general, but the simplest theories includes Prospect theory, the Principal and Agent Theory, Greater Fool Theory, Capital Asset Pricing Model and the liquidity Preference Theory which they are discussed below.

Prospect theory: The prospect theory is an economics theory developed by Daniel Kahneman and Amos Tversky in 1979. Prospect theory proposes that always investors are more risk averse, which means he/she prefer lower return for known risk rather than higher return for unknown risk, simply the theory based on the fact that investors prefer to avoid loss over making gain.

Currently there are numbers of studies that shows that the prospect theory is relating with investor behavior to make investment decisions (Sankaraguruswamy, 1996; Lev and Das 1994).

Base on the assumption of this theory, in case investor faced with a risky choice that may result to gains, individuals are risk-averse, which means he or she prefer to choose an investment that may result into a lower return but with a low risk as represented by concave curve functions. In addition, in a scenario where investor faced with a risky investment opportunities which may cause him or her to get losses, individuals are risk-seeking, this means suggesting choice that result to a lower expected return as long as he can be free from loss as represented by convex curve function.

The Principal and Agent Theory: Agency Theory emerged in the 1970s from the combined disciplines of economics and institutional theory of Stephen Ross and Barry Mitnick respectively, agency theory is a principle that is used to describe and resolve conflict of interest between principals and agents. In most situation, the conflict of interest occurs between shareholders as principal and chief executive officer (CEO) as an agent. It is known that most of pension funds in East Arica are controlled by Government agency. Therefore sometime happens agent which is fund/government/or management may undertake real estate project which is not incapacity to benefit principal which are the members of the fund, the project or investment decisions can be made by fund managers for the government interest and not for maximization of fund value. This is where it causes conflict of interest.

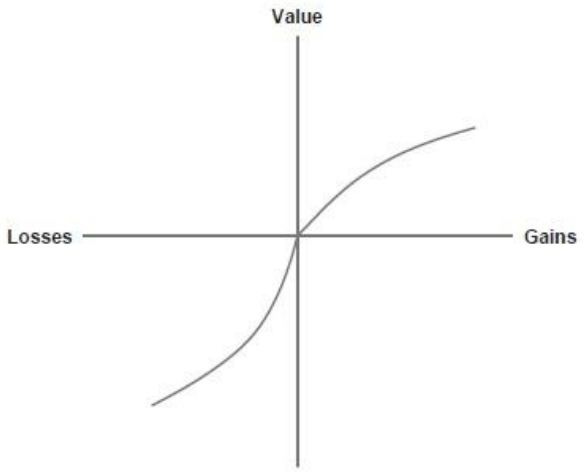

Fig. 2. Prospect theory

The value function that passes through the reference point is s-shaped and asymmetrical. The value function is steeper for losses than gains indicating that losses outweigh gains.

Greater Fool Theory: The greater fool theory is a bedrock principle of investing. In finance and economics, the greater fool theory states that "it is possible to make profits by purchasing assets (which may be over-priced) and selling it to another person (a bigger or greater fool) who is willing to pay even a higher price for that asset". In a property investment, the greater fool theory can drive investment through the expectation that prices always rise. It applies during the property market bubbles. Property market bubbles are an economic event in which the price of specific real estate property such as housing rise dramatically and increase beyond their fundamental value [22].

The Liquidity Preference Theory: This theory states that investors prefer liquidity as opposed to investing in capital items. In practice liquidity preference theory describes the premium offered in advance in relation to expected future rates of return. This theory suggests that an investor is interested in an investment with a higher return and premium. In addition, investors also prefer cash or highly liquid investments.

2.2 Determinants of Property Investment Decisions in Zanzibar Social Security Fund

Determinants of property investments decisions in Zanzibar social security fund includes rate of interest (IR), Urbanization (URB), inflation rate (INF), member's contributions (MC), benefit payment (BP), return on investment (ROI), investment in Government securities (IGS) etc. These determinants can be classified into pension funds specific determinants and non-pension funds specific determinants.

Pension funds specific determinants: These are determinants within the fund (ZSSF) that can influence property investment decisions in Zanzibar Social Security Fund by which the fund management have control over these determinants. It includes member contributions (MC), investment in Government securities (IGS), return on investment (ROI) and benefit payment (BP).

