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COMPARATIVE STUDY OF NATIONAL PENSION SCHEME AND SIP MUTUAL FUND SCHEME

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Abstract

In India, the National Pension System (NPS) benefit was expanded to include all citizens (as of 2009), giving the elderly people the chance to receive pensions as they age. Similar to NPS, MF programmes may also be used to realise desired retirement objectives. Investors must correctly manage risk when calculating returns since, among other things, investing in different schemes is sensitive to risk. It's interesting to note that the fundamental characteristics of NPS and MF as investment avenues are largely the same, which raises the question of whether or not choosing a better investment option as part of a retirement plan will be influenced by how well the two investment avenues perform in terms of return. In the current research, an effort has been made to compare the performance of NPS and MF schemes using Sharpe's index and risk-adjusted trailing return. The study will make it easier to choose a more advantageous investment vehicle for a retirement plan.

Keywords: Retirement, Pension, National Pension Scheme (NPS), Mutual Fund (MF).

Introduction

According to the results of the 'Census-2011', there were around 104 million senior people in India who were older than 60 years old. In addition to this, it was anticipated that the number of old people in India would increase to 173 million by the year 2026, and with a growth rate of around 3% yearly, the number would climb to 319 million in the year 2050 (old in India 2016). As a result, a sufficient corpus is necessary at the time of retirement in order to pay the growing cost of living, the expense of healthcare, and any other unforeseen circumstances that may arise during post-retirement. A pension plan is a kind of annuity plan that allows one to continue receiving income after retirement. In accordance with the recommendations and suggestions contained within the reports compiled by OASIS, IRDA, and the Bhattacharya Committee, the National Pension Scheme (NPS) was initiated by the government of India in the year 2004 via the Pension Fund Regulatory and Development Authority (PFRDA). At first, the NPS was only available to those working for the government, but it will become available to all citizens of India by the end of 2009. It is a strategy known as an annuity plan that aims to accumulate a sizable fund or corpus towards the conclusion of one's working life in order to offer a steady income during retirement. An investor has to create a Tier-I account, which is required, and has the option of opening a Tier-II account, which is voluntary, in order to participate in the NPS. In a similar vein, mutual funds provide their participants with a variety of investment plans that they may follow during their working lives in order to accumulate a sizeable corpus that they can use once they retire. After retirement, an investor has the option to withdraw either the whole of the fund or a portion of it, and they also have the choice to participate in a systematic withdrawal plan (SWP) in order to continue receiving a steady income after they have retired.

It has been observed that the basic features of both the NPS and MFs seem to be identical.

Both are,

- ❖ Investment avenues to build a large corpus in the long run (retirement solution)
- ❖ Systematic investment plans (SIP)
- ❖ Market-linked investment products
- ❖ Transacted at Net Asset Value (NAV)



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- ❖ Managed by AMC
- ❖ Open to all the citizens of India

The identical features create confusion especially among retail investors whether the performance in terms of return of the two investment avenues is indifferent or not for the choice of a better investment option as a part of a retirement plan.

Literature Review

Dave (2006) made an effort, in his paper, to explain India's recent pension reform and its influence on the country's growing elderly population, with a focus on the implications for social and economic policy on pensions.

Kalarwala. Pawan Kumar (2011) wanted to investigate, in his article, the least return guarantee that participants of the new pension plan would get from the programme. The author came at the conclusion that the new pension system might make it easier for the government to absorb a reduced part of the additional burden of public spending.

Sonkusare and Rajesh (2019) tried to examine the problems and challenges faced by the government in implementing the NPS. They concluded that to build a large corpus at the time of retirement, other investment options may be considered such as MF.

Markandan Nandita, (2016), in her executive summary, attempted to investigate the operation of NOAPS (National Old Age Pension Scheme) and the history of the OASIS project. The brief provided an overview of the foundation of the pension changes in India as well as the path forward.

Anantha and Balanga (2016) reached the conclusion that the performance of the various NPS funds was symmetrical after doing research in which they attempted to emphasise the performance of various NPS funds based on return. The study report written by Kamath and Rupali (2017) compared the cost and benefit of NPS funds with other retirement plans and found that the processing costs were the primary element that set NPS funds apart from other retirement schemes.

