

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

AN EVALUATION OF THE INVESTMENT POLICIES OF THE PENSION FUND IN  
GHANA. A CASE OF THE SSNIT PENSION SCHEME

KNUST

BY

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## DECLARATION

With exception of the references and quotations from other sources, which have all been acknowledged, I hereby sincerely declare that the entire project work is my own effort and has never been presented for another degree in this university or elsewhere.

Candidate

Samuel Sackey

Signature.....

Date.....

## CERTIFICATION

I hereby declare that the preparation of the dissertation was supervised in accordance with the guidelines on the supervision of the project work laid down by the Kwame Nkrumah University of Science and Technology.

Supervisor

Mr. J. M. Frimpong

Signature.....

Date.....

External Examiner

Name.....

Signature.....

Date.....

## DEDICATION

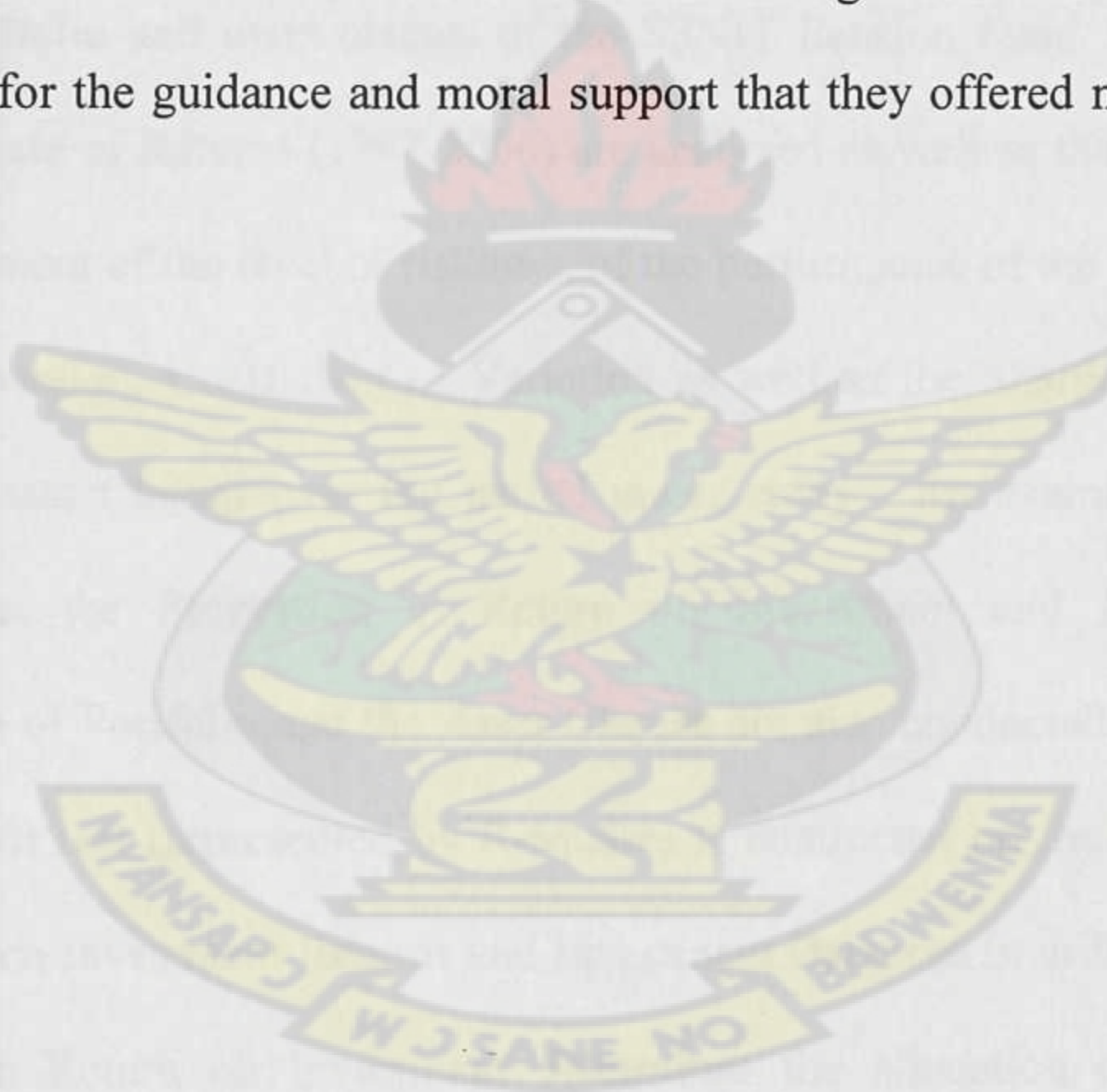
This work is dedicated to my brother Mr. Frederick Nii Aflah Sackey for his financial and moral support throughout the period of my study and pursuit of the Masters in Business Administration Degree.

# KNUST



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## ABSTRACT

There has been widespread public concern and perception about the inadequacy of the defined benefits provided by Pension Scheme to pensioners in Ghana. The Pension Scheme in Ghana is committed to providing income replacement for Ghanaian workers and their dependents in the event of stoppage or loss of income resulting from old age, invalidity or death. To be able to payout guaranteed pension benefits as a form of Social Insurance, there must be prudent investment of surplus funds in order to achieve such a feat.

In this study, thorough analyses are made on the performance of the investment activities of the portfolio and asset classes of the SSNIT Pension Fund. The Portfolio Nominal and Real Rate of Returns (1997-2006) are analyzed as well as that of the Asset Classes. The assessment of the level of riskiness of the performance of the Fund is based on the Standard Deviation, Coefficient of Variation as well as the Sharpe Ratio of the Portfolio and the Asset Classes over the period under study. An examination of the relationship between the Proportion of Return on Investment and Proportion of Investment Balances of Portfolio and the Asset Classes are also conducted. An analysis of the goodness of fit test (represented by R-square) is conducted on the Portfolio and Asset Classes between Investment Returns and Investment Balances in order to ascertain the extent to which Return on Investment determines the allocation of Investment Balances.

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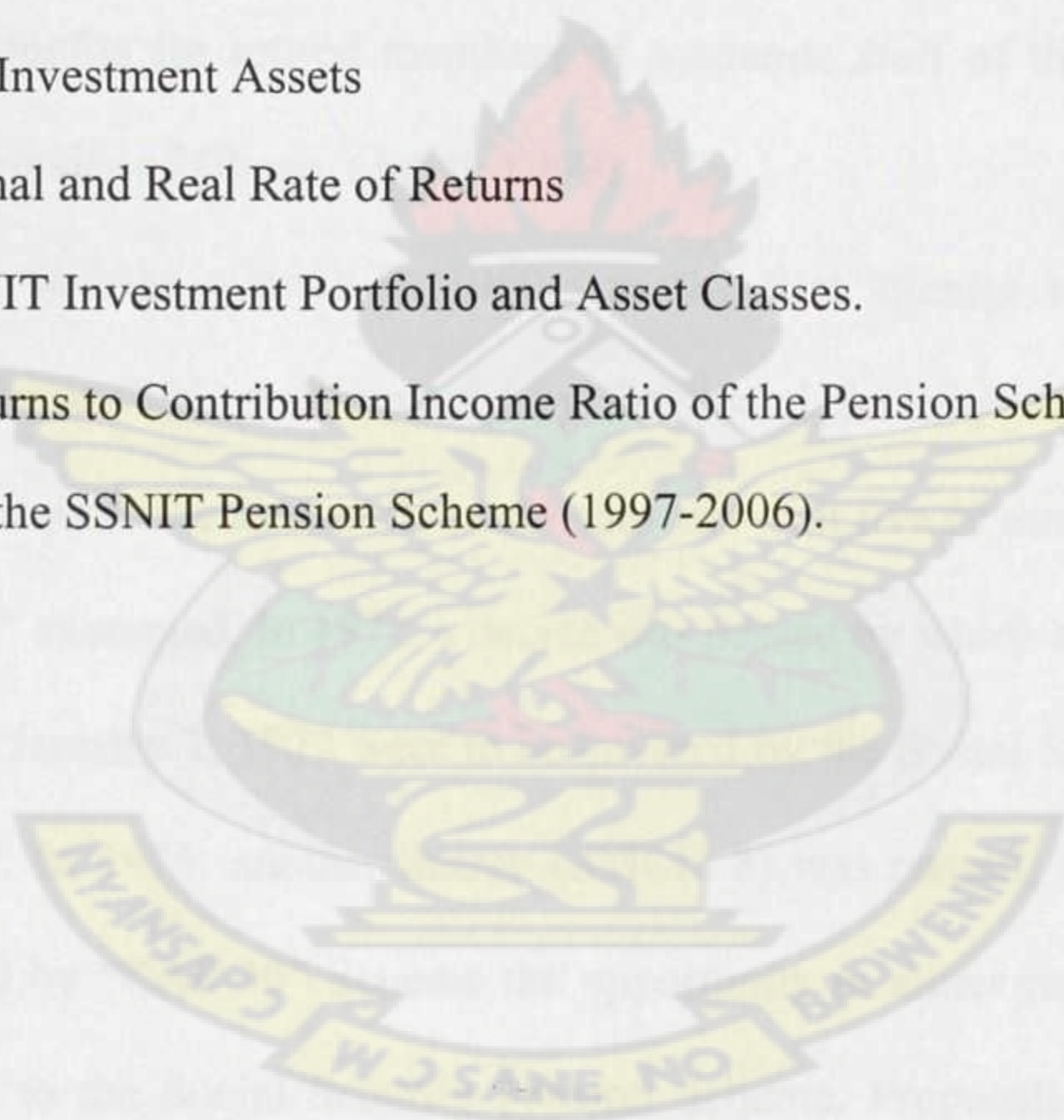
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## CHAPTER ONE

### GENERAL INTRODUCTION

#### 1.1 Background

The Pension Scheme in Ghana was instituted in 1987 and conversion was effected in 1991 with the promulgation of the (PNDC Law 247) i.e. the Social Security Law (1991) which was to be administered by the Social Security and National Insurance Trust (SSNIT). SSNIT is committed to providing income replacement schemes for Ghanaian workers and their dependants in the event of stoppage or loss of income resulting from old age, invalidity or death. Similar non-contributory Schemes were developed to provide retirement benefits for retired members of academic staff of the University of Gold Coast now University of Ghana. (Adjei, 1999).

The compulsory savings scheme in 1960 was the first attempt to developing a National Pension Scheme. This was replaced by the Social Security Act 279 of 1965. Under which coverage was extended to all establishments with five or more workers with those under "CAP 30" exempted. In 1972, a decree was passed by which all civil servants employed on or after January 1, 1972 were to be covered by the Social Security Scheme instead of "CAP 30". In 1975, another decree (SMCD 8) was passed, which provided civil servants covered by "CAP 30" Scheme the opportunity to either remain with their Scheme or to switch to the Social Security Pension Scheme. Proposals to convert the social security scheme from a Provident Fund scheme to a Pension Scheme were made to the government in 1987. However, the actual conversion was not carried out until 1991, with the promulgation of Social Security Law 1991 (P.N.D.C.L. 247). The Provident Fund Scheme was intended to operate for a five (5) year period and there after be converted into a Pension Scheme. Contrary to expectation, the Provident Fund Scheme

operated for twenty-five years with the Social Security Act 1965 being replaced by the Social Security Pension Law 1991 (P.N.D.C.L247).

Currently SSNIT holds investment portfolio that spans almost the entire economy including services, manufacturing, real estate and on the stock exchange. The investment portfolio of the Trust is categorized into five main asset classes; they are Listed Equity, Unlisted Equity, Fixed Income, Real Estate and Economically Targeted Investments. The value of the investment portfolio has grown from ₵979.05billion in 1997 to ₵1939.80 billion in 2006. This significant growth in assets calls for prudent asset management by the managers of the fund in order for optimal returns to be made on investments for the Trust's core mandate of income replacement of the aged to be met. The fact that the current Pension Scheme is yet to be completely converted from the Provident Fund into a Social Insurance Scheme also calls for prudent asset management of the Pension Funds. It is against this background that this research has been motivated to the evaluation of the investment policies of the Trust.

## 1.2 Statement of Problem

Many concerns have been raised about the inadequacy of defined benefits provided by the Pension Scheme to pensioners. Again despite huge pool of pension funds which is estimated at 11.82 trillion cedis in 2006 to be of partially funded schemes, yet returns on investments portfolio are not adequate enough to compensate pensioners for their numerous years of contribution. Again the proportion of the Ghanaian labour force that participates in the Pension Scheme continues to grow. Available statistics shows that the membership of the SSNIT Pension Scheme has increased significantly over the past decade with the number of active contributors rising by 68% from 722,120 in 1997 to

1,211,620 in 2006 (excluding those registered with the Trust but have not contributed for at least one(1) month in the last twelve(12) months). (Source: SSNIT Research Department.) The Scheme's cores function of adequately providing for their dependents in the event of income loss resulting from old-age, invalidity, or death which must be met is seriously challenged. As the proportion of the Ghanaian labour force that participates in the Pension Scheme continues to grow, the responsibility of providing for their security and that of their dependants in the event of income loss resulting from old-age, invalidity or death must be catered for. This can be achieved by the long term sustainability of the Pension Scheme and the prudent investment of the surplus funds can be said to be one of the principal determinants that can be employed to achieve such a feat. In examining the investments of the Pension Scheme, (Atabugum, 1997) discovered that the Pension Fund was quite substantial with a fund ratio of 9. She indicated that the Scheme appear sustainable due to the current prevailing demographic structure of the existing population whereby the contributing members to the scheme far outnumber the beneficiaries(i.e. pensioners). With the changing demographic structure there could be the problem of non-sustainability of the fund. Again, this therefore necessitates prudent investments to reap positive real returns for the sustainability of the Scheme.

The performance of the Trust's investments have raised public outcry on the sustainability of the fund. According to October 11, 2000. Daily Graphic, the Trust admitted that their corporate loan portfolio and some direct investments have underperformed. Despite the huge annual amount of funds that accrue to the Scheme and the economic importance that it provides, it is saddled with this perceived abysmal performance of its investment portfolio. These may be attributed to (1) improper asset selection and allocation; (2) poor fund management; and (3) the Pension Fund has

become an increasingly political target since there is the impression that the Pension Fund forms part of the public purse and can be used as such under the guise of meeting social mandates. It is therefore prudent that the Trust examines its investment activities to ensure that its assets generate maximum returns. The major research issue is therefore examining the investment activities of the Trust's investment portfolio over 1997-2006 to find whether the Trust has been generating returns that can sustain the Scheme.

### 1.3 Objectives

Broadly, the study is intended to evaluate the performance of investment policies of SSNIT Investment portfolio.

Specifically, the study seeks to;

1. Identify and describe the asset classes of SSNIT investment fund.
2. Examine the growth trend of returns in each of the asset class.
3. Examine the risk analysis on the SSNIT investment portfolio and the asset classes.
4. Establish reasons underlying the nature of the returns on the SSNIT investment portfolios.
5. Examine the trend of the returns on SSNIT investment portfolios.
6. Examine the asset management of each of the asset classes.
7. Examine the level of liquidity of the SSNIT Pension Fund.
8. Make appropriate recommendations to enhance the performance of SSNIT investment portfolio.

## 1.4 Justification

The study sets out to evaluate the investment policies of the SSNIT investment portfolio over the period 1997-2006. The SSNIT Pension Fund is invested into a combination of fixed and non-fixed income investment portfolios. The general information and perception within the public domain regarding the management and performance of SSNIT investment portfolio in particular and the Pension Fund in general leaves much to be desired. In the light of this, stakeholders including pensioners, contributors and the concerned general public together with analysts alike are concerned and seek a lasting solution to it. It is the fervent hope of the researcher that this study would provide answers to this. The study would serve as precedence for future research and also address some of the lapses identified in earlier studies.

Of particular importance are the implications of the findings of the study regarding the long term sustainability and viability of the SSNIT Pension Scheme. Fund managers of the Pension Fund would be advised to observe prudent asset management and investment policies for optimum portfolio returns while managers of the economy would be called upon to closely monitor and manage macroeconomic variables (such inflation and interest rates) that adversely affect portfolio returns in order to mitigate their harmful effects on investments.

## 1.5 Scope of the Study

The study is going to be a single case study on one organization i.e. The Social Security & National Insurance Trust (SSNIT). This is because SSNIT is the only statutory public Trust charged with the administration of Ghana's Pension Scheme. The study is going to cover the Finance, Investments & Developments departments. Since SSNIT's

investments spans several sectors within the economy, data from institutions such as the Ghana Stock Exchange, Bank of Ghana, Statistical Services and the International Social Security Association.