Non-pension funds specific determinants: These are determinants that can have either negative or positive influence to the property investment decisions made by Zanzibar Social Security Fund. They represent factors outside of the Fund which can influence the property investment decisions.

2.3 Empirical Literature Review

There are several studies that have been done in attempt to determine the factors influencing property investment decisions. These studies relate in one way or another to the studied topic which is impact of firm specific determinants of non-pension fund on property investment decisions, an evidence from Zanzibar Social security Fund in Tanzania.

Rono [23] studied on "An Evaluation of Factors Influencing Pension Managers Investment Decisions in Kenya". Three representatives from each of the twelve registered fund managers completed the study questionnaire. The questionnaire was administered through the drop and pick later method. Data was analyzed using SPSS (Statistical Package for Social Sciences) and summarized using descriptive statistics such as mean, standard deviation, frequencies, percentages. The study establish that investment risks, returns, and trends in the rate of interest were the fundamentally significant factors distressing managers' of pension funds on their investment decisions. investment portfolio, Decision-making preferences, past performance and legal framework were taking as less significant. Consistency and sustainable long term returns, prevailing economic, inflation and political situations were also important qualitative factors in decision making for pension fund investment [24-27].

Lieser and Groh, [28], undertaken the study to identify the determinants of commercial real estate investments using particular set of panel data series for 47 countries from 2007 to 2009. The study examined the effect of demographic, social-economic and institutional characteristics on commercial real estate investment activities by looking at cross-sectional and time series analysis methods. The result of this study concluded that the growth of economic, increased urbanization, and related demographics characteristics stimulate real estate investments. It was also tinted that lack of transparency in legal structures, social-cultural challenges, administrative barriers, and political instabilities of countries diminish desire of real estate investors.

Lowies [29] conducted study on the role of

behavioral aspects in investment decision-making by listed property fund Managers in South Africa. The aim of this study was to determine whether behavioral aspects influence listed property fund managers in South Africa when they make decisions on property investment. Questionnaires were sent to 29 listed property fund Managers in South Africa. The 17 responses represented 80% of the total market capitalization of listed property funds in South Africa. The data were analysed using non-parametric statistical measures. The study finding indicates that listed property fund managers in South Africa are influenced by behavioral aspects in the form of frame dependence. The study also found that South African fund manager's shows loss averse in their investment decisions.

Adeoti, Gunu, and Tsado [30] conducted study on Determinants of Pension Fund Investment in Nigeria: The Critical Factors. The study was conducted to assess the determinants of investment in Pension Funds. It used primary source of data, which were obtained by means of questionnaire. Respondents were selected from a sample of five Pension Fund Administrators (PFAs) in Nigeria using simple random sampling technique. A number of 125 questionnaires were managed on 18 items by using likert scales. The data obtained were analyzed using factor analysis by principal component. The final result of this study showed that Economic, Risk and Security of real estate factors were the major determinants of pension fund investment. The study concludes that variables such as interest rate and internal control system were not critical in determining investment of pension funds in Nigeria.

Benjamin [31] on Factors influencing Land Ownership and Real Estate Investment Decisions in Ile-Ife (Ife Central as a case study), This paper examines factors influencing land ownership and real estate investment decisions in Ile-Ife, Nigeria. This research was conducted to find out the factors that contribute to the decision making in land ownership and real estate investment in Ife. The information obtained was through the employment of questionnaire in the area of study. The use of frequency tables, charts and ANOVA was adopted in analyzing the questionnaire. The study findings established that investment decisions of investors in the study area are influenced by certain identified factors. The main important key factors to the study are affordability of land, accessibility of land, ease to land acquisition, profit motive, land security and political stability in the area of study.

Natasha and Hassan (2015)[2] studied the factors that influencing property investment decisions among Employees in Felcra Bhd in Malaysia. The goal of the research was to find out the most important factors that influences property investment decisions and look at other factors that determine property investment decisions amongst employees who works in investment firms. The study used four independent variables that are financial knowledge, geographical attributes, risk awareness and the possible return. The study adopted explanatory research design using internet based questionnaire. The sample size of this study was 250 workers and only 212 respondents were used. The study used multiple regression via SPSS v.21 for analyze the data. The study result showed out that the knowledge of finance of the Felcra employees gives the most impact on their property investment decisions. The study also found out that all independent variables discussed have significant and positive impact on property investment decisions.