In his paper, **Kali Sukhen (2017)** made an effort to exaggerate the significance of the National Pension System (NPS) in terms of ensuring financial security in old life in India. He came to the conclusion that the new pension plan is superior to the previous defined benefit pension system. The author also mentioned that the new pension system would stimulate general growth of the capital market, which was another point that was made in the article.

In their research, **Jain and Sharma (2018)** examined the behaviour of NPS subscribers and compared the NPS to several alternative retirement pension programmes. They came to the conclusion that NPS has seen significant popularity growth.

According to the research conducted by **Krishna (2020)**, which discusses the performance of various funds under NPS based on portfolio performance indices, the researchers discovered mixed findings based on Sharpe's, Treynor's, and Jensen's ratios. These ratios were used to evaluate the performance of the funds.

Objective of the Study

The comparable characteristics cause retail investors to feel uneasy when it comes to making a decision about which investment option would provide the most suitable contribution to a retirement savings plan. Therefore, at this moment, it is advisable to investigate whether the NPS is to be viewed as the old wine of SIP-based MF in the new bottle. This is because the NPS has just undergone significant changes. The assessment of the relevant literature revealed that almost no effort was made to compare NPS and MF as components of a retirement plan with regard to the portfolio performance measure known as Sharpe's ratio. This was one of the observations that was made. As a consequence of this, an effort has been made to evaluate the various investment opportunities in terms of their risk-adjusted returns, with the



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goal of selecting the most suitable investment strategy for retirement. The purpose of this research is to ease the selection of appropriate pension/retirement benefit investment schemes by evaluating the performance of the various schemes offered by the National Pension System (NPS) and the Mutual Funds (MF) based on risk-adjusted returns.

Research Methodology & Data

The research will mostly consist of analytical work. The purpose of this research was to compare and contrast the risk-adjusted return performance of various funds that are offered via NPS and MF. Secondary data is gathered for the research from a variety of sources, including the websites of the National Pension Trust, AMFI, and RBI, as well as other periodicals, books, and newspapers. For the next nine (9) years, i.e. from 2014. to 2022, the Net Asset Values (NAV) of the funds that fall under the NPS and MF will be gathered at closing on the last day of each and every month. Because NAV data for certain of the funds that are part of the NPS became easily accessible starting in 2014, the aforementioned time period was taken into consideration for this analysis.

Except for the Aditya Birla Sun Life Pension Management Ltd., all of the six funds that fall under Tier-I of the National Pension System (NPS) and that have been authorised by the Pension Fund Regulatory and Development Authority (PFRDA) have been taken into consideration for the study. Mutual fund schemes from the same fund houses as those offered by the NPS were studied, with the exception of the L&T Triple Ace corporate fund, the Franklin India corporate debt fund, and the Nippon India corporate debt fund. This was done to ensure consistency and to give a more accurate comparison of the results.

For data analysis, statistical tools such as mean, standard deviation, independent t-test, Levene’s test, and, Sharpe’s ratio, have been used with the help of SPSS and Excel Spread Sheet (MS office).

Data Analysis & Discussion

Statement of Sharpe’s Index [NPS]

Table 1

Pension Fund	NPS Scheme (Tier-1) -- Equity Fund					
	Kotak Mahindra Pension Fund Ltd	SBI Pension Fund Ltd	HDFC Pension Management Co. Ltd	UTI Retirement Solution Ltd.	ICICI Pru. Pension Fund Ltd.	LIC Pension Fund Ltd.
Mean Return (2014-2022) (Rp)	15.59	14.8	15.78	15.41	15.35	13.87
SD (σ)	11.14	15	15.42	15.67	16.38	16.28
Risk-Free Return (Rf)	7.26	7.26	7.26	7.26	7.26	7.26
Sharpe’s Index	0.75	0.5	0.55	0.52	0.49	0.41

[source - www.npstrust.org.com]

In the present study, the **10-year Government Securities rate** was considered the **Risk-free rate (Rf)**.

Sharpe’s Index/ratio measures the risk-adjusted return i.e. return per unit of total risk (SD) of a fund. It is used to measure historical performance. A fund with a higher ratio is considered superior relative to its benchmark return. Precisely, Sharpe’s ratio is calculated to measure the performance of a fund. **Sharpe’s Index/ratio = [(Rp – Rf) ÷ (σ)]**

The Sharpe’s ratios of corporate debt and government debt funds under NPS were calculated following the same technique as in Table -1 and the results were shown in table – 3