As stated in the methodology of the study, annual returns and annual rate of returns of the asset classes, proportion of investment balances to the asset classes would be used. The data collected would be analyzed using Line Graphs, Histograms and Pie Charts.

The study period is 1997-2006 and it has been chosen in order to evaluate the performance of the investments of the Trust in recent times and also due to the inception of the Pension Scheme as it metamorphosed from the Provident Fund. Constraints on Data availability are anticipated particularly on the returns on the Economically Targeted Investment (ETI) asset class, which constitutes about 2% on average of the portfolio.

## **1.6 Methodology**

This section is in two parts, i.e. the research design and the method of data collection.

### *Research Design*

The study will analyze and evaluate the investment activities of Pension Fund. The study will mainly be a combination of descriptive and explorative search. This is to give a clear and vivid picture of what the Trust's investment performance has been in the past given the economic and political situation during those periods.

The study will be a longitudinal study since data collected will be over a ten year period. This will be done by gathering data on time-series with respect to returns of the Portfolio and the asset classes of the Pension Fund investments. This will be done to

study the trend performance as well as taking the macroeconomic variables under different periods into consideration.

### *Data Collection*

The study will mainly be based on secondary sources of data made up of documentary records, annual reports, financial reports, bulletins, journals and other relevant materials relating to investment activities and portfolio mixes of the Pension Fund.

## **1.7 Organization of the Study**

The study is organized into five main chapters. Chapter one is the introductory chapter. It consists of the background analysis of the study, the research problem statement and the set objectives. Also included in this chapter are the justification, scope and limitations, methodology and how the study is organized.

Chapter two is the review of literature and chapter three is the presentation of the organizational profile of SSNIT and the methodology of the study to reflect data sources, financial, actuarial statistical tools to be used in data analysis in chapter four.

Chapter four contains statistical tools such as graphs, histograms and charts used in the data analysis. Actuarial and financial concepts are also used in the analysis of data. In chapter five, the summary, conclusion and the relevant recommendations of the study are presented. References and accompanying appendices are also presented.

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1 The Emergence and Concept of Social Security

The International Labour Organization (ILO) defines social security as “the protection which society provides for its members, through a series of public measures, against the economic and social distress that otherwise would be caused by the stoppage or substantial reduction in earnings resulting from sickness, maternity, employment injury, unemployment, invalidity, old age and death; the provision of medical care; and the provision of subsidies for families with children.” (ILO Convention 102, 1952). The objectives of social security are among others, to replace loss or reduction in incomes, promote health through medical care, and to assist families bringing up children. These objectives are achieved through social security benefits. These benefits vary with society and level of development. Some of the social security benefits are old-age pension, disability benefit, medical care benefit, death benefit, sickness allowance, maternity allowance, employment injury benefit, unemployment allowance and child care support.

(Webster, 1984) outlined in a thesis by Durkheim “Division of Labour” how modern societies emerged from traditional societies. He proposed that there are two basic types of societies, i.e. the “traditional” and the “modern”. He indicates that with the traditional societies, people perform limited tasks. One village is like another in what they do, think or believe. In these circumstances social circumstances is based on simple common life styles and beliefs that prevail within settlements. With the modern societies, he indicates that there is an ever increasing number and population density. According to (Nukunya, 1992) the emergence of colonialism led to the breakdown of traditionalism in

Ghana. This brought the introduction of fairly uniform procedures and practices over areas which were formerly governed under different constitutions and conventions. He also indicated that the introduction of money also led to radical change in the commercial and economic lives of people. This led to inter-ethnic and inter-regional trade, increased interaction and understanding among people as they learnt the languages, customs and lives of other people. This meant an individual could sell his labour to anyone he wanted to therefore no one needed to depend on the family property. This therefore led to migration and the eventual concentration of population in places whose economic opportunities attracted the majority of these workers.

According to (Richardson, 1965), the introduction of the industrial revolution brought about rapid development in industry and transport leading to the enhancement of mobility of labour and Social Security began on a voluntary basis. In the event, haphazard and indiscriminate private charity was supplementary in part by the work of charity organizations. Mutual aid became more attractive to people who in the main were not of the type to be recipients of charity as they joined together partly to protect themselves against the needs for charity. He asserted that towards the end of the 19th century, there was state social security to supplement voluntary provision and state relief of destitution. The scheme involved direct state responsibility and an elaborate administrative system which were introduced piece-meal, each problem-sickness, unemployment, old-age, and the rest being dealt with at different times and each had its own independent legislation and administration.

## 2.2 Ghanaian Literature on the SSNIT Pension Fund Investment

(Hess and Impavido, 2003) in a World Bank study reported that the SSNIT Pension Fund is required to be invested in assets with adequate yield and liquidity and acceptable risk level. (Dei, 2001) corroborates this and points out that those managers must follow basic portfolio theory rules for asset diversification as they seek to maintain an optimal Funding Ratio and to secure a long term ratio of returns to the fund. (Hess and Impavido, 2003) maintains that SSNIT the investment policy includes social and developmental projects (including housing finance, students' loans and industrial estates) have become a burden on the SSNIT Pension Fund. (Dei, 2001) also maintains a similar view that the students' loan scheme has become a burden on the SSNIT Pension Fund. He pointed out that the number of students had increased and consequently the students' loan had increased considerably whereas postgraduate unemployment had also increased thereby creating further burden on the Pension Fund. He further stressed out that these loans are granted to students at a subsidized interest rate coupled with government delays in the payment on interest subsidies to the SSNIT Pension Fund again increases the overall burden on the Fund. The International Labour Organization (ILO) minimum standard for determining rates of interest allow that the rate of benefits payable on earnings of a beneficiary or a covered person should not be less than the indicated percentage of the previous earning (Income Security Recommendation 1994).

(Gorkel, 1996) indicates that most recipients of social security in Ghana have suffered erosion in the benefits they received at old age because the interest rates and inflation on the contribution was for most periods lower than the prevailing interest rate. In his analysis, he considered the effects of inflation, exchange rate and real interest rates

on the savings of members of the Pension Scheme and found out that members' loss were 52%, 53% and 25% in 1980, 1981 and 1990 respectively.

According to (Adjei, 1999) the Pension Scheme invests in both fixed and non-fixed income portfolios. As at 1999, 46% of the scheme's investments were in fixed income assets with the rest in non-fixed income assets. The scheme also undertakes substantial social investments in healthcare delivery (including building of health-posts and mini-hospitals), education (e.g. students' loan scheme) and employment generation businesses (corporate loans to help companies expand). He indicated that the SSNIT considers investment in employment generation businesses as one of the means by which the membership of the scheme can be increased since new employees of such companies become mandatory members of the scheme. Hence, any investment with the potential by SSNIT.

### **2.3 Investment Policy and Performance of Public Pension Funds**

A study by (Thomas and Tonks, 2001) into over two thousand (2000) segregated Pension Funds during the period 1837-1997 found that most of the funds are "close teachers" of the FT-All Share Index and that their average out-performance was significantly different from zero, around one half of a percentage point per year. The average selectivity alpha and the average timing parameters were both negative. This suggests that active portfolio management which involved strategic asset selection and timing adversely affect the performance of investment portfolios. (Blahe et al., 1999) also found stock selection and market timing to returns on United Kingdom Pension Funds Investment Portfolios very negative.

Another study conducted by (Surz et al., 1999) examined the quarterly investment returns of ninety-one large pension plans over a 10-year period (1974-1983) and concluded that investment policy explained an average of 93.6% of the variation in total pension plan return used data from 1997-1987 similarly found out that 91.5% of could be explained by policy decisions.

Several studies have been conducted into the American Pension Funds. (Lakomishok et al., 1992) examined 769 defined benefit funds in 1983-1989 and (Ippolito and Turner, 1987) studied 1526 US ERISA-bases Pension Funds during the period of 1977-1983. Both studies found out that, on average, the pension manager significantly underperformed the passive management (represented by S & P Index).

A study by (Coggin et al., 1993) on a random sample of 71 US equity pension funds during January 1983-December 1990 found significant average positive selectivity and negative average timing. (Christopherson et al., 1998) using conditional performance evaluation framework evaluated 261 portfolios over 1980-1996 to the Russell 3000 benchmark and found out that the average manager out-performed the Russell by 0.72% per annum. They concluded that selectivity and timing are sensitive to the choice of benchmark when management style is taken into consideration. They found that funds that target value strategies yielded out-performance of 2.1% per annum, but funds that adopted growth strategies under-performed by -0.96% per-annum. (Blake et al., 1999) examines the asset allocation of a sample of 364 UK Pension Funds that retained the same fund manager over the period 1986-1994. They find that the total return is dominated by asset allocation. Average return from stock selection is negative, average return to market timing very negative.

(Thomas and Tonks, 2001) however in a large sample of Pension Funds find little evidence of any abnormal performance but find that Pension Funds seem to follow very similar investment strategies so that identifying out-performance is difficult. In recent times, research on performance has been investigating whether Pension Funds that out-perform continue to persist in the future. (Grinblatt and Titman, 1992), found that differences in mutual fund performance between funds persist over five (5) year time horizons and this persistence is consistent with the ability of fund managers to earn abnormal profits.

(Hendricks et al., 1993) analyzed the short-term relative performance of no-load, growth oriented mutual funds, and found the strongest evidence for persistence in a one-year evaluation horizon. (Malkiel, 1995 and Stewart, 2007) however argue that survivorship bias is more critical than previous studies have suggested. They point out that only the more successful mutual funds survive. Higher risk funds that fail tend to be merged into products to hide their poor performance. Also bias from tendency to run incubator funds –run ten different products –see which one test and the market those, ignoring the poor record of the rest. When an allowance is made for survivorship bias in aggregate, funds have under-performed benchmark portfolios both after management expenses and even gross of expenses. He further points out that whilst considerable performance persisted in the 1970s. There were two consistencies in fund returns in the 1980s.

(Brown and Goetzmann, 1995) examined the performance persistence of US mutual funds and claimed that the persistence is mostly due to the funds that lag the S & P. They demonstrate that relative performance pattern depends on period observed and is

correlated across managers that are not captured by standard stylistic categories or risk adjustment procedures.

(Urwin et al., 2001) describe success in Pension Fund's Investment to involve meeting defined liabilities, so that measures of financial success must incorporate the assets and liabilities of the balance sheet. All else being equal, success therefore involves strengthening the balance sheet by improving the asset/liability ratio. They further found out that in order to fulfill the Pension Fund's financial mission, there are the traditional and non-traditional approaches that must be adopted. The traditional approach splits the investment decision into two part; the first being the setting of a strategic asset allocation or policy, and the second being investment management implementation. It involves the creation of a benchmark to represent the policy, establishes an investment neutral investment and allows the performance from the investment management implementation to be benchmarked against a fair index. They further asserted that the non-traditional or absolute return approach involves no benchmark, merely one or more performance targets and risk targets. This is the more natural way to manage a fund investing in alternative assets such as private equities and hedge funds. In such cases, there are no obvious benchmarks, only performance comparators.

(Useem and Mitchell, 2000) explored four measures in examining the Public Pension Plan Investment Policies. They include: (1) Tactical Investment, (2) Equity Investment (the fraction of pension assets placed in stocks) (3) Outside Investment management (whether asset management is contracted to outside investment forms) (4) International investment. They concentrated on these four measures because they were among the key investment decisions that pension managers make and because data available to them contain good information about each. The investment strategy they

studied included the extent to which public pension plan's portfolio was devoted to stocks, real-estate equities and other forms of equities.

(Dimitiri et al., 2008) claim that the investment guidelines set by the Norwegian Pension Fund Act of 2005, set the equity share between thirty (30) and fifty (50) percent of the portfolio. They also claim that the Canadian Pension Plan Investment Board (CPPIB), in seeking to expand its internal active management is engaging in both traditional value-added management and short-horizon trading strategies. As a principal investor, the CPPIB is taking several stakes in private equity investments including infrastructure projects, acquiring ownership rights in toll roads, airports, electrical transmission networks and water distribution systems. Its involvement in real estate projects has also evolved into owning controlling stakes between 50% and 80% in office buildings, shopping malls of retirement homes.

According to (Engstrom, 2004), compared with other nationalities, Swedes prefer equity funds, which amount to 70% of the total Industry. He claims that out of a number of 112 funds, 97 invest in broad Swedish equity market (Sweden funds) and 15 focus their investments on small Swedish firms (Small Cap Funds). All the funds meet the same investment policy i.e. the UCITS terms (undertakings for collective investments in Transferable Securities), and are therefore comparable to U.S funds which meet similar terms. The UCITS terms state that the funds are not allowed to hold a single stock worth more than 10% of their total assets. Moreover, they are only allowed to hold stocks worth more than 5% of their total assets to a maximum of 40% of total assets. The terms also state that as to 75% of the assets of the funds cannot acquire more than 10% of the voting securities of any issuer and cannot invest more than 5% of total fund asset in any one

issuer. Hence, the minimum number of stocks a diversified U.S mutual fund and a European (UCITS) mutual fund must own is sixteen (16).

(Useem and Mitchell, 2000) found that state and local pension systems on average, held 42 percent of their investment assets in equities and 50% in fixed income assets, the remainder was primarily cash. Salisbury et al (1994) on the contrary found out that public pensions allocate 47% to equity and 47% to bonds.

The next investment strategy is the investment in hedge funds. (Stewart, 2007) explains why the growth in Pension Funds investments in hedge funds with an estimate of over 10,000 funds at over \$1trillion. He claims that on one hand, many Pension Funds are attempting to match assets and liabilities more closely to avoid under funding in future (a trend which is being supported by regulatory and accounting changes). Hedge funds can be used to manage, reduce and indeed hedge such liability risks. Hedge funds also allows for risk reduction via increased diversification away from traditional equity and market holdings (via holdings in commodities, properties, etc). On the other hand, the asset liability matching is provoking a move into bonds which coupled with the low-interest rate environment, means that Pension Funds are also been forced to think harder about how to generate return. Rather than holding traditional equity portfolios, generating most of their return from market returns, Pension Funds are increasingly rethinking their investment approach and searching for 'alpha' or excess return over the market. Pension Funds are progressively more prepared to invest in a broader range of products from emerging market debt or equity, high yield fixed income, property, commodities, illiquid investments, etc. Hedge funds are increasingly used as instruments to facilitate this new investment approach.

(Arnott et al., 1991), the major concern of fund sponsors has been the variability of the value of the fund assets, which have always been marked to market. They make reference to FASB 87 which stipulates that interest rate employed to calculate the present value of the liabilities is no longer the actuary's province. Market interest rate must now serve that purpose which means that the present value of bonds liabilities will henceforth tend to vary more widely than it has varied in the past. A (Societe Generale', 2006) report refers to investment strategies that hedge the value of a portfolio to a certain extent against market risk as portfolio insurance.

(Brennan and Schwartz, 1979) show, holding a stock position and buying put option is equivalent to holding a riskless investment equal to the present value of the desired floor and buying call options with the remaining capital. In other words, a portfolio insurance strategy with guaranteed minimum return can also be implemented with stocks and put options. That is portfolio insurance with put options; only one specific exercise price is admissible to guarantee a certain floor. In contrast, for portfolio insurance with Calls, the exercise price is arbitrary because the floor is accomplished by the riskless fixed income investment and not by the option position.

(Black and Jones, 1987) also developed the Constant Proportion Portfolio Insurance (CPPI) which was not based on option theory. To implement a CPPI strategy, an investor first selects a floor below which he does not want the value of its portfolio to fall. If we consider the difference between the current portfolio value 'A' and the floor 'F' as a cushion "C", this amount i.e.  $=A-F$ . can be invested in a risky asset. They further explained that for a pension fund, the cushion is normally rather small. As a result, only a small portion of the portfolio can be invested in stocks. To increase the equity exposure, E, the cushion is multiplied by a constant factor, m i.e. where  $m > 1$ . Thus  $E = mC$ .

A (Societe Generale', 2006) report also reveals yet another investment strategy known as the Reverso. This is for pension funds, an investment strategy that generates both profits in bull and in bear markets. Such a strategy implies a combination of Call and Pull option. This profit pattern is a straddle which involves buying a Call and Put with the same strike price and expiration. If the stock price is close to this strike price at maturity of both options, the straddle leads to a loss, however, if there is a sufficiently large move of the stock price in either direction a profit will result.

## **2.4 Principles for investing Social Security Funds**

The basic principles that govern the investments of Social Security Funds are the same as those of other fiduciary institutions. They include: (1) Safety, (2) Liquidity, (3) Yield, (4) Diversification, (5) Social and Economic Utility.