Another study was carried out by Koske, Makokha and Namusonge [32]. The study aim was to investigate the effect of Social-Cultural Factors on Real Estate Investment: A Survey of Kisumu City, The study adopted a descriptive survey research design. The study applied a stratified and random sampling technique to select a sample size of 300 individuals owning rental houses within Kisumu City with target population of the study included 1,200 landlords of commercial real estates in Kisumu city. Collection of data for the study was done mainly through questionnaire which was been given to 300 respondents. The findings of the study were to establish how the real estate investments could be improved in order to meet the increasing demand for commercial space and residential houses in Kisumu City. Result revealed that Social-Cultural Factors influence real estate investment.

Moreover, Sirya [33] studied Factors Influencing Real Estate Companies Investment Decisions in Commercial Properties in Nairobi County. This study concentrated on finding out what exact factors controlled real estate investment in Nairobi County. The study used secondary method with the aid of questionnaires,

descriptive Statistics and regression model to give result. Analysis of data collected from forty nine real estate companies operating in Nairobi County and Kenya Central Bank was done using SPSS version 20. Research result showed that increasing in interest rate affected investment decisions in commercial properties in Nairobi. Inflation factor was found to be associated with real estate companies' investment decision in Nairobi County, however, coefficient result showed that it was not significant factor. Infrastructure development, foreign investment and multinationals companies' entry in Nairobi, was found to influence companies real estate investment decisions in Nairobi.

2.4 Research Gap

With the help of literature reviews, it showed that there are different researches that were done on determinants of property investment decisions in Real Estate Companies (REITS) and pension funds. Most of these researches done in developed countries and some of them focus only on company or pension funds specific determinants, some focus on non pension fund specific determinants and others combine both influencing factors of property investment decisions in real estate companies or pension funds.

In addition to that, to the best of researcher knowledge, few comprehensive researches have been done in developing countries to ascertain determinants of property investment decisions in pension funds, most of these few research conducted in developing countries their result are not consistent. To fill this gap this study will specifically focus on the determinants of property investment decisions in pension Funds and their cause-effects relationship between the determinants and property investment decisions, a case study of Zanzibar social security fund in Tanzania. This study will employ non pension funds specific determinants to get new particular evidence on factors influencing property investment decisions in pension funds.

3. RESEARCH METHODOLOGY

3.1 Research Design

The study used time series based on quantitative research approach; in quarterly basis spanning from July 2010 to June 2018. Quarterly data employed was easily available and more meaningful in this case as compared to annually or monthly data. The time series data was better for this study because, the data exhibit several behaviors that if they are not taken into account, they may affect the parameter estimation and particularly may cause the problem of spurious regression. Thus, the choice of this approach was recommended for this type of research.

3.2 Data Collection Method

Base on the above argument in order to get the required information for this study only secondary data was used. These secondary data was gathered from Bank of Tanzania (BOT) relating interest rate and Office of Chief Government Statistician (OCGS) relating rate of inflation and urbanization.

3.3 Model Specification

To investigate the impact of firm specific determinants of non-pension fund on property investment decisions, the basic model of this study was designed as follows:-

$$Property\ Investment\ Decisions = f(Influence\ Determinants)$$

As mentioned before, the study aimed to investigate the impact of firm specific determinants of non pension on property Investment Decisions, therefore the following model was designed to make the analysis easier and the results more clear. The model was categorized as follows:

3.4 Model for Central Objective

$$Property\ Investment\ Decisions = f(Non-pension\ fund\ specific\ determinants)$$

$$y_t = \beta_0 + \beta_1 T_t + \varepsilon_t$$

Then the basic model to answer the central objective of this study transformed into the regression of the following form:

Where *y* represents the Property investment decisions in which PID used as a stand-in for (Property investment decisions) and *T* is a firm specific determinants of non pension fund on property investment decisions. Therefore, the researcher represented the model for linear regression as shown below:

$$\log PID_t = \beta_0 + \beta_1 \log URB_t + \beta_2 \log INF_t + \beta_3 \log IR_t + \varepsilon_t s \setminus s$$

Whereby,
PID= Property Investment Decisions
URB= Urbanization
INF= Inflation
IR= Interest rate
β_0 is the constant term, β_1, β_2 ,β_3 and β_4, are the parameters estimated, t = 1, 2… is the time index for the time from July 2010 to June 2018 in quarterly basis and ε is the stochastic error term.