*Safety:* This is of foremost importance since Annual Report 2006. The trust is holding assets (pension funds) in trust for the scheme's contributors. The safety of an investment is the assurance that both the principal and interests that accrue will be paid in full and on time. (Brigham and Ehrhardt, 2002) claims that no investment should be undertaken unless expected rate of return is high enough to compensate the investor for the perceived risk of the investment. Safety of an investment may be found in the strength of the issuer or the guarantee supporting the issue. According to (Casu et al., 2006), safety is one of the requirements lenders look out for and this takes the form of minimization of risk, minimization of cost and liquidity. This is the risk element in any investment and must be carefully evaluated. Risk levels are different for different instruments. They are non-existent for government bonds but they exist in varying degrees for Corporate bonds (or unsecured CR), Municipal bonds and Foreign bonds. A

secured investment is an instrument supported by some specific property of the issuer. An endorsement acceptance or guarantee on the surface of an instrument by a high net worth person or blue-chip company constitutes a security that will be an asset whose cash flows is well known and certain.

*Yield:* The investment of these reserves must earn interest at least corresponding to market rate of interest else the scheme will face a deficit at maturity when investment income tend to be a major source of inflow with very little surplus for investment. The primary responsibility of the fund manager is to maximize returns. This requires that he does a careful analysis of investment and make comparison with alternative opportunities. Risk and returns of a portfolio have a direct relationship. The higher the risk likely to befall a portfolio of securities, the higher the returns it is likely to offer and vice-versa. (Brigham and Ehrhardt, 2002) corroborates this assertion that, "No investment should be undertaken unless the expected return is high enough to compensate the investor for the perceived risk of the investment". It is possible to minimize risk to a nearly risk-free investment by keeping only to government security where returns will be no higher than government treasury bills. Alternatively, an aggressively active investment activities could be employed that will earn high returns but will place the firms assets in an unreasonably risky position. Both alternatives could not therefore be ideal. A point in between the two extreme positions will optimize the firm's investment portfolios. This requires the selection and combination of right portfolio mix.

*Liquidity:* For investment of contingency reserve, it is not necessary to seek investments with highest yield because the principal objective for the replacement of these funds is liquidity.

Benefits are paid from current contributions with the surplus funds added to reserve funds for investments. The ease with which the trustee can liquidate investments even before maturity dates meet expected and unforeseen payments as they fall due is very crucial. (Casu et al., 2006) claims that one of the objectives of asset management involves decisions concerning the amount of liquid assets and reserves to keep on hand taking into account the trade-off between profitability and liquidity. Unexpected contingencies can bring about changes in the cash that require the employment of cash which hitherto was idle. Unexpected contingencies can bring about in changes that require the employment of cash. This may necessarily compound the trustee to liquidate enough investment portfolios to cover the requirements.

*Diversification:* This involves spreading the funds among various investment media as well as among different industries and geographical areas in order to reduce investment risk. (Casu et al., 2006) state that investment decisions stem from a conscious effort by managers to diversify earnings and therefore reduce risk. They further claim that diversification of earnings and risk reduction can be brought about by expansion into foreign markets and risk will be reduced the less correlated earnings in the foreign country are to those in the home market. The above form requirements are standard investment principles for all types of financial institutions.

*Social and Economic Utility:* This is the harmony with public interest. It is in the interest of the Trust that funds are invested in such a way that they contribute to the improvement of the socio- economic development of the people by way of housing, education, health, employment, etc. According to (Hess and Impavido, 2003) "there is political involvement in the investment choices of public Pension Funds". This involvement can come in the form of legislation passed on the initiative of trustees or can

involve mandates to make certain investments or prohibitions on other investments. (Dei, 2001), states that the SSNIT Investment policy includes social and developmental mandates in the following areas: housing finance, student loans and industrial estates. He further comments that the student loan scheme has become a burden for the SSNIT Pension Scheme. Again in the 2006 Annual Report, the chairman of the Board of Directors of SSNIT corroborates this fact and stated that, "the student loan has always been a thorny issue for the Trust and diversion from the Trust's core mandate".

## **2.5 A Review of Some Pension Funds**

According to (Watson, 2003) Employer Pension Fund is a type of pension fund in U.K. set up by employers for employees. The objective is to provide income in retirement on top of their basic and universal state pension scheme. Unlike life insurance companies, pension funds set up by employers is by other such sponsors are unlikely to purchase the services of brokers, in order to acquire business; but they may employ financial auxiliaries as managers acting as agents. The basic requirement for such a pension fund is for tax purposes is that contributions by employers are tax deductible, but the pension is taxable, known as deferral of income. He also identified pension funding for the individual of self-employed in the U.K. Under this type of pension funding, the same tax concession exist under the same condition and since the 1980s, they became available on a new class of funded "personal pensions" which could be taken by these employers who did not have the opportunity to join an employer pension scheme or who exercise a new right to opt out of an existing employer scheme. Personal pension funds have the advantage that the policy holder could opt to defer taking an annuity up to age seventy-five (75). Collective Pension Funds (CPFs) have been operating in OECD countries for

decades although the specific forms vary from country to country. (Hu, Y. et al., 2007), also explains CPF as independent entities containing a pool of assets acquired for the purpose of financing pension plan benefits of employers which are not from the same company or holding group of companies. They identified industry fund as a form of CPF. They claim that industry funds cover employees of enterprises that do not have common ownership but that operate in the same industry under this type of CPF representation of both employees and employers sit on board of trustees and jointly make decision about the running of the schemes although they often hire professional managers to conduct daily activities relating to the funds which means that equal representation for employee and employers representatives are almost always observed. The key merit relating to industry or multi-employer fund form of CPF they stress is that these are non-profit bodies and therefore the potential problem of conflicts of interests between shareholders and beneficiaries does not normally arise. While equal representation has the benefit of allowing employees and employers greater amount control over their pension funds, it's faced with the drawback largely due to lack of expertise of trustees especially with respect to their decision relating to the investment of the pension fund assets might not be optional.

Another form of CPF identified by the (Hu, Y. et al., 2007), is common in developed economies, including OECD countries, Hong Kong and China is the master trust which by definition is open to all corporate plan sponsors. The master trust is a standardized investment product offered by financial institution in the pension market. In this case, any interested plan sponsor can establish such funds subject to agreement on fees and investment strategies. Selection of service providers and financial products are in general decided by employers rather than employees. In many cases, a range of

investment products with the different risk-return profiles are available which are then targeted at plan sponsors or groups of participants with different risk preferences. In comparison with industry funds, the trustees of master trusts are nearly always profit-oriented, i.e. they operate for commercial reasons providing professional services-although by law they still have the fiduciary duty to act in the interests of the members and beneficiaries of the pension plan. They further held the view that master trusts often operate on a one-stop shopping basis where different professional services over bundled vertically and managed by the same financial institution. The key merit relating to master trusts is the quality of services and professional expertise provided by financial institution, given their experience in administering and running pension funds. However, poor representation of employees and employers on the trustee board is one of the main weaknesses for master trusts and this poses the problem of aligning trustees' commercial interests and their fiduciary duties resulting in conflict of interest and general loss of control by the plan sponsor.

(Watson, 2003) also compares pension funds with an insurance contract. He claims that the British personal pensions are classified as part of "Social insurance". This is on the grounds that the employer makes an indirect contribution, through a higher social security contribution and the difference between this and a lower rate paid by the government is paid into a personal pension fund.

(Davis, 1993) defines a Pension Scheme as a form of social insurance. According to him, "It is an arrangement to provide a member with income when he/she retires from gainful employment. The pension received may be a flat rate or dependent on the amount of contributions and the length of time that those contributions have been paid". He outlines the main objective of any pension scheme to provide members with adequate

incomes when they retire. He argues that what constitutes an adequate pension or income is in fact, not easy to point out. However, it is generally accepted that the adequacy of pension is related to the individual's income prior to retirement. Thus, for a member whose pre-retirement income was relatively high, the value of pension needed to adequately replace this income should be relatively high. However, if a member's level of income prior to retirement is low then he/she will need a higher replacement ratio (that is, the ratio of pension to pre-retirement income) to enjoy adequate pension. In this case, it will be expected that at least one component of the total pension is not related to the individual's earnings during working life or designed to favour members with low incomes. A pension policy must therefore, aim at developing the mechanisms by which the objective of adequate pension can be achieved. This poses great challenge for policy-makers, as it is certain that many people retire on inadequate incomes, especially in developing economies.

(Inductivo, 2002) however defines a Provident Fund Scheme as a compulsory savings scheme that the employer and the employee make regular contributions into the scheme on behalf of the employee. These contributions are invested. When the employee reaches retirement age, become permanently incapacitated or dies prior to retirement, the total contributions together with investment income is paid as a lump sum to the employee or his/her dependants in case of death. In some cases, it is possible for the employee to draw income from the fund prior to retirement.

## **2.6 Some Performance Measures of Public Pension Funds**

(Tonks, 2005) applied composite portfolio performance evaluation models. He made adjustments for the risk of the portfolio in terms of realized returns. He applied the

Treynor measure. Treynor proposes the Security Market Line as a benchmark, i.e. measures the risk premium per unit of systematic risk. It is given as  $T = (R_p - R_f) / \beta_p$ , the 'T' measure is appropriate for funds that invested their wealth in a number of portfolios. He also used the Sharpe's model which measures the risk premium per unit of total risk. It is given as  $S = (R_p - R_f) / \sigma_p$ , the 'S' measure is appropriate for funds that have invested their wealth in one portfolio and thus measures the efficiency of the fund's investments. In these models,  $R_p$  is the average rate of return during a specified period,  $R_f$  is the average rate of return on a risk free investments over the same period,  $\sigma$  is the standard deviation of the returns on the portfolio i.e. the total risk/volatility of the fund's investment.  $\beta$  is the measure of systematic risk and is given as  $\text{Cov}(R_i, R_m) / \sigma_m$

(Jensen, 1968) proposed measuring the performance of a portfolio by its abnormal return above the SML; it is given as  $\alpha = R_p - [R_f + \beta_p(R_m - R_f)]$ . Alternatively, the excess return ( $R_p - R_f$ ) of a portfolio may be regressed against excess return on the market and interpret the intercept as the Jensen measure. Thus  $R_{it} - R_{ft} = \alpha_i + \beta_i(R_{mt} - R_{ft}) + \epsilon_{it}$ . The Jensen- $\alpha$  specifically evaluates the active fund management by the portfolio manager as opposed to the passive fund management of investing in the risk free and the market portfolio.

(Fama and French, 1996) however identified that a potential problem with the risk adjusted performance measures outlined is that the benchmark used for comparison may be inappropriate. This is because, it is an unresolved question whether the Capital Asset Pricing Model (CAPM) is the correct pricing model that can explain the cross-sectional distribution of asset prices in an economy. (Roll, 1978) also indicates that the chosen index may not represent the entire universe of securities and it is likely that equity indices such as S&P 500 will have a large capitalization bias. In this case the performance measure

may be comparing the performance of the Fund with a benchmark that may be inefficient. (Grinblatt and Titman, 1993) suggest a method of assessing portfolio performance without requiring a benchmark; this involves comparing the performance of the selected assets in the portfolio with a reference period when these same assets were not in a portfolio. (Tonks, 2005) contends that the Jensen technique made no allowance for market timing abilities of Fund managers when they change the composition of their portfolio on the basis of expected market movements. He argued that when portfolio managers expect the market portfolio to rise in value, they may switch from into equities and/or they may invest more in higher beta stocks. Again when they expect market portfolio to fall in value, they will undertake the reverse strategy; sell high beta stock and move into 'defensive' stocks. (Ferson and Schadt, 1996) advocate allowing for the benchmark parameters to be conditioned on economic conditions in order to distinguish Fund managers' skills from simply taking advantage of predictable market or factor movement.

## **2.7 SSNIT Investment Regulations**

The PNDC Law 247, which established the Pension Scheme provides in section 3 (c) under which the objective of the Trust is stated as "responsible for the administration and investments of the Scheme within the framework of the general directives issued by the board". Unlike other financial institutions which have regulations stipulated by law with regards to areas of investment and which proportions of funds to go into each investment asset, SSNIT has no regulations. Investment decisions are solely taken by the board, since the board is dominated by government nominees with the Director General

inclusive, put decisions taken more in line with social and political expediency rather than economic prudence.

## **2.8 International Social Security Association's Guidelines on Investing Social Security Funds.**

The International Social Security Association (ISSA) of the International Labour Organization has provided the following guidelines for the investment of social security funds:

1. The maintenance of a sound governance structure, which require the clear identification of responsibilities, establishment of a governing body that should be subject to the least political interference or influence, the creation of an investment committee appointed by the investing institution. The investment committee appointed by the investing institution should be responsible for developing the investment policy and investment strategy, recommending them to the governing body, overseeing their implementation, and overseeing their effectiveness.
2. The two primary objectives for the investment of social security funds are (1) security- the investments should assist the social security scheme to meet its commitments in a cost-effective way; and (2) profitability- the investments should achieve optimum returns. The social and economic utility of investments may also be taken into account. Such cases however should be subsidiary to the primary objectives of security and profitability.
3. Periodic analysis of each asset class and the portfolio as a whole should be carried out to determine normal, risk-adjusted, and inflation adjusted rates of return. The

analysis should include comparisons should include comparisons with target rates of return and with appropriate benchmarks, to allow the governing body of the social security scheme to assess investment performance, to update the asset allocation strategy, and to make adjustments (as may be required) to the investment policy and strategy. The analysis of investment portfolio performance should be publicized.

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## CHAPTER THREE

### METHODOLOGY & ORGANISATIONAL PROFILE

#### 3.1 METHODOLOGY

The study is focused on some departments of SSNIT. From these departments the researcher collected internal secondary data and sought primary data. Data so obtained were processed and analyzed to evaluate the investment performance of the fund.

##### 3.1.1 SAMPLE SELECTION PROCEDURE

Purposive sampling procedure was used to select departments. Purposive sampling technique enables the researcher to use his judgments to select cases that will best enable him to answer his research questions and to meet his objectives. The departments selected include; 1) Investment department 2) Finance department and 3) Actuarial department.

These departments were selected based on the fact that they collate data on investments and returns on investment and report on such activities of the Trust's Policies that are developed, implemented, monitored and evaluated by these departments

##### Data Collection

Relevant data for the study were derived mainly from secondary sources. Primary data was obtained to supplement the secondary data in order to facilitate in-depth understanding and analysis of the subject.

*Secondary Data:* Secondary data were obtained both internally and externally. Internal secondary data were obtained from annual reports, actuarial valuation reports as well as annual Asset Allocation and Comparative Performance Returns of SSNIT Portfolio

Investments. External secondary data was obtained from magazines, journals and electronic publications. World Bank, International Monetary Fund (IMF) publications as well as Bank of Ghana Prime rate and Risk-free rate. The GSE-All Share indices were also obtained from the Ghana Stock Exchange.

*Primary Data:* Primary sources were also exploited for data. Face-to-face interviews were used so as to enhance an in-depth understanding of the operational as well as investment activities of SSNIT.

### **3.1.2 Presentation and Analyses of Data**

Data on “Financial and investment Activities” which include investment and administration activities were collated and analyzed using the following tools.

Absolute values, Percentiles, Rate of Growth Trends, Financial Ratios and Statistical charts and models. Microsoft Excel and Word are the main software packages used in the analyses and presentation of data and information.

### **Portfolio Performance Measurement**

*1. Geometric Mean (GM):* The GM measures the compound rate of growth over time. It is used to calculate the average growth rate given compound interest with variable rates. It is also used to reflect the growth of invested funds over time, i.e. the uniform or constant rate at which invested funds grew over the period. It is defined by the  $n$ th root of the product resulting from multiplying a series of returns together as follows.

$GM = \sqrt[n]{(TR_a, TR_b, TR_c, \dots, TR_n)}$  Where TR is a series of total return on assets.

2. *Sharpe Performance Measure*: It is the excess Return to Variability. It uses the Capital market Line as a benchmark. It is defined as  $S = (R_p - R_f) / \sigma_p$

Where  $R_p$  is the Return on the portfolio,  $R_f$  is the Risk-free rate and  $\sigma_p$  is the standard deviation of the return on the portfolio.

3. *Standard Deviation of an asset*: It is given by the positive square root of the variance of the returns of an asset.

$$\sigma_p = \sqrt{\sum_{i=1}^n (R_i - R_m)^2}$$

Where  $R_i$  is the return on the asset,  $R_m$  is the mean return of the asset and  $\sigma_p$  is the standard deviation of the return on the asset.

4) *Coefficient of Variation (CV)*: This shows the risk per return, and it provides a more meaningful basis for comparison when the expected returns on two alternatives are not the same. It is defined as  $CV = \sigma_p / R_p$  Where  $\sigma_p$  is the standard deviation of the asset and  $R_p$  is the expected return on the asset.

### **Investment Performance Evaluation**

1. *Rate of Return* = (Investment Income - Investment Balance) / (Investment Balance)

Thus the Rate of Return = (Investment Return) / (Investment Balance)

The rate of return standardizes the return by considering the return per unit of investment

2. *Fund Ratio* = (Total value of the Fund) / (Total Expected Return)

The Fund Ratio is an actuarial index and an indicator of the number of years that the Fund can cover its expenditure (Pension Payments) if no inflows (contributions) are received and outflows or expenditure level remains constant.

### 3. *Investment Income to Contribution Income Ratio*

Given by= (Investment Income)/ (Contribution Income)

## 3.2 **Organizational Profile of SSNIT**

The Social Security and National Insurance Trust (SSNIT) is a statutory public Trust charged with the administration of Ghana's National Pension Scheme. The Trust is currently the largest non-bank financial institution in the country. The primary responsibility is to replace part of lost income due to Old Age, Invalidity, or loss of life. The Pension Scheme administered by SSNIT has a registered membership of approximately one million with over 58,000 pensioners who currently collect their monthly pension from SSNIT.

### 3.2.1 **The Trust**

The Trust was established in 1972 under NRCD 127 to administer the National Social Security Scheme. Prior to 1972, the Scheme was administered jointly by the then Department of Pensions and the State Insurance Corporation. The Social Security Law (PNDC Law 247) under which the current Social Security Scheme operates was passed in 1991. Until 1991, the Trust administered a Provident Fund, and this was converted into a pension scheme.

### **3.2.2 Mission and Vision**

#### **Mission**

As its institutional mission, "SSNIT is committed to providing cutting-edge income replacement schemes, to Ghanaian workers and their dependants in the event of old age, permanent disability, or death through a motivated staff and diligent leadership".

#### **Vision**

The vision of the Trust is "To develop SSNIT into a world-class financial institution, dedicated to the promotion of economic security of the Ghanaian worker"

### **3.2.3 The Trust's Investment Policy**

Primarily, as a result of the partial funding design adopted by the SSNIT Scheme, the Trust is able to accumulate huge reserves which are to be invested to generate income to augment the contributions of members. The investment policy guidelines seek to achieve safety, high yield and liquidity. Nevertheless, in line with our social responsibilities, the Trust also undertakes socially oriented investments in sectors such as health, education, housing and the provision of basic infrastructure. The Trust is the largest single institutional investor on the Ghana Stock Exchange that is helping to nurture the development and sustenance of the Capital Market in Ghana. The Trust has shares in a number of listed companies on the stock market. In addition, the Trust has investments in unlisted equities and in commercial and residential properties all over the country.

The Trust Investment Policy objectives include the following:

1. To implement Optimal Asset Allocation Policy.
2. To maintain a long-term Optimal Fund Ratio.
3. To protect the corpus of the assets in the scheme and the value of those assets.

4. To achieve a real return on investment of at least +2.0% per annum.
5. To endeavour to attract train and retain competent investment talents.

### 3.2.4 SSNIT Investment Portfolio

Under the PNDC Law 247, SSNIT Investment Policy its portfolios is classified into a number of categories by their risk and return characteristics. The current Investment Policy classifies their portfolios into these asset classes; Listed Equity, Unlisted Equity, Fixed Income, Real Estate and Economically Targeted Investment portfolios.

*Listed Equity:* SSNIT-held listed equity investments are ownership shares held by SSNIT in companies listed on the Ghana Stock Exchange (GSE). As at the close of 2006, the Trust has invested in 23 out of the 31 listed companies. The market value of SSNIT-held listed equities the same period at stood at ₵10,321 billion representing 22% of total investment portfolio and also constituted 2.54% of the GSE total market capitalization of ₵112,496.01.

*Unlisted Equity:* SSNIT-held unlisted equity investments are ownership shares held in companies not listed on the Ghana Stock Exchange (GSE), they also includes International Equities representing 0.1% of total investment portfolio. At the close of 2006, the Trust has invested in 52 companies in the Financial, Manufacturing and Service Sectors of the economy. The value of SSNIT-held unlisted equity at the close of 2006 stood at ₵3406 billion constituting 7.0% of total investment portfolio. The Trust's investment policy provides a target allocation (or policy mix) of 4%, a rebalancing range of +/-3% and a benchmark return of between 20% and 25% return on equity.

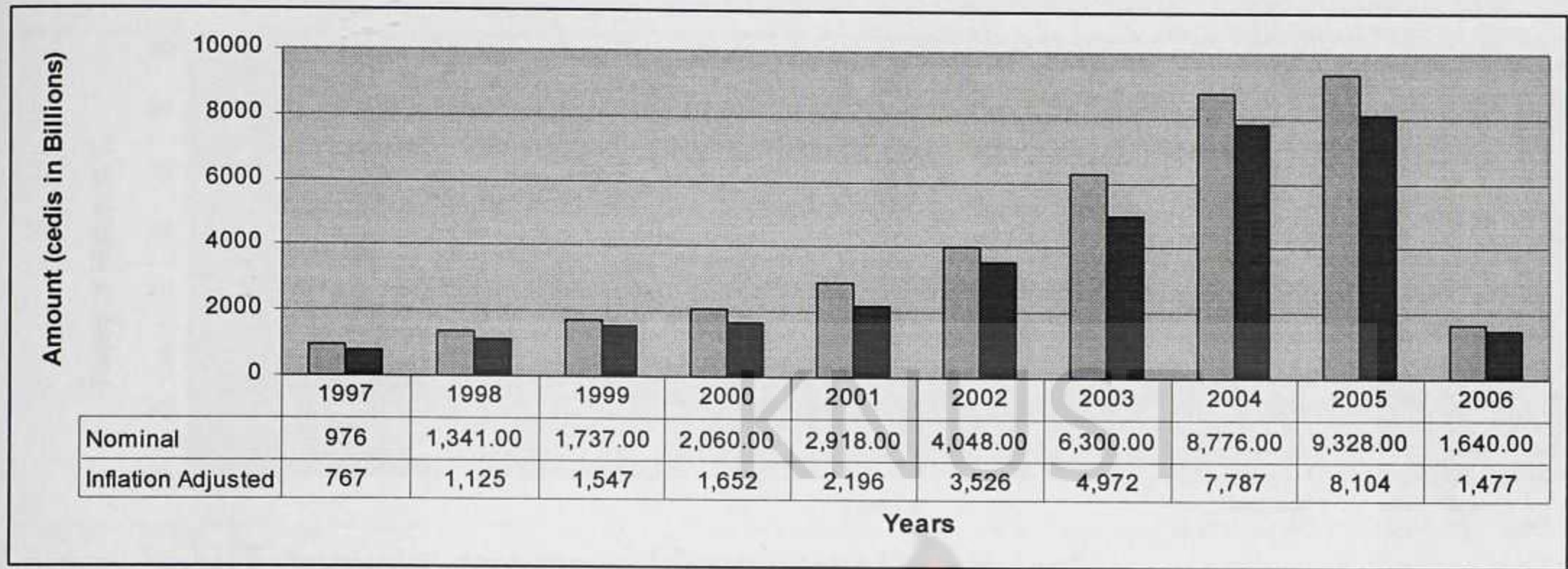
*Fixed Income:* This class of assets is expected to provide income to meet interest cost on accrued pension liability. The fixed income securities are held to provide liquidity and portfolio diversification. This class include Government of Ghana bonds, Corporate Debts Short Term Debts (i.e. treasuries), and Student s' Loans. At the end of 2006, the value of fixed income portfolio stood at approximately ₵26,696 billion constituting 58% of total investment portfolio. The benchmark allocation of the Trust's investment policy is 51%.

*Real Estate:* This class of assets is to provide stability and diversification through investments, which tend to preserve and expand capital during periods of high unanticipated inflation. At the close of 2006 the value of Real Estate portfolio stood at ₵5190 billion constituting 11% of investment portfolio. The benchmark allocation by the Trust's investment policy is 15%.

*Economically Targeted Investment (ETI):* These are investments made in line in line with the social and economic utility principle of the investments of the fund. Whiles ETI investments are not supposed to yield economic profits, they must not make losses. At the close of 2006, the value of ETI portfolio stood at ₵87.33billion constituting 0.7% of investment portfolio. The benchmark allocation of ETI is 5% of the total investible funds. Some investments under ETI include Export Finance Company Ltd., Eximguarantee, Ghana Healthcare Company Ltd., Accra Abattoirs Ltd., Kumasi Abattoirs Ltd., Metro Mass Transit Ltd., Consumer Credit Ltd., and GISEL.

### 3.2.5 Growth in Investment Assets

The value of the Trust’s investment assets has grown substantially over the past decade from ₦979.05 billion in 1997 to 1,939.80 billion in 2006 representing a growth rate of 7.89% over the period.



Source: SSNIT Annual Accounts and Investments Department

Fig 3.1 Trend in Total SSNIT Investment Assets (1997-2006)

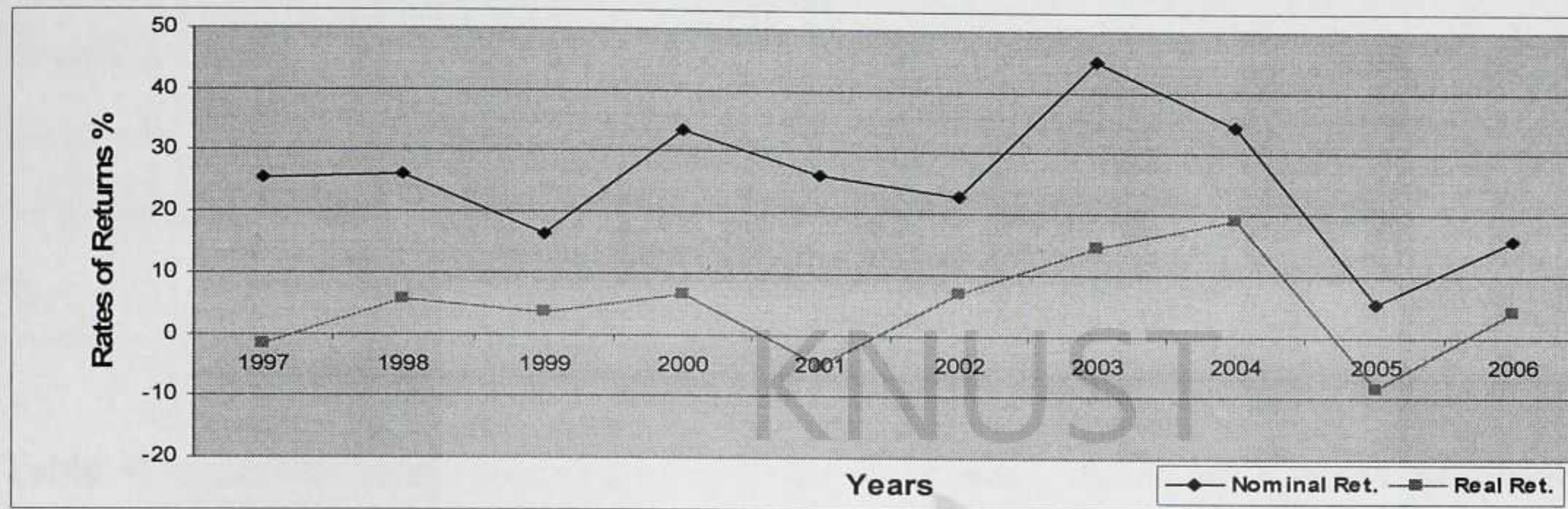
### 3.2.6 Affiliation

The Trust is a member of the International Social Security Association (ISSA), an affiliate of the International Labour Organization (ILO). SSNIT is the first ISSA member south of the Sahara to convert its provident fund scheme into a pension scheme in 1991.

## CHAPTER FOUR

### DATA ANALYSIS, FINDINGS AND DISCUSSIONS

#### 4.1 Trend in Annual Returns on Asset Classes and Portfolio (1997-2006)



Source: SSNIT Annual Accounts and Investment Department

Fig. 4.1 Portfolio Nominal and Real Rate of Returns (1997-2006)

Over the period under review the mean (real) portfolio rate of return recorded was +4.58% and the mean (nominal) portfolio rate of return recorded was +25.1%. Nominal rate of returns ranged between 22.7% and 25.5% between 1997 and 2002 (except with 2000) when it was 33.5%. Real rate of returns during the same period recorded values between -5.1% and 6.9%. Real rate of return was -1.6% in 1997 in 2001 and -5.1% in 2001 because of increased inflationary rates of 27.6% and 32.9% respectively. Nominal rate of returns peaked to 45.1% in 2003, reduced to 34.4% and 5.4% in 2004 and 2005 respectively and increased marginally to 15.7% in 2006. Real rate of returns in turn increased from 6.9%, 14.5%, and 19.2% in 2002, 2003, and 2004 respectively but decreased to -8.4% in 2005 as a result of low nominal return vis-à-vis a relatively higher inflation rate of 15.1%. Real rate of return increased subsequently to 4.3% in 2006. The

Geometric mean rate of return on the portfolio also recorded a value of 22.16%. (Refer to Appendix M).

	Listed Equity	Unlisted Equity	Fixed Income	Real Estate
Nominal Rate of Return %	71.47	11.78	22.88	23.26
Real Rate of Return %	2.32	0.04	0.25	0.19

Source: SSNIT Annual Accounts and Investment Department

Table 4.1. Mean Real and Nominal Rates of Return on Asset Classes of SSNIT Investment Portfolio (1997-2006)

The mean (real) rate of return on the Listed Equity asset class over the period under review was +2.32%. It recorded the highest mean rate of return within the investment portfolio of the Trust with 71.47% over the period under review. The asset class recorded rates of return ranging between 33.89% and 112.05% within 1997 and 2002. It recorded a significantly high rate of return of 271.30% in 2003 and decreased to 101.50% in 2004. The Listed Equity asset class performed abysmally with rates of return of -2.25% and -0.68% in 2005 and 2006 respectively. The Geometric mean rate of return on the asset class over the period was however 36.37%. (Refer to Appendix N).

The mean (real) rate of return on the Unlisted Equity asset class over the period under review was +0.04%. It however recorded the lowest the mean (nominal) rate of return of the Trust with 11.78% over the period under review. The asset class recorded rates of return ranging between 2.5% and 8.02% over the period except with the year 2006 when it recorded a significantly high rate of return of 86%. The Geometric mean rate of return on the asset class over the period was 5.27%.(Refer to Appendix P).

The mean (real) rate of return on the Fixed Income asset class over the period under review was +0.25%. It recorded a mean nominal) rate of return of 22.90% over the period. The asset class recorded rates of return ranging between 10.14% and 39.33% over the period. The Geometric mean rate of return on the asset class over the period was however 21.6 %.(Refer to Appendix Q).

The mean (real) rate of return on the Real Estate asset class over the period under review was +0.19%. It recorded a mean (nominal) rate of return of 23.26% over the period. The asset class recorded rates of return ranging between10.3% and 38.23% over the period under review. The Geometric mean rate of return on the asset class was however 21.84 %.( Refer to Appendix R).