3.5 Variables Description

3.5.1 Dependent variable

Property Investment Decisions (PID): used as dependent variable of this study**,** this dependent variable was measured by amount of funds that have been invested in property investment per each quarter in a year from July 2010 to June 2018 in (TZS).

3.5.2 Independent variables

a) **Interest rate:** This variable was expected to have a negative relationship with the property investment decisions of ZSSF because if interest rate is high automatically reduces the power for investment.
b) **Inflation rate:** Inflation refers to as persistent rise in the general price of a commodities and services; inflation rate is measured by consumer price index (CPI). This variable was expected to have a negative relationship with the property investment decisions of ZSSF because if inflation is high automatically reduces the power for investment.
c) **Urbanization:** Is the increase of population in urban area, which can be caused by migration or natural population increases. The variable was expected to have positive influence on property investment decisions of ZSSF.

3.6 Estimation Techniques

According to above statement, the estimation technique was based on the time series approach. This technique was used because of the nature of the dependent variable. Since this study is a time series in nature from July 2010 to June 2018, the following test was conducted.

Unit Root Test: The way to testing for a unit root in this study was Augmented Dickey-Fuller (ADF). ADF was reliable and valid because of the frequently used in testing the unit root in the different studies. According to Dickey and Fuller (1981) the ADF test involves both the level and first differenced observations by estimating three models.

Table 2. Variables description and their measures

Dependent Variable	Independent Variable	Measure	Expected sign
Property investment Decisions	Inflation rate	Quarterly change in consumer price index	-ve
Property investment Decisions	Urbanization	Quarterly increasing urban population Statistics in Zanzibar	+ve
Property investment Decisions	Interest rate	Quarterly percentage of BOT rate	-ve

Source: Author's

Co-integration Analysis: This stage was determined the level of co-integration between the investigated variables. Simply, this stage examined whether the stochastic trends in the examined variable have a long-term relationship, which is believed to contain unit roots,. For the co-integration test, two maximum likelihood tests of Engle and Granger [34] and the Johansen [35] and Johansen and Juselius [36] method was used to test for co-integration. According to Granger (1988), standard tests for causality are valid only if there is co-integration between the variables. Therefore, in the presence of integrated variables, a necessary pre-condition to test for causality is to check whether the variables are co-integrated.

Vector Error Correction Model (VECM): Since there is evidence of co-integration between the variables, the vector error correction model (VECM) was calculated to determine long-run causality and short-term dynamics. This enables for two types of causation to be determined: short-run causality and long-run causality. The VECM is estimated as shown below:-

Non pension funds specific determinants

$$\Delta PID_t = T_1 \sum_{i=1}^{k-1} u_{1i}\Delta PID_{t-i} + \sum_{i=1}^{k-1} v_{1i}\Delta IR_{t-i} + \sum_{I=1}^{k-1} w_{1i}\,\Delta INF_{t-i} + \sum_{I=1}^{k-1} X_{1i}\,\Delta URB_{t-i} + Z_1 ECT_{t-i} + e_t$$

$$\Delta IR_t = T_2 \sum_{i=1}^{k-1} u_{2i}\Delta PID_{t-i} + \sum_{i=1}^{k-1} v_{2i}\Delta IR_{t-i} + \sum_{I=1}^{k-1} w_{2i}\,\Delta INF_{t-i} + \sum_{I=1}^{k-1} X_{2i}\,\Delta URB_{t-i} + Z_2 ECT_{t-i} + e_t$$

$$\Delta INF_t = T_3 \sum_{i=1}^{k-1} u_{3i}\Delta PID_{t-i} + \sum_{I=1}^{k-1} v_{3i}\,\Delta IR_{t-i} + \sum_{I=1}^{k-1} w_{3i}\,\Delta INF_{t-i} + \sum_{I=1}^{k-1} X_{3i}\,\Delta URB_{t-i} + Z_3 ECT_{t-i} + e_t$$

$$\Delta URB_t = T_4 \sum_{i=1}^{k-1} u_{4i}\Delta PID_{t-i} + \sum_{I=1}^{k-1} v_{4i}\,\Delta IR_{t-i} + \sum_{I=1}^{k-1} w_{4i}\,\Delta INF_{t-i} + \sum_{I=1}^{k-1} X_{4i}\,\Delta URB_{t-i} + Z_4 ECT_{t-i} + e_t$$