4.1.2 Returns on the SSNIT Investment Portfolio and Asset Classes (1997-2006).

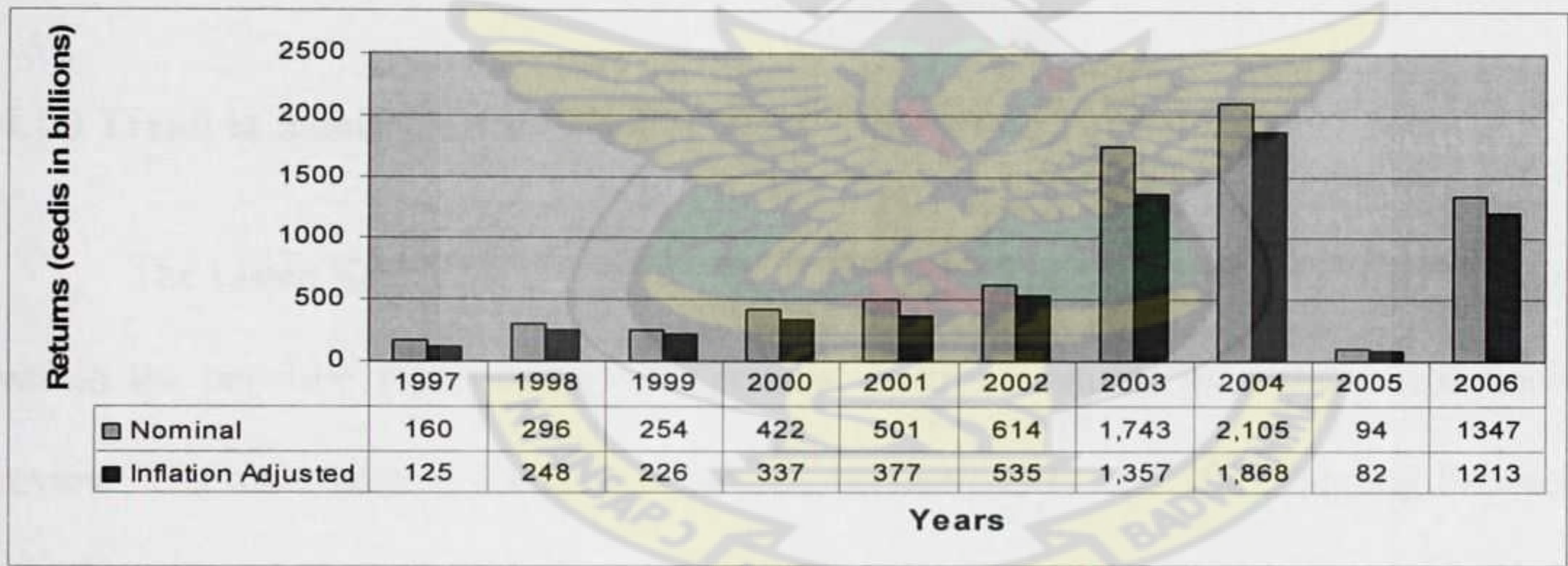


Table 4.2 Annual Nominal and Inflation-Adjusted Returns on the SSNIT Investment Portfolio. (1997-2006)

Returns on the portfolio investment can be determined by the collective behaviour of returns on the individual asset classes over the period under review. The mean nominal and inflation-adjusted returns on the portfolio were ₦753.6 and ₦636.8 billion respectively. Returns on the portfolio increased steadily between 1997 and 2002 from ₦160.48 billion to ₦614.25 billion. This can be largely attributed to the returns on Fixed

Income and Listed Equity asset classes. The Fixed Income asset classes increased steadily from ₵88.51 billion to ₵339.19 billion and Listed Equity also increased steadily from ₵26.49 billion to ₵177.43 billion between 1997 and 2002. Portfolio returns further increased significantly from ₵614.25 billion in 2002 to ₵1,743.1 billion and ₵2105.2 billion in 2003 and 2004 respectively. This again can be largely attributed to the significant increase in returns on the Listed Equity asset class. Returns on the portfolio decreased significantly from ₵2,105.2 billion in 2004 to ₵93.6 billion and ₵1,347 billion in 2005 and 2006 respectively. This again can be attributed again to the abysmal performance by the Listed Equity and Fixed Income asset classes during this period. The Listed Equity asset class decreased from ₵1440.9 billion to ₵-575.8 billion and ₵8.6 billion in 2005 and 2006 respectively and the Fixed Income asset class also decreased from ₵629 billion and ₵62.4 billion in 2006.

#### **4.1.3 Trend in Annual Returns on the Asset Classes and Portfolio. (1997-2006)**

The Listed Equity asset class recorded the highest mean returns of ₵361.79 billion within the portfolio representing 43% of total portfolio returns over the period under review. The asset class recorded low returns between 1997 and 2002 ranging between ₵26.49 billion and ₵177.43 billion. The Unlisted Equity asset class recorded relatively low mean returns of ₵13.14 billion representing 2% of portfolio returns over the period under review. The asset class recorded low returns between ₵0.58 billion and ₵12.4 billion over the period but slightly increased to ₵62.4 billion in 2006. The Real Estate and the Fixed Income asset classes recorded mean returns of ₵12.4 billion ₵299.78 billion within the portfolio representing 2% and 58% respectively of portfolio returns over the period.

#### **4.2.1 Risk Analysis SSNIT Investment Portfolio (1997-2006)**

The portfolio risk recorded a mean risk of 6.04%. The portfolio risk ranged between 0.28% in 2006 and 9.92% in 2003. An analysis on the annual portfolio coefficient of variation shows that the portfolio was most variable (risky) in 2004 with 0.58 units of risk per unit of return earned on the portfolio. The portfolio however earned the least level of variability (risk) in 2006 with 0.01 units of risk per unit of return earned on the portfolio. On average, the portfolio Coefficient of Variation recorded a value of 0.24 over the period under review. The portfolio risk premiums earned per unit of total market risk is measured by the Sharpe Ratio: Excess return on Variability. The portfolio recorded negative values throughout the period (except with 2003, 2004, and 2006). This was not impressive. The mean Sharpe ratio recorded over the period was -2.41. (Refer to Appendix M).

#### **4.2.2 Risk Analysis of the Asset Classes within the SSNIT Investment Portfolio (1997- 2006).**

The Listed Equity asset class recorded a mean variability (risk) level of 2.85% over the period under review. It recorded a maximum level of variability of 6.51% in 2003 and a minimum variability of 0.43% in 2000. An analysis of the Coefficient of Variation of the asset class shows that it recorded the highest variability (risk) in 2003 with 0.7 units of risk assumed for every unit of return earned. It recorded the least variability in 2000 with 0.01 units assumed for every 1 unit of return earned. The asset class recorded a mean Coefficient of Variation of 0.14 units over the period.

The risk premium earned by the asset class per unit of total market risk earned is measured by the Sharpe Ratio. The asset class recorded negative ratios in 1997, 1999, 2001; however, the asset class recorded positive (impressive) ratios in the remaining years within the period under review. The mean Sharpe Ratio experienced by the asset class over the period was 26.97. (Refer to Appendix N).

The Unlisted Equity asset class recorded a mean variability (risk) level of 1.38%. It experienced the highest variability in 2006 of 6.2% in 2006 and the least variability of 0.6% in 1997. An analysis of the Coefficient of Variation of the asset class shows that it experienced the maximum variability (risk) of 0.72units in 2006 and a minimum variability of 0.07units in 1998. The asset class experienced a mean Coefficient of Variation of 0.26units over the period under review. The risk premium earned by the asset class per unit of total market risk earned measured by the Sharpe Ratio recorded negative ratios throughout the period (except with 2000 and 2006). They were unimpressive. It recorded the highest ratio of 40.13 in 2000 and the least ratio of -49.26 in 1997. The mean Sharpe Ratio recorded by the asset class over the period was -18.1. (Refer to Appendix P).

The Fixed Income asset class recorded a mean variability level of 0.14%. It experienced the highest variability of 0.8% in 1999 and the least level of variability of 0.02% in 2004. Analysing the Coefficient of Variation shows that the asset class was most variable in 1997 and 2006 with 0.04 units of risk assumed for every 1 unit of return earned. It also experienced the least variability in the years 1998, 2000, 2002, 2003, 2004 and 2005 with 0.01unit of risk (for each year) assumed for 1 unit of return earned. The asset class experienced a mean Coefficient of Variation of 0.02 over the period. The risk premiums earned by the asset class per unit of total market risk earned measured by the

Sharpe Ratio recorded negative ratios throughout the period (except with 2000 and 2005). It recorded a mean Sharpe Ratio of -28.77 over the period. (Refer to Appendix Q).

Risk Measure/ Portfolio	Mean Std.Deviation	Mean Coeff. Variation	Mean Sharpe Ratio
Portfolio	6.04	0.24	-2.41
Listed Equity	2.85	0.14	26.97
Unlisted Equity	1.38	0.26	-18.1
Fixed Income	0.14	0.02	-22.87
Real Estate	0.02	0.02	-21.11
ETI	—	—	—

**Table4.2** Risk Profile of SSNIT Investment Portfolio and Asset Classes (1997-2006)

The Real Estate asset class recorded a mean level of variability (risk) of 0.2 over the period. It experienced a maximum level of variability of 0.47% in 1997 and the least variability of 0.04% in 2006. Analyzing the Coefficient of Variation shows that the asset class was most variable in 2004 with 0.04 units of risk assumed for every unit of return earned. It experienced the least variability in the years 1998, 1999, 2000, 2002, 2003, 2005 and 2006 with 0.01 unit of risk assumed for every 1 unit of return earned.

The risk premium earned by the asset class per unit of total market risk earned measured by the Sharpe Ratio recorded negative ratios throughout the period (except with 2003, 2005 and 2006). They were not impressive. The mean Sharpe Ratio recorded by the asset class over the period was -21.11. (Refer to Appendix R).

**4.3.1 The Proportion of Investment Balances to Asset Classes within the SSNIT Investment Portfolio (1997-2006).**

A total fund amount of ₦ 46,558.92 billion was set aside for investment purposes within the SSNIT Investment portfolio over the period under review. Out of this, ₦10,291.01billion representing 22% of the fund was invested in the Listed Equity asset class. This amount registered a growth by a rate of 51.28% during the period under review. The Unlisted Equity and Real Estate asset classes received ₦3,406.12 billion and ₦5,190.31billion as investment funds representing 7% and 11% respectively of the portfolio investment balance. The Funds allocated the Unlisted Equity and Real Estate asset classes registered growth rates of 35.79% and 24.62% respectively during the period under review. The Fixed Income asset class received the largest share of investment funds of ₦26,695.51 billion representing 58% of the portfolio investment balance. It grew by 37.11% over the period under review. The ETI asset class also received ₦976.48 billion and represented only 2% of the Portfolio Investment balance. It registered a growth rate of 10% over the period under review.

	Listed Equity	Unli sted Equity	Fixe d Income	Real Estate	ETI
Mean Prop. of Returns (%)	43	2	53	2	—
Mean Prop. Investment Balances (%)	22	7	58	11	2

**Table 4.3** Mean Proportions of Returns and Investment Balances of Asset Classes of SSNIT Investment Portfolio (1997-2006).

**4.4 The Proportion of Return on Investments against Investment Balances of the Asset Classes of SSNIT Investment Portfolio. (1997-2006)**

In terms of the proportion of returns on the individual assets of the portfolio, the Fixed Income and the Listed Equity asset classes contributed approximately 53% and 43% respectively. The Real Estate and the Unlisted Equity asset classes also contributed approximately 2% each. In comparative terms, the Listed Equity and the Fixed Income class received 43% and 53% respectively of total portfolio investment balances. The Unlisted Equity and Real Estate and ETI classes received 7%, 11%, 2% respectively of portfolio investment balances.

**4.5 Investment Returns to Contribution Income Ratios of the Pension Scheme (1997-2006)**

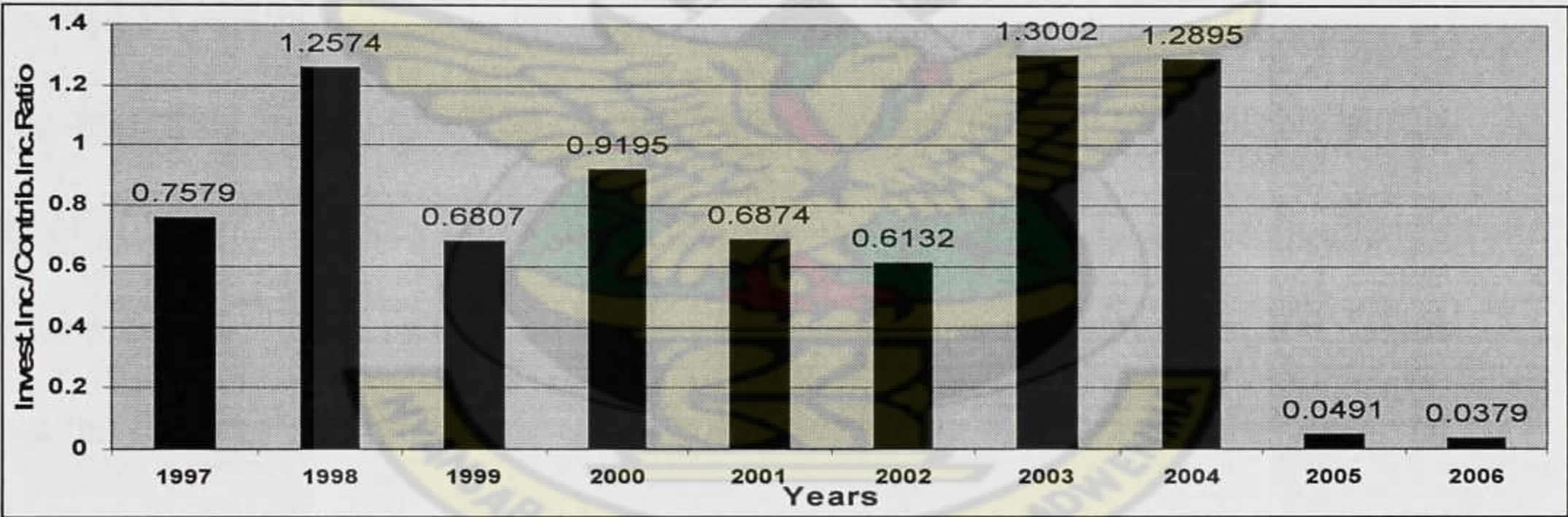


Fig 4.7 Graph of Investment Income to Contribution Income Ratios (1997-2006)

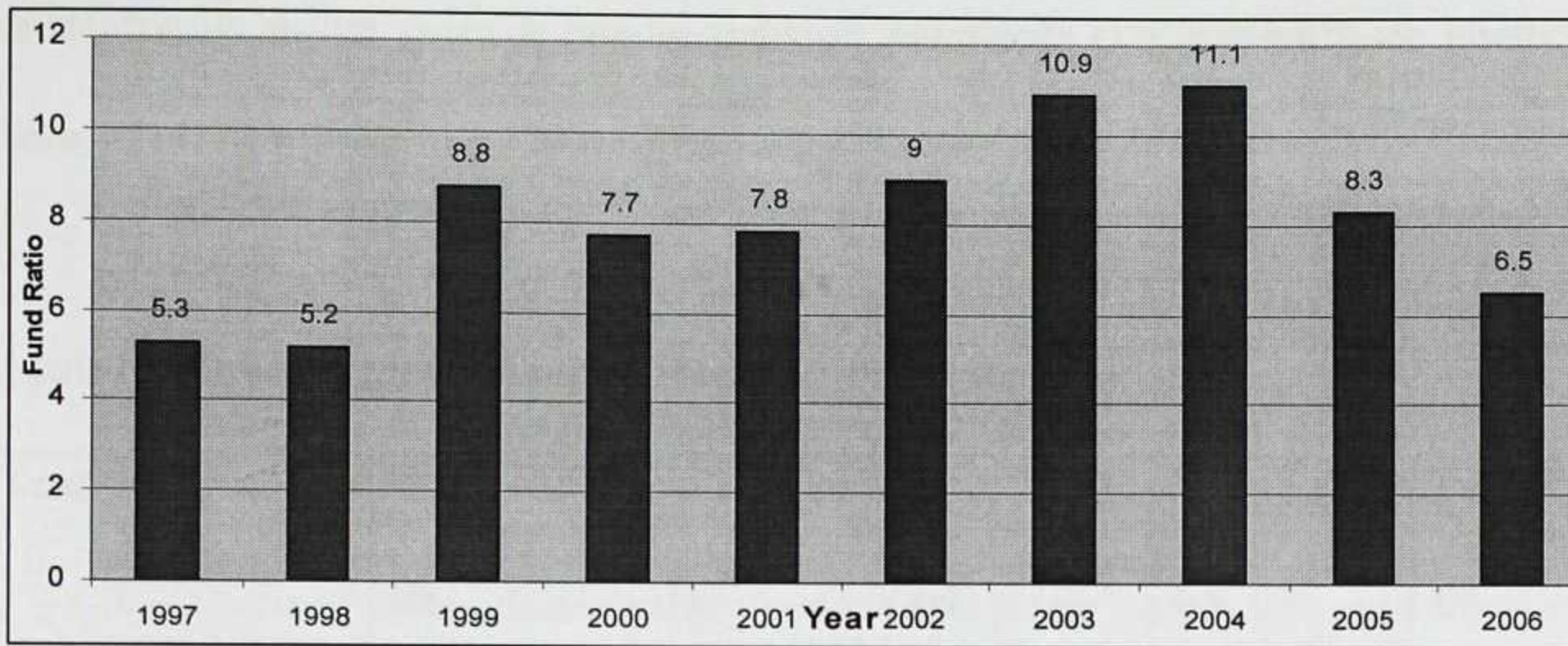
The mean Investment Income to Contribution Income ratio over the period under review was 0.76. There were records of high ratio values of 1.26, 1.30, and 1.29 in the years 1998, 2003, and 2004 respectively with the highest value of 1.3 recorded in 2003. The ratio values were however below 1.0 in most years within the period. They were 0.76, 0.68, 0.92, 0.69, and 0.61 in the years 1997, 1999, 2000, 2001, and 2002. In the

years 2005 and 2006 however the ratio values were extremely very low at 0.049 and 0.037 respectively.