3.6.1 Granger causality

The study applied Granger causality test in order to measure short run relationship and to determine the direction of causality. It was provided information about whether a change in one variable causes changes in another [37]. The notion of causality is primarily introduced by Granger (1969). According to Granger causality idea which states that," if a signal X_t "Granger-causes" (or "G-causes") a signal Y_t, then past values of X_t should contain information that helps predict Y_t above and beyond the information contained in past values of Y_t alone". The equations are as below:-

$$\Delta \ln y_t = \beta_0 + \sum_{i=1}^{n} \beta_{1i} \Delta \ln y_{t-i} + \sum_{i=0}^{n} \beta_{2i} \Delta \ln x_{t-i} + ecm_{t-1} + \varepsilon_{1t} \qquad \ldots\ldots\ldots \quad 3a$$

$$\Delta \ln x_t = \delta_0 + \sum_{i=1}^{n} \delta_{1i} \Delta \ln x_{t-i} + \sum_{i=0}^{n} \delta_{2i} \Delta \ln y_{t-i} + ecm_{t-1} + \varepsilon_{2t} \qquad \ldots\ldots\ldots \quad 3b$$

Where ECM_{t-1} = the lagged error-correction term obtained from the long run equilibrium relationship and x = Factors influencing investment decision, for details see Table 2.

Although the existence of a long run relationship between x and y suggests that there must be Granger – causality in at least one direction, it does not indicate the direction of temporal causality between variables. The direction of the causality in this case can only be determined by *F*- statistic and the lagged error- correction term. Following Narayan and Smyth, [38]; Morley [39]; and Odhiambo (2009a), we will only estimate with an error – correction term the equations where the null hypothesis of no co-integration has been rejected, though the error-correction term has been incorporated in both equations 3a and 3b.

4. FINDINGS AND DISCUSSION

4.1 Descriptive Statistics for Key Variables

Table 3 present the descriptive summary of the key variables used in the study. The total number of observations in the analysis was 32. The data showed that, the averages mean scores of PID, INF, IR and URB reveals approximate normality in the data distribution of each variable. The value for kurtosis in each variable is below the benchmark for normal distribution which is 3 and that confirms normality. Their value range on 2 which is below the bench mark, also the skewness of all variables were close to Zero range, the value ranges from 0 to 1 this indicate the normality of the variables. The standard deviations as presented in the Table 2 were found to be low when compared to its mean for each variable, which indicates a small coefficient of variation of the series. Furthermore, the range of deviation between the maximum and minimum of each individual series is found to be reasonable in comparison to the mean. The mean over median ratio for each series is seen to be approximately one, which represents normality of distribution.

The Jarque-Bera statistics also indicate that the distributions of all the variables were normal distribution because all variables has probability greater than 0.05 which enabled to accept the null hypothesis of normal distribution for each variable, which confirms that the series are normally distributed. For that reasons, the study has been confirmed the normality of distribution as appeared in the Table 3. Moreover, according to Table 3, the mean value of PID was 8.5 with a standard deviation of 1.07. Its median value is 7.78 with maximum and minimum values of 10.1 and 7.7, respectively. The below Table 3 represent the value of other variable includes INF, IR and URB where by each variable mean, medium, maximum, minimum, standard deviation are shown.

4.2 Stationary Test

This test applied so as to check whether the variables has unit root problem, it is better to test unit roots before checking the co-integration of the variables in order to avoid the problems of spurious [34]. The method of Augmented Dickey-Fuller has been employed in the study to check unit root at both levels and first differences as shown in research methodology section of this study. The results of the unit root test are presented in Tables 4 and 5 respectively. The critical value statistics are given in response of MacKinnon [40] values. All the variables are transformed by applying the logarithm. The new variables are denoted with: LPID, LINF, LIR and LURB.