#### **4.6 The Fund Ratio of the SSNIT Pension Scheme.**

The Trust's Investment policy objectives include an attempt 'To maintain a long-term Optimum Fund Ratio'. (Siegmann, 2003) also corroborates this by stating that 'financial regulators check the financial status of a fund, the quality of management, and serve as protector of the rights of active and inactive participants. The financial status of a fund can thus be summarized by the Fund Ratio. It is the ratio of the Assets to the Present Value of the Liabilities'. The Fund Ratio is an actuarial index that is used to design and forecast financing schedules and to assess the financial status of the Social Security Fund. It is thus defined as the ratio of Fund or Reserves available at the beginning of operations to the expected Expenditure level in the year.

For instance, if the Trust has reserves amounting to ₵9,327.5 billion at the beginning of 2005 with a projected expected expenditure level of ₵1,123.8 billion, then it could be said that the Trust had a Fund Ratio of 8.3 at the start of the year 2005. This means that the Fund or reserves of the Trust could be enough to cover expenditure level for 8.3 years or (8years and 4months) if (1) the expenditure levels remain the same and also (2) if contributions to the Scheme were to cease over the period under review.



Source: SSNIT Actuarial Department

**Fig4.8** Fund Ratios of the SSNIT Pension Scheme (1997-2006)

The mean Fund Ratio over the period under study was approximately 8.1. The years 1999, 2002, 2003, 2004, and 2005 recorded very high ratios of 8.8, 9.0, 10.9, 11.1, and 8.3 respectively which were above the mean ratio over the period. On the contrary the years 1997, 1998, 2000, 2001 and 2006 recorded relatively low ratios of 5.3, 5.2, 7.7, 7.8, and 6.5 respectively which were below the mean ratio over the period.

The Trust is in a process of moving completely away from the Provident Fund financing to a Social Insurance Scheme which require lower level of funding. In particular, because the Pension Scheme did not start until July, 1991 therefore the number of pensioners have not grown enough to generate a higher level of cost as a result of increased pension payments. The Fund Ratio would be expected to be fairly high over the next few years because the annual benefit expenditures have not reached such high levels to significantly reduce the ratio but the Fund would be burdened in the long term as the rate of growth of pension payments benefits is increasingly becoming higher than rate of growth of contributions to the Scheme. In line with this, the Trust recorded a growth rate of 33.58% in contributions from ₦33.38 billion in 1997 to ₦798.71 billion in 2006 as

against a relatively higher growth rate in pension payments (i.e. expenditure levels) of 42.3% from €211.73 billion to €2,868 billion over the period under study.

#### 4.7 Liquidity/Short-Term Solvency Ratio (2002-2006)

Year	2002	2003	2004	2005	2006
Current Ratio	9.98:1	9.3:1	11.6:1	12.0:1	5.16:1
Acid-Test Ratio	9.45:1	8.74:1	11.0:1	11.47:1	4.57:1

**Table 4.2**

Liquidity ratio also called Working Capital ratio is basically defined as having enough Current Assets to meet your Current obligations. Working Capital ratio is of immense importance to management and other stakeholders because it is an indication of the level of Return on Assets and also shows whether there is enough liquidity to meet short term obligations as and when they fall due.

The Current Ratio which determines the financial solvency of the fund provides the best single indicator of the extent to which claims of short-term creditors are expected to be converted to cash fairly quickly. Current ratios over the years have remained very high over the period under review recording such ratios as 9.98, 9.3, 11.6, 12 and 5.16 all beyond the industry average of 4.2 for the years 2002, 2003, 2004, 2005, and 2006. This presumes that after current assets have remained more than current liabilities and that after current assets have being used to meet short term obligations there will still be still excess liquidity remaining to the Trust and must be utilized by putting it into viable income generating investment opportunities. High levels of Current Ratios could also be

an indication that the Trust has a lot of funds tied up in unproductive assets, such as excess cash or marketable securities to stake holders such as pensioners, contributors and other financial institutions.

## **4.8 Discussion and Analysis of Results**

### **4.8.1 Analysis of Performance of Returns on SSNIT Portfolio and Asset Classes**

The mean nominal return on investment for the period (1997-2006) was approximately 25.1%. The portfolio nominal return ranged between -5.4% and 45.1% over the period. The mean real return on the portfolio over the period was +4.58%. This is (258 basis points) in excess of the SSNIT actuarially determined targeted real return of +2.0%. The portfolio performed abysmally in 1997, 2001, and 2005 and recorded negative real returns. However from 1998 to 2006 (except for 2001 and 2005), the portfolio recorded positive real returns of 5.8%, 3.5%, 6.7%, 6.9%, 14.5%, 19.2% and 4.3% in 1998, 1999, 2000, 2002, 2003, 2004 and 2006 respectively. The Geometric mean rate of return on the portfolio was 22.16%. This suggests that over the period, funds allocated to the SSNIT Investment Portfolio grew at a uniform rate of 22.16%.

With respect to the asset classes, the mean real return on the Listed Equity class over the period were +2.32%. This was 0.32 (32basis points) in excess of SSNIT actuarially determined targeted real return of +2.0%. The Geometric mean rate of return on the asset classes over the period were 36.37%. This suggests that over the period, investment funds allocated to the asset class grew at a uniform rate of 36.37%. The mean real return on the Unlisted Equity, Fixed Income and Real Estate asset classes were however +0.04, +0.25 and +0.19, over the period. These were 1.96%, 1.75% and 18.1% (196,175 and 181 basis points) respectively below the SSNIT actuarially determined

targeted real return of +2.0%. The Geometric mean rate of return on the asset classes over the period were 5.27%, 21.6% and 21.84% respectively. These suggests that over the period, investment funds allocated to the asset classes grew at uniform rates of 5.27%, 21.6% and 21.84%.

The mean nominal return on the Real Estate asset class was 23.26% over the period. Nominal returns to the asset class outperformed the annual performance benchmark (Treasury bill rate + 200bp) between 1997 to 2003. Returns to the asset class were however below the annual benchmark from 2004 to 2006. (Refer to Appendix L).

The mean nominal return to the Listed Equity class 71.47% over the period. Returns to the class outperformed the annual performance benchmarks (GSE All Share Index) throughout the period under review (except with 2003 and 2004). (Refer to Appendix L).

The Fixed Income class recorded a mean nominal return of 22.9% over the period. The returns however underperformed the annual performance benchmark (Treasury Bill Rate) throughout the period under the period. Returns to the asset class were above the annual benchmark from 2004 to 2006. This could be attributed to the extremely high risk free rate and inflation rates from 1997 to 2002.

#### **4.8.2 Risk Analysis of SSNIT Investment Portfolio and Asset Classes.**

With respect to the analysis of risk, the portfolio returns shows the most variability in 2004 with 14.62units and the least variability in 2006 with 0.28units. The mean portfolio variability over the period was 6.04units. Using the Coefficient of Variation, the portfolio performed best (least variability) in 2006 with 0.01units and experienced the greatest variability in 2004 with 0.58units. On the average, the

portfolio's Coefficient of Variation stood at 0.24units. This means that over the period, for every unit of return earned, it assumed a risk level of 0.24units. Using the Sharpe Ratio as a basis of measurement of risk, the portfolio recorded a mean ratio of -2.41 over the period. This means that over period, the portfolio received -2.41units of returns for every unit of risk it assumed. The portfolio recorded negative Sharpe ratios throughout the period (except with 2003, 2004, and 2006). The portfolio posted positive Sharpe ratios of 1.64units, 1.18units, and 5.5units in 2003, 2004 and 2006 respectively. This means that the portfolio received returns of 1.64units, 1.18units, and 5.5units of risk for every unit of risk assumed in 2003, 2004 and 2006 respectively. (Refer to Appendix M). The portfolio's Sharpe ratios were negative and the following reason can be adduced to explain such occurrence; The Sharpe Ratio uses the Risk-free rate as its benchmark which is determined by the Capital Market Line (CML). The CML specifies a linear relationship between return and risk and its slope reflects the aggregate attitude of investors towards risk (i.e. the riskier an asset, the higher the expected return). In the case of Ghana (the SSNIT Investment Portfolio), from the mid 1990s to 2002, the risk-free returns have been higher in comparative terms than the returns on the SSNIT investment portfolio thus registering negative Sharpe ratios.

In the case of the asset classes, the Listed Equity class over the period experienced a mean variability of 2.85units over the period. The asset recorded the most variability in 2003 with 6.51 units and the least variability 2000 with 0.43 units. An analysis using Coefficient of Variation shows that the asset class performed best in 2006 and experienced the worst performance in 2000. The mean Coefficient of Variation recorded was 0.14 units; this means that over the period, the asset class assumed a risk of 0.14 units for every unit of return earned. The asset class recorded a positive Sharpe ratio

throughout the period (except with 1997 and 2001) with a mean ratio of 26.97 units. This means that over the period, the asset class earned a premium of 26.97 units for every unit of risk that it assumed. (Refer to Appendix N).

The Unlisted Equity class over the period experienced a mean variability of 1.38 units over the period. It recorded the least variability in 1998 with 0.07 units and the most variability in 2006 with 6.20 units. An analysis using the Coefficient of Variation shows that the asset performed best in 2006 and experienced the worst performance in 1998. The mean Coefficient of Variation recorded was 0.26 units; this means that over the period, the asset class assumed a risk level of 0.26 units for every unit of return earned. This means that over the period, the asset class assumed a risk level of 0.26 units for every unit of return earned. The asset class recorded negative Sharpe ratios throughout the period (except with 2000 and 2006) with a mean ratio of -18.1 units. This means that over the period, the class earned a (negative) premium of -18.1 units for every unit of risk that it assumed. (Refer to Appendix P).

The Fixed Income class over the period experienced a mean variability of 1.14 units over the period. It recorded the least variability in 2004 with 0.02 units and the most variability in 1997 with 6.20 units. An analysis using the Coefficient of Variation shows that the asset performed best in 1999 and experienced the worst performance of 0.01 unit in 1998, 2000, 2002, 2003, 2004 and 2005. An analysis using the Coefficient of Variation shows that the asset performed best in 2005 and experienced the worst performance in 1998. The mean Coefficient of Variation recorded was 0.02 units; this means that over the period, the asset class assumed a risk level of 0.02 units for every unit of return earned. The asset class recorded negative Sharpe ratios throughout the period (except with 2000 and 2005) with a mean ratio of -28.77 units. This means that over the period,

the class earned a (negative) premium of -28.77 units for every unit of risk it assumed. (Refer to Appendix Q).

The Real Estate class over the period experienced a mean variability of 0.02 units over the period. It recorded a least variability in 1998 with 0.01 units and the most variability in 1997 with 0.47 units. A risk analysis using Coefficient of Variation shows that the asset class performed best in 2004 and experienced the worst performance in 1998, 1999, 2000, 2002, 2003, 2005 and 2006 with 0.01. The mean Coefficient of Variation recorded was 0.02 units; this means that over the period, the asset class assumed a risk of 0.02 units for every unit of return earned. The asset class recorded negative Sharpe ratios throughout the period (except with 2003, 2005 and 2006) with a mean ratio of -21.11 units. This means that over the period, the class earned (negative) premiums of -21.11 units of returns for every unit of risk it assumed. (Refer to Appendix R).

#### **4.8.3 The Correlation between SSNIT Investment Portfolio Returns and Investment Balances (1997-2006)**

The overall goodness of fit value represented by R-squared value on the Portfolio balances and Investment Returns shows a weak correlation between the two variables with a value of 44.85% and a standard error of 2691.97. This suggests that decisions based on returns on portfolio for investment purposes determine only 44.85% on the allocation of investible funds. The goodness of fit was also determined for the various asset classes within the portfolio. For the Listed Equity asset class, there was a weak R-square value of 31.87%. Again for the Unlisted Equity and Fixed Income asset classes there were relatively stronger R-square values of 71.54% and 73.24% respectively. The

Real Estate asset class recorded an extremely strong R-square value of 92.02%. The goodness of fit values represented by R-square values for the asset classes suggest that Returns on Investment determine 31.87%, 71.54%, 73.24% and 92.02% of the decision on the allocation of Investment Balances to the Listed Equity, Unlisted Equity, Fixed Income and Real Estate asset classes respectively.(Refer to Appendix C).

#### **4.8.4 Relationship between the Proportion of Returns on Investment and Proportion of Total Investment Balances to Asset Classes.**

In terms of the comparison between the proportions of Returns on the various asset classes to the portfolio returns as against the proportion of Investment Balances to the asset classes; the Listed Equity asset class contributed 43% of portfolio returns over the period. This means that over the period, every 1% of portfolio returns realized, the Listed Equity class contributed 0.43%. The proportion of investible funds allocated to the Listed Equity class however was only 22% which in comparative terms is less than the proportion of contribution of returns of the asset class to the portfolio. The Fixed Income asset class contributed 53% of portfolio returns over the period. This suggests that over the period, every 1% of portfolio returns realized, the Fixed Income class contributed 0.53%. The proportion of investible funds allocated to the Fixed Income class was 58% which in comparative terms was rather more than the proportion of contribution of returns on the asset class to the portfolio.

The Real Estate asset class contributed only 2% of the portfolio returns over the period. This means that over the period, every 1% of portfolio returns realized, the Real Estate class contributed 0.02%. The proportion of investible funds allocated to the asset

class was however 11% which in comparative terms was rather more than the proportion of contribution of returns of the asset class to the portfolio.

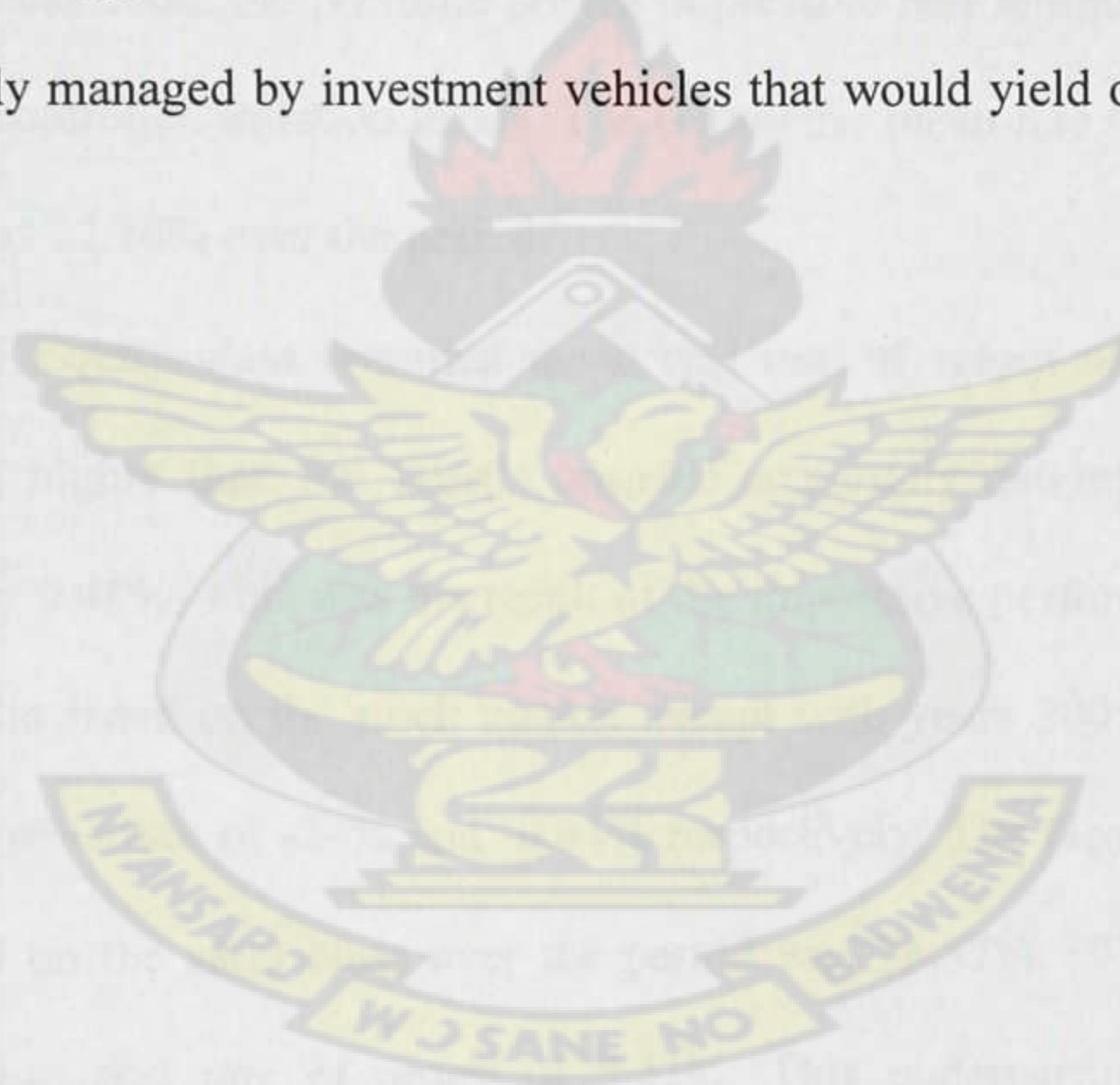
The Unlisted Equity asset class also contributed only 2% of the portfolio returns over the period. This means that over the period, every 1% of portfolio returns realized, the Unlisted Equity class contributed only 0.02%. The proportion of investible funds allocated to the asset class was however 7% which in comparative terms was rather more than the proportion of contribution of returns to the asset class to the portfolio. (Refer to Appendices I and J). The Economically Targeted Investments (ETI) class has been made in line with social and economic utility principle of the investments of the fund. The ETI do not provide financial returns to the fund. Included in this are; Export Financial Company Ltd., Ghana Healthcare Company Ltd., Accra and Kumasi Abattoirs, the Metro Mass Transit Ltd. etc. Returns on investment of this asset class, for example, include gains received by the beneficiaries of the Metro Mass Transit Limited. These can be seen to include the free ride for school children at the basic school level, the provision of mass transit for commuters in the urban centers in order to reduce traffic congestion and the provision of transport services for those in the deprived communities at highly subsidized rates among others. It is believed this would encourage the less endowed and those below the poverty line attend school and thereby lead to an increase in school enrolment, reduction in street children, armed robbery, prostitution and their attendant ramifications.

#### **4.8.5 The Effect of High Liquidity Levels & High Fund Ratios on the Performance of the Fund**

The Trust recorded very high liquidity levels between the years 2002 and 2006. The Current Ratio provides the best single indicator of the extent to which the claims of

short term creditors are covered by assets that are expected to be converted to cash fairly quickly. The Current ratio of the Trust averaged 9.2 above the industry average of 4.2 between 2002 and 2006. This was because expenditure levels of the Trust were extremely low compared with cash inflows to the Fund. The mean Fund Ratio of the Trust over the period 1997-2006 was approximately 8.1. This suggests that over the period, given the level of reserves of the Trust, if expenditure levels remain the same and also contributions to the Scheme were to cease, on average the Fund of the Trust could be enough to cover expenditure levels for 8.1 years.

Given a high average liquidity level of 9.2 and an associated high average Fund Ratio of 8.1, these suggest that there are excess reserves that the Trust is holding that must be judiciously managed by investment vehicles that would yield optimal returns to the Fund.



## CHAPTER FIVE

### SUMMARY OF FINDINGS AND RECOMMENDATIONS

#### 5.1 Summary

##### 5.1.1 Analysis of Returns on SSNIT Investment Portfolio and Asset Classes

The mean real returns on the portfolio over the period under review was +4.58%. This compares favourably to the targeted actuarially determined real rate of return of +2.0%, exceeding it by 2.58%. The portfolio performed abysmally within the years (1997, 2001 and 2005) due to high levels of inflation. More prudent asset management could have averted these negative real returns. However in the years 1998, 1999, 2000, 2002, 2003, 2004 and 2006, the portfolio posted impressive real returns of low levels of interest rates and controlled inflation levels. The Geometric mean rate of return recorded on the portfolio was 22.16% over the period.

The Listed Equity class recorded mean real rate of return of 2.48% over the period. This was higher than the Trust's targeted actuarially determined real rate of return of +2.0% by 0.48%. This was the result of the impressive performance of SSNIT investment portfolio listed on the stock market except with years 2005 and 2006 when they posted negative values of -24% and -0.44% respectively. The Geometric mean rate of return recorded on the asset class over the period was 36.37%. The Fixed Income class recorded mean real rate of return of 0.25%. This underperformed the Trust's targeted actuarially determined real rate of return by 1.75%. The Geometric mean rate of return recorded on the asset class over the period was 21.6%.

The Unlisted Equity class also recorded a mean real rate of return of +0.04%. This underperformed the Trust's targeted actuarially determined real rate of return by 1.96% over the period. The Geometric mean rate of return recorded on the asset class over the

period was 5.27%. The Real Estate class also recorded a mean real rate of return of +0.19%. This also underperformed the Trust's targeted actuarially determined benchmark of +2.0% over the period by 1.81%. The Geometric mean rate of return recorded on the asset class over the period was 21.84%. The Economically Targeted Investments (ETI) class has been made in line with social and economic utility principle of the investments of the fund. The ETI do not provide financial returns to the fund.

### **Risk Analysis of SSNIT Investment Portfolio and Asset Classes.**

In the years 1998, 1999, 2000, 2002 and 2006, when the portfolio recorded coefficient of variations of 0.05, 0.04, 0.08, 0.09 and 0.01 respectively, fund managers were risk averse. The portfolio was exposed to higher levels of risk of in 2003, 2004, and 2005 with coefficient of variations of 0.39, 0.58 and 0.52 respectively. The portfolio recorded negative Sharpe ratios throughout the period (except with 2003 and 2006) with returns below the risk-free returns. In 2003 and 2004 however, the portfolio's returns outperformed the risk-free returns.

Among the asset classes, the Listed Equity and the Unlisted Equity classes recorded relatively higher levels of variability with mean coefficient of variation of 0.14 and 0.26 respectively while the Fixed Income and the Real Estate classes recorded lower variability levels with mean coefficient of variation of 0.02 each over the period. In terms of the Sharpe ratios, the Listed Equity class was the only asset that recorded positive value of 26.97. This is attributed to the strategic asset selection and allocation in such areas as manufacturing industries (including the breweries) and services industries (including banking and insurance) that the Pension Fund was invested into. The Unlisted Equity, Fixed Income and Real Estate classes recorded negative Sharpe ratios of -18.1,

-22.87 and -21.11 respectively over the period. This was the result of high risk-free returns causing these asset classes to under perform the risk-free rate

### **5.1.3 The Correlation (R-Square) between Returns on Investment of Portfolio and Asset Classes and Allocation of Investment Balances.**

The goodness of fit represented by R-squared between the Returns on Investment and Investment Balance over the period under review shows a rather weak correlation between the two variables with an R-square value of 44.85%. This suggests that returns on the portfolio determine only 44.85% of the decision on the allocation of investible funds. For the asset classes the R-square values recorded for the Listed Equity, Unlisted Equity, Fixed Income and Real Estate classes were 31.87%, 71.54%, 73.24% and 92.02% respectively. These values suggest that apart from the Real Estate class with a strong correlation between the two variables, the Fixed Income, Unlisted Equity and particularly the Listed Equity classes with relatively weak R-square value of 31.87%, there are other critical factors that determine the allocation of Investment Balances that are advanced to these asset classes quite apart from the Returns on Investment. This urgently calls for further investigation into the investment activities of the Trust in the future.

### **5.1.4 Relationship between the Proportion of Returns on Asset Classes and Proportion of Total Investment Balances to Asset Classes.**

The results of the relationship between the proportions of the returns on the asset classes against that of investment balances to the asset classes reveal that most of the asset classes received higher investment balances in comparison with investment returns received from them. Investment returns received from the Unlisted Equity, Real Estate and the Fixed Income asset classes were 2%, 2%, and 53% respectively compared

disproportionately with the allocation of higher investment balances of 7%, 11% and 58% respectively to these asset classes over the period. The Listed Equity class on the other hand recorded a proportion of investment returns of 43% within the portfolio. It however received a disproportionately lower allocation of investment balance of 22%. The Economically Targeted Investment (ETI) class does not record any investment returns by the nature and philosophy of the Trust's investment policy. It however received an allocation of 2% of investment balances over the period under review.

#### **5.1.5 The Investment Returns to Contribution Income Ratio of the Pension Scheme.**

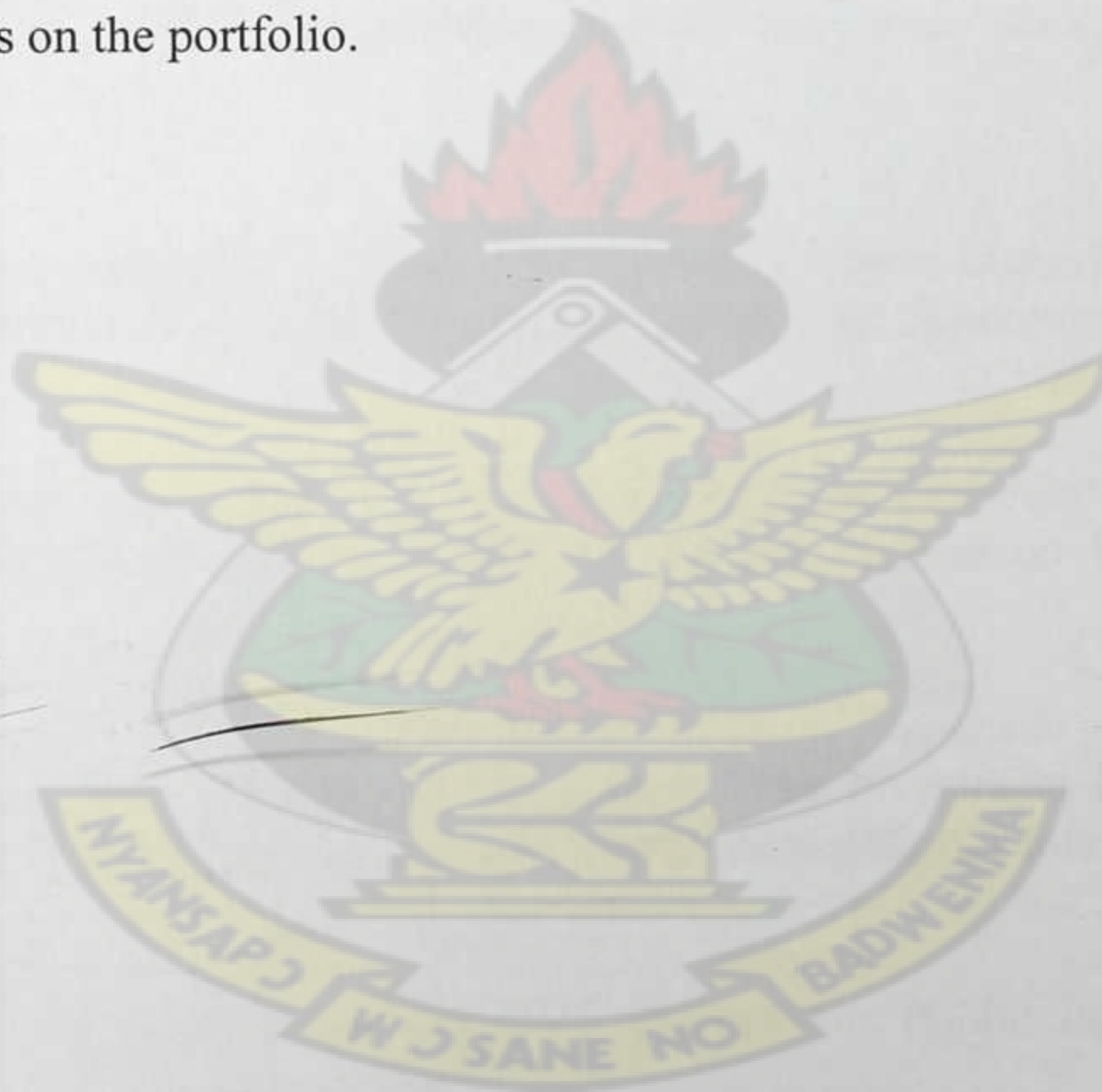
Inflows to the Fund are principally determined by the contribution income and investment returns. Over period under review, contribution income increased from 211.73 billion to 2868.0 billion with a growth rate of 33.58% and return on portfolio investment grew from 979.05 billion to 11,951.97 billion with a growth rate of 32.05%. Again over the period, the contribution income to investment returns ratio stood at 0.76. These suggest that the rate of the inflows of contribution income as against that of returns on portfolio investment is relatively higher. Therefore, strategic asset selection and allocation policies must be adopted for the Trust to realise optimal investment returns to augment the size of the Pension Fund.

#### **5.2.1 Recommendations:**

It is very imperative for the Trust to achieve optimal Investment returns, better internal control, treasury management, investment strategy, and improved governance and accountability systems. It is thus strongly recommended that;

1. There should be effective management of excess liquidity (discretionary cash) by investing such funds into short term municipal and government bonds, securities and other viable investment vehicles in order to reduce the excess liquidity that the Trust holds over a given period.
2. Introduction of a better governance system, including the Trust's representation on the Board of Governors of the companies in which it has invested and the review of the rules on the voting mandates for such representatives. Government representation on the Board of the Trust must also be reviewed in order for the Board to be a fair representation of the interest of all stakeholders such as tax payers, employers, active and passive members of the Scheme as well as other civil society groups.
3. There should be periodic appraisal of the Investment Portfolio of the Trust in order to (i) possibly review the asset weights and the composition of the assets classes particularly the Listed Equity class in order to ensure that targeted annual returns are met, and (ii) possibly determine the strategic fit of the investments in relation to the investment philosophy and objectives of the Trust.
4. There should be a well laid down and the documentation of Investment Policies to serve as a strategic guideline that must be adhered to improve investment performance and to reduce undue delays and to shorten procedures in investment decision making.
5. There should be an independent and transparent evaluation of the existing assets in the Investment Portfolio of the Trust and other potential investments that may be available. This should be done through the conduct of thorough technical and financial due diligence in order to meet the investment objectives of the Trust.

6. Government through the Central Bank should as matter of economic expediency follow sustained prudent macroeconomic policies in order to control money supply and reduce the lending and inflation rates. These economic interventions would create the enabling macroeconomic environment needed for the SSNIT Investment portfolio and many other investment opportunities to achieve optimum investment returns.
7. There should be the periodic review of the financial market performance and the periodic review of the Trust's Investment portfolio to determine the returns on the various assets to readjust asset allocation and composition in order to achieve optimal returns on the portfolio.



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APPENDICIES

APPENDIX A

The Relationship between of Pension Payment, Contributions and their Growth Rates of the SSNIT Pension Scheme. (1997-2006)

Year	Benefits(¢'bn)	Growth Rate %	Contribution (¢'bn)	Growth Rate %
1997	33.38	53.8	211.73	24.55
1998	45.37	35.9	235.15	11.06
1999	62.35	37.4	372.78	58.53
2000	95.46	53.1	458.84	23.09
2001	133.49	39.8	728.35	58.74
2002	160.64	45.8	1,001.72	37.53
2003	348.24	55.2	1,340.22	33.79
2004	447.35	54.1	1,632.53	21.81
2005	630.24	40.9	1,906.00	16.75
2006	798.71	26.7	2,868.00	50.50

Source: SSNIT Research Department

APPENDIX B

SSNIT Pension Scheme Fund Ratios (1997-2006)

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Ratio	5.3	5.2	8.8	7.7	7.8	9.0	10.9	11.1	8.3	6.5

APPENDIX C

Correlation (R-Squared) between Investment Returns and Annual Investment Balances on Asset Classes of SSNIT Investment Portfolio (1997-2006)

Asset Class	Listed Eq.	Unlisted Eq.	Fixed Income	Real Estate	E.T.I
R- Square.	0.318694	0.715448	0.732363	0.920891	-

# APPENDIX D

Comparison of Investment Returns and Investment Balances and their Growth Rates of the SSNIT Pension Scheme (1997-2006)

Year	Invest. Bal.(¢' bn)	Growth Rate %	Invest. Ret.(¢' bn)	Growth Rate %
1997	979.05	—	160.48	—
1998	1,341.02	36.97	295.68	84.25
1999	1,736.53	29.49	253.76	-14.18
2000	2,059.90	18.62	421.91	66.26
2001	2,918.48	41.68	500.65	18.66
2002	4,048.47	38.72	614.25	22.69
2003	6,300.00	55.61	1,734.10	182.31
2004	8,775.50	39.30	2,105.20	21.40
2005	9,327.50	6.29	93.60	-95.55
2006	1,939.80	-79.20	108.60	16.03

Source: SSNIT Annual Accounts and Investment Department

## APPENDIX D

Proportion of Investment Balances to Asset Classes of the SSNIT Investment Portfolio (1997-2006)

Year	Listed Eq. (¢'bn)	Unlisted Eq. (¢' bn)	Fixed Inc. (¢' bn)	Real Estate (¢' bn)	ETI (¢' bn)
1997	7.51	5.04	45.68	17.14	4.04
1998	11.62	10.12	38.30	11.74	3.34
1999	8.87	10.55	42.66	9.12	2.59
2000	12.11	15.14	33.07	12.51	0.85
2001	10.11	10.45	31.51	8.70	0.65
2002	10.50	8.74	60.59	8.12	0.51
2003	22.50	4.60	58.00	13.00	2.00
2004	31.00	5.30	51.90	10.30	1.50
2005	22.20	7.90	58.00	10.60	1.40
2006	23.90	5.90	59.90	9.50	0.70

Source: SSNIT Annual Accounts and Investment Department

## APPENDIX E

Targeted versus Mean Real Proportion of Investment Balance Allocations to Asset Classes of the SSNIT Investment Portfolio. (1997-2006)

Asset Class	Listed Eq.	Unlisted Eq.	Fixed Inc.	Real Estate	ETI
Target Prop.	25.00%	4.00%	51.00%	15.00%	5.00%
Real Prop.	16.03%	8.37%	47.96%	11.07%	1.79%

Source: SSNIT Annual Accounts and Investment Department

# APPENDIX F

Annual Real Returns, Nominal Returns and Inflation Rates of SSNIT Investment Portfolio (1997-2006).