Whereas:

LPID stand for logarithm of Property Investment Decisions
LINF stand for logarithm of Inflation Rate
LIR stand for logarithm of Interest Rate
LURB stand for logarithm of Urbanization

Table 3. Descriptive statistics for key variables

	LREID	INF	IR	LURB
Mean	8.569226	2.062500	3.938750	8.533549
Median	7.786375	1.662500	3.990000	8.545683
Maximum	10.13558	4.000000	4.495000	8.580919
Minimum	7.705222	1.200000	3.400000	8.416046
Std. Dev.	1.076764	0.945490	0.273741	0.053006
Skewness	0.587570	1.136182	0.503943	-1.015078
Kurtosis	1.430654	2.760350	3.236033	2.785219
Jarque-Bera	5.125069	6.961431	1.428726	5.556888
Probability	0.077109	0.030785	0.489504	0.062135
Sum	274.2152	66.00000	126.0400	273.0736
Sum Sq. Dev.	35.94207	27.71250	2.322950	0.087099
Observations	32	32	32	32

Source: Researchers

Table 4. Results for Unit Root Test (At Level) for Firm Specific Determinants of non-pension fund

Variables	T-Statistics	Probability	Results/Remark
LPID	-0.372597	0.9020	Not stationary
LINF	-1.322488	0.6064	Not stationary
LIR	-1.239013	0.6445	Not Stationary
LURB	-2.496911	0.1259	Not Stationary

Note: Null Hypothesis (Ho: variables are not stationery (NS) i.e. unit root) was not rejected at level
Significant at 5% significance level
Source: Author

Table 5. Results for Unit Root Test (At First Difference) for firm specific determinants of non-pension fund

Variables	T-Statistics	Probability	Results/Remark
LPID	-5.629921	0.0001	Stationary
LINF	-5.310841	0.0001	Stationary
LIR	-8.855131	0.0000	Stationary
LURB	-5.678641	0.0001	Stationary

Note: All variables became stationary at 5% level of significant after the first difference. The results are obtained from MacKinnon's table by using Eviews7 packet program
Source: Author

To determine the nature of the time series, unit root test is employed to understand whether the data are at stationary or non-stationary conditions. By stationarity, it means that there exist constant figure among the mean, variance and auto covariance at any point while non-stationary experience changes in mean, variance and auto covariance at any point (Suleiman 2016). Significantly, the stationarity of time series help to achieve correlation among research variables. But if non-stationary time series exist, then the sample size experience what is called spurious or nonsense regression. The rule for decision making under time series unit root test involves the rejection of the null hypothesis at the 1%, 5% and 10% statistical significance level. This implies that time series data set do not contain a unit root; therefore, at least one time series is stationary. This automatically implies the acceptance of the alternative hypothesis.

Table 4 shows the result from Unit root test in constant, the result shows that all variables were non-stationary at level (lag 0) but once proceeding to the first difference as shown at Table 5 in which all variables became stationary. Generally, the results showed that null hypothesis of unit root were positive at level, nevertheless, upon the first differences of the variables, the null hypothesis was rejected in favor of alternative hypothesis which cited that the series are stationary. Conclusively, all study variables achieved stationarity at order one, I *(1).* These results provide the indication of the presence of possible long run association in the model. But this can be justified by the test of co-integration to check whether the model has long run association or not.

4.3 Co-Integration Analysis: Johansen Co-Integration Test

After testing and proved that all variables are integrated at order one I *(1),* the researcher applied Johansen's maximum probability estimation to test for co-integration so as to check the presence of long-run association among the stationary variables. The results of impact of firm specific determinants of non-pension fund on the property investment decisions (PID) namely, Interest Rate (IR), Inflation Rate (INF) and Urbanization (URB), Tables 6 and 7, shows that there exist long run relationship among variables, as it rejects the null hypothesis at none * and at most 1 * in both Max Eigen and Trace test, so the study accept the alternate hypothesis.

Table 6. Results for johansen co-integration test (Trace)

Hypothesized		Trace	0.05	
No. of CE(s)	Eigen value	Statistic	Critical Value	Prob.**
None *	0.777116	74.99227	47.85613	0.0000
At most 1 *	0.476083	32.96137	29.79707	0.0209
At most 2	0.394607	14.86155	15.49471	0.0621
At most 3	0.028480	0.809002	3.841466	0.3684

*Note: Trace test indicates 2 co-integrating eqn(s) at the 0.05 level. * denotes rejection of the hypothesis at the 0.05 level. **MacKinnon-Haug-Michelis (1996) p-values.*
Source: Author computation from collected Data (2019)

Table 7. Results for johansen co-integration test (Max Eigen)

Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigen value	Statistic	Critical Value	Prob.**
None *	0.777116	42.03091	27.58434	0.0004
At most 1*	0.476083	18.09982	21.13162	0.0540
At most 2	0.394607	14.05255	14.26460	0. 1262
At most 3	0.028480	0.809002	3.841466	0.3684

Note: Max-eigen value test indicates 2 co-integrating eqn(s) at the 0.05 level. * denotes rejection of the hypothesis at the 0.05 level. **MacKinnon-Haug-Michelis (1996) p-values
Source: Author

Table 8. VECM coefficient standard errors and statistic

	LURB	*LINF*	*LIR*
Std. Error	(16.7352)	(0.29893)	(16.7352)
T-statistics	[-5.75181]	[8.67246]	[-5.75181]

Source: Author computation from collected Data (2019)

4.4 Vector Error Correction Model

Due to the above result which shows that all the variables were co-integrated in the models, and prove that there exists a long run relationship between the variables at equilibrium. According to Granger (1988), if two variables are co-integrated, there is a sign of causality between them at least in one direction. VECM was considered appropriate for the analysis of objective of this study using the specified model. Based on the objectives of this study, this section presents and discusses the estimated results of the impact of firm specific determinants of non-pension fund on property investment decisions.

4.4.1 Analysis and discussion of results from relationship between property investment decisions at ZSSF and firm specific determinants of non-pension fund on the property investment decisions

From the equation below the VECM result presented showed that, the coefficient of the constant term is 709.0854 implying that at zero performance of the various explanatory variables used, property investment decisions (PID) stands at 709.0854 units. The result of the VECM equation of the model of the study is.

$$logREID = 709.0854 + log96.25770URB - log2.592457INF - log\ 25.10969IR$$

From the model of the study which describes the impact of firm specific determinants of non-pension fund on property investment decisions at ZSSF namely; interest rate, urbanization and inflation, the detailed elaborations of non-pension fund specific determinants that affect the property investment decisions of ZSSF as estimated regression result has revealed are explained below.

Interest Rate: According to the result of the VECM equation above, one unit increases in interest rate (IR) cause the property investment to decrease by 25.10969 units at significant level of 5%, due to this result it implies that interest rate have negative relation with PID. This means when the bank lending interest rate is very high will reduce the capacity of consumers to take mortgage to purchases or rent real estate property of ZSSF. So in this way ZSSF management refuses to invest fund in real estate property especially residential property. That means interest rate though it is significant but does not influence property investment decisions at ZSSF in a long run. This result is consistent with our expectation. But not consistent with Sirya [33] who found out that increasing in interest rate affected investment decisions in commercial properties in Nairobi. The difference might be caused by the facts that this research dealt with pension funds while his study was on other commercial firms deals with real estate property investment.

Inflation Rat: The coefficient of inflation indicates that one unit increase in inflation rate (INF) leads to decrease in property investment by 2.592457 units at significant level of 5%. So the result of this work shows that consumer price index (proxy for inflation) has a negative relationship with PID, this is because inflation rate cause the increase price of product as a result it reduces the purchasing power of currency hence the amount of money which used to invest on real estate property will be high as a result selling price or rental fees of properties automatically goes up, so this will hinder the desire of ZSSF to invest in real estate properties. This result is the same as our expectation and also with the previous study done by Sirya [33] and inconsistent with the results obtained by Muli [41] in Kenya in which he argued that as the value of property increases as a result of inflation, the rental fees also increases, enabling the income generated by property companies to maximize revenue with overall rise in prices and thus inflation trigger investment decisions in real estate property.

Urbanization: The coefficient result of urbanization indicate that one unit increase in urbanization (URB) leads to the increase in PID by 96.25770 units at significant level of 5%, so the result of this study shows that urbanization has positive relationship with property investment decisions of ZSSF, according to the result an increase in urbanization take high percentage compared with other variables, so urbanization influence very much on the investment decisions of property at ZSSF. This result supported by our expectation and with previous studies done by Lieser and Groh [28] and Muli [41] who argued that urbanization has a positive influence on property investment decisions because of higher demand for business space, residential property and offices.

4.4.2 Results of Error Correction Term (ECT)

Table 8 present the ECT result of objective of the study, the result showed that the inflation rate has very high significant speed of adjustment with a negative sign, this means that tends to reduce the disequilibrium term, it's coefficient was -0.24 (24%). Followed by interest rate which has insignificant speed of adjustment of -0.03 (3%) to allow to corrects the previous period disequilibrium of the system. But the urbanization proves that it was insignificantly at the disequilibrium by 0.5% because as urbanization changes the property investment decisions moves away from the equilibrium. Since inflation was significant means cannot be ignored and it had a negative sign thus it can influence property investment decisions in a short run and has relationship with property investment decisions. The other two firm specific determinants of non-pension fund on property investment decisions namely urbanization and interest rate were not statistically significant. It can be concluded that in a short run the entire variables has no any significant influence in the property investment decisions at ZSSF except inflation.

Table 9. Result for the error correction term of objective of the study

Error Correction term:	D(LREID)	D(INF)	D(IR)	D(LURB)
CointEq1	-0.129367	-0.239600	-0.030868	0.004730
	(0.06063)	(0.09420)	(0.02526)	(0.00262)
	[-2.13387]	[-2.54347]	[-1.22215]	[1.80725]
R-squared	0.458850	0.404328	0.499450	0.546765

Table 10. Granger causality results of the model

Null Hypothesis:	Obs	F-Statistic	Prob.
INF does not Granger Cause LPID	24	1.59751	0.2753
LPID does not Granger Cause INF		0.41916	0.8768
IR does not Granger Cause LPID	24	0.73100	0.6668
LPID does not Granger Cause IR		5.75218	0.0162*
LURB does not Granger Cause LPID	24	4.30023	0.0350*
LPID does not Granger Cause LURB		0.45830	0.8517

*Note: * represent statistical significance at 5%.*
Source: Author computation (2019)

4.5 Granger Causality Results

The Granger-Causality test was conducted in order to find out the causal linkages between property investment decisions in Zanzibar Social Security Fund and firm specific determinants of non-pension fund on property investment decisions as mentioned in objective number two of this study. Also the researcher performed the Granger-Causality test in order to examine whether one determinant variable is useful in forecasting in short-run relationship. In this study, the researcher employed the method developed by (Granger, 1969). Based on the co-integration results, it can be ascertained that variables are co-integrated, and therefore, are causally related. The Granger causality method was used to test the direction of causality among the variables. From the models used, *Yt* represented by LPID and *Xt* represented by LINF, LIR and LURB stand as firm specific determinants of non-pension fund on property investment decisions which are the independent variables [42-46]. The results presents the link between property investment decisions and firm specific determinants of non-pension fund on property investment decisions as follows:-

4.5.1 Granger causality results for investment property decisions and firm specific determinants of non-pension funds on property investment decisions

The granger causality result of the model shown in the Table 10 below showed that there are unidirectional causal relationship from urbanization to property investment decisions and from property investment decisions to interest rate in ZSSF at five percent level of significance. On the other hand the inflation rate and property investment decisions does not granger cause each other, which means no one affect or cause the change of the other.

5. CONCLUSION

From the finding of this research, the following conclusions were made:-

Property investment has substantial benefits and advantages among others includes an excellent rate of returns, amazing tax advantages, high tangible asset value, increasing in value over time as well as portfolio diversification, as a result of these benefits this study will enable ZSSF to maximize their liquidity as now they will be aware on the factors that real influence their decisions making on property investment. This will trigger an alarm if they were doing wrong or not and realize which determinants to concentrate much in making property investment decisions. And now they will be sure in respect of how, where and when to invest.

Therefore, the relationship between property investment decisions and firm specific determinants of non-pension fund on property investment decisions indicate that there were strong relationship, this implies that the management of ZSSF and other pension funds should consider these determinants before making their property investment decisions. This is because the findings are in line with what was expected since the test conducted has revealed that all variables are significantly related to the property investment decisions. This also implies that, all variables take the correct sign as it was expected. Also, according to the result the urbanization as non-pension funds specific determinants conformed to have great impact on the establishment of property investment. Furthermore, since the results showed that there

was significant negative relationship between interest rate and property investment decisions at ZSSF the study suggested that there is a need for management of Zanzibar Social Security Fund to work together with financial institutions to develop a working formula on how they can facilitate mortgage facility at reasonable rate for real estate property especial residential property, this will help to increase demand and supply for real estate property to society.

DISCLAIMER

The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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