Year	Nominal Ret. %	Average Inflation %	Real Returns %
1997	25.50	27.60	-1.60
1998	26.10	19.20	5.80
1999	16.40	12.40	3.50
2000	33.50	25.20	6.70
2001	26.20	32.90	-5.10
2002	22.70	14.80	6.90
2003	45.10	26.70	14.50
2004	34.40	12.70	19.20
2005	5.40	15.10	-8.40
2006	15.70	11.00	4.30

Source: SSNIT Annual Accounts and Investment Department

# APPENDIX G

(Nominal) Rates of Return % of Asset Classes of the SSNIT Investment Portfolio.

Year	Listed Eq.	Unlisted Eq.	Fixed Inc.	Real Estate	ETI
1997	33.89	-	17.15	29.66	-
1998	112.05	8.02	23.00	22.23	-
1999	10.61	4.67	26.44	19.30	-
2000	97.22	3.01	39.33	28.58	-
2001	40.15	2.72	26.27	38.23	-
2002	65.29	3.85	22.07	22.89	-
2003	271.30	3.42	28.00	29.00	-
2004	101.50	3.60	16.40	10.30	-
2005	-21.20	2.50	20.00	17.90	-
2006	3.90	86.00	10.14	14.50	-

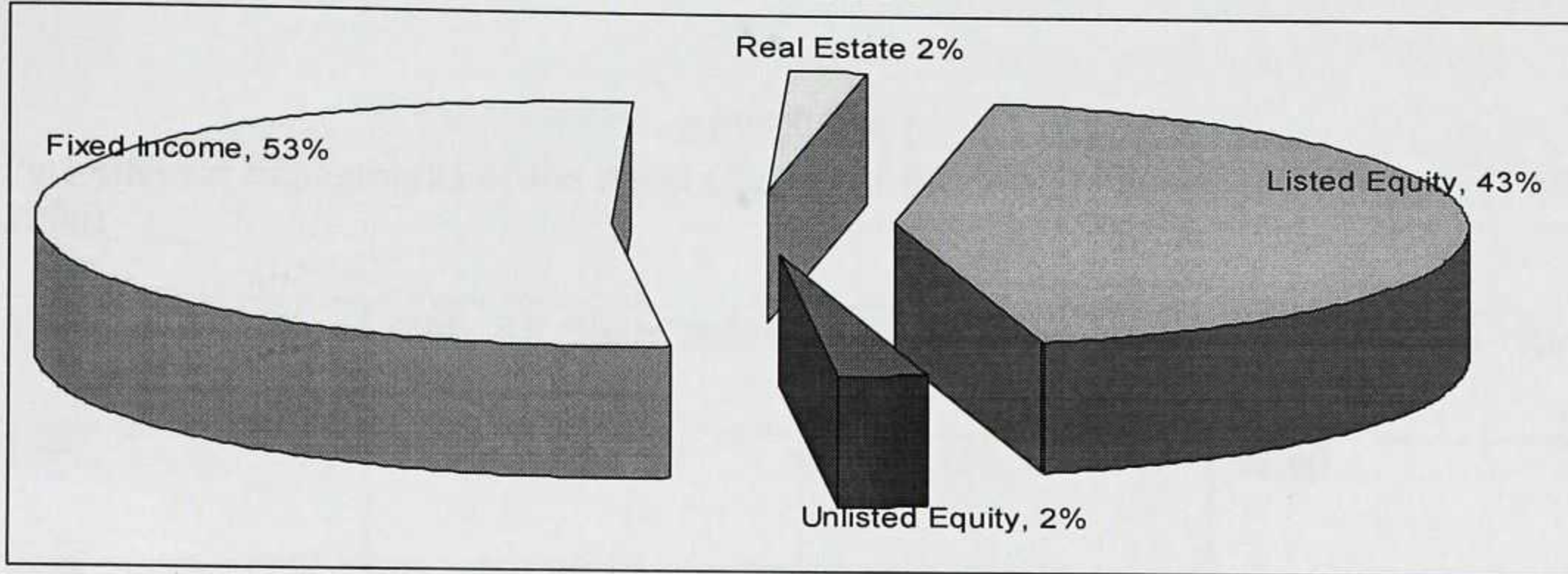
Source: SSNIT Annual Accounts and Investment Department

# APPENDIX H

Investment Returns to Contribution Income Ratios of the SSNIT Pension Scheme.

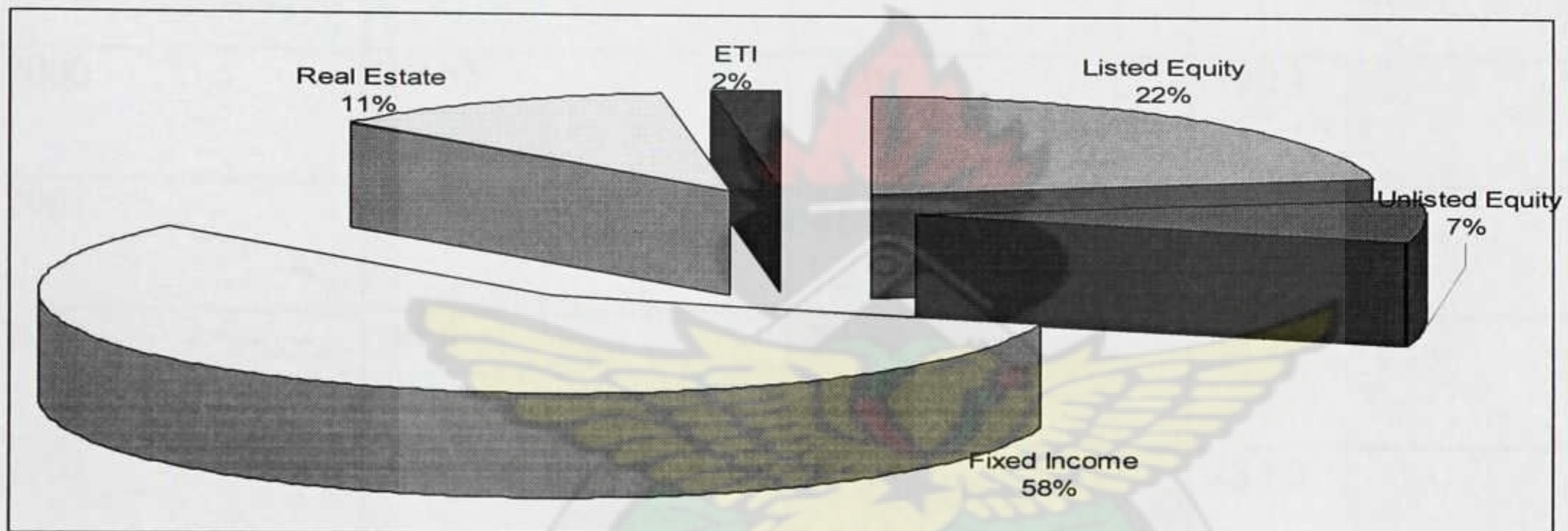
Year	Invest. Ret.( ₦ bn)	Contribution Inc. (₦ bn)	Invest Ret./Contribution
1997	979.05	211.73	0.7579
1998	1,341.02	235.15	1.2574
1999	1,736.53	372.78	0.6807
2000	2,059.90	458.84	0.9195
2001	2,918.48	728.35	0.6874
2002	4,048.47	1,001.72	0.6132
2003	6,300.00	1,340.22	1.3006
2004	8,775.50	1,632.53	1.2895
2005	9,327.50	1,906.00	0.0491
2006	1,939.80	2,868.00	0.0379

## APPENDIX I



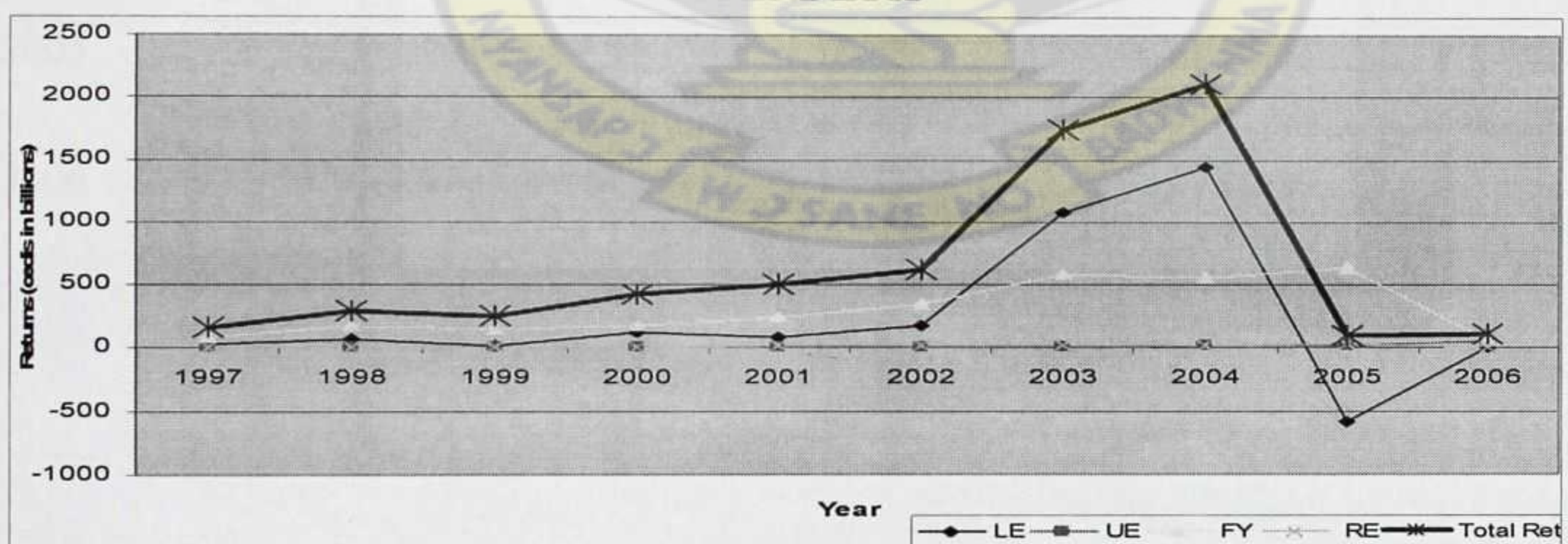
Proportion of Returns on Asset Classes to Portfolio Returns(1997-2006).

## APPENDIX J



Proportion of Investment Balances to Asset Classes within

## APPENDIX K



Source: SSNIT Annual Accounts and Investment Department Annual Returns for Asset Classes and Portfolio (1997-2006)

# APPENDIX L

Performance Benchmarks of the Asset Classes of the SSNIT Investment Portfolio (1997-2006)

Year	GSE All Share Index (%)	Annual Prime Rate (%)	Treasury Bill Rate (%)
1997	41.85	45.0	47.90
1998	69.69	43.17	37.58
1999	-15.22	28.25	28.26
2000	16.55	27.0	39.13
2001	11.42	27.0	40.92
2002	46.0	24.92	25.15
2003	155.0	26.54	28.80
2004	91.0	18.5	17.08
2005	-30.0	16.83	15.43
2006	4.97	14.33	10.20

APPENDIX M

Annual SSNIT Investment Portfolio Risk and Returns (1997-2006)

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Mean
Nominal Return %	25.5	26.1	16.4	33.5	26.2	22.7	45.1	34.4	5.4	15.7	25.1
Inflation Rate %	27.6	19.2	12.4	25.2	32.9	14.8	26.7	12.7	15.1	11.0	19.8
Real Return. %	-1.6	5.8	3.5	6.7	-5.1	6.9	14.5	19.2	-8.4	4.3	4.58
Standard. Deviation	6.18	1.22	1.08	2.12	9.68	2.32	9.92	14.62	12.98	0.28	6.04
Coefficient of Variation.	0.25	0.05	0.04	0.08	0.39	0.09	0.39	0.58	0.52	0.01	0.24
Sharpe Ratio	-3.62	-9.41	-10.98	-2.66	-3.96	-1.06	1.64	1.18	-0.77	5.5	-2.41

APPENDIX N

Annual Risk and Returns of the Listed Equity Asset Class (1997-2006)

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Mean
Nominal Return %	33.89	112.05	10.61	97.22	40.15	65.29	271.3	101.5	-21.2	3.90	71.47
Inflation Rate %	27.6	19.2	12.4	25.2	32.9	14.8	26.7	12.7	15.1	11.0	19.8
Real Return. %	0.22	4.6	-0.13	2.75	0.21	3.20	8.83	6.48	-2.25	-0.68	2.23
Standard. Deviation	2.1	2.28	2.45	0.43	2.11	0.88	6.51	4.16	4.57	3.00	2.85
Coefficient of Variation.	0.06	0.02	0.23	0.01	0.05	0.13	0.02	0.04	0.22	0.70	0.14
Sharpe Ratio	-6.67	32.66	-2.82	135.1	-0.36	51.83	37.25	20.29	1.26	1.23	26.97

# APPENDIX P

## Annual Risk and Returns of the Unlisted Equity Asset Class (1997-2006)

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Mean
Nominal Return %		8.02	4.67	3.01	2.72	3.85	3.42	3.60	2.50	86.0	11.78
Inflation Rate %	27.6	19.20	12.40	25.20	32.90	14.8	26.70	12.7	15.10	11.0	19.80
Real Return. %		-0.55	-0.58	-0.85	-0.89	-0.69	-0.84	-0.66	-0.78	6.25	0.04
Standard. Deviation		0.60	0.63	0.90	0.94	0.74	0.89	0.71	0.83	6.20	1.38
Coefficient of Variation.		0.07	0.13	0.30	0.35	0.19	0.26	0.20	0.12	0.72	0.26
Sharpe Ratio		-49.26	-37.44	40.13	-40.64	-28.78	-28.52	-15.15	-15.58	12.2	-18.1

# APPENDIX Q

Annual Risk and Returns of the Fixed Income Asset Class (1997-2006)

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Mean
Nominal Return %	17.15	23.00	26.44	39.33	26.27	22.07	28.0	26.4	20.0	10.14	22.90
Inflation Rate %	27.6	19.20	12.40	25.20	32.90	14.8	26.70	12.7	15.10	11.0	19.80
Real Return. %	-0.37	0.19	1.05	0.54	-0.20	0.46	0.47	0.27	0.30	-0.16	0.25
Standard. Deviation	0.62	0.06	0.8	0.29	0.45	0.21	0.22	0.02	0.05	0.41	0.14
Coefficient of Variation.	0.04	0.01	0.03	0.01	0.02	0.01	0.01	0.01	0.01	0.04	0.02
Sharpe Ratio	-49.5	-243	-2.28	0.69	-32.55	-14.66	-3.64	-34.0	91.4	-0.15	-22.77

# APPENDIX R

Annual Risk and Returns of the Real Estate Asset Class (1997-2006)

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Mean
Nominal Return %	29.66	22.23	19.3	28.58	38.23	22.89	29.0	10.3	17.9	14.5	23.26
Inflation Rate %	27.6	19.20	12.40	25.20	32.90	14.8	26.70	12.7	15.10	11.0	19.80
Real Return. %	0.72	0.15	12.4	0.13	0.16	0.51	0.08	-0.18	0.17	0.29	0.19
Standard. Deviation	0.47	0.10	0.51	0.12	0.09	0.26	0.17	0.43	0.08	0.04	0.20
Coefficient of Variation.	0.02	0.01	0.26	0.01	0.02	0.01	0.01	0.04	0.01	0.01	0.02
Sharpe Ratio	-38.8	-153.5	0.01	-87.92	-28.99	-8.69	1.18	-15.77	30.88	107.5	-21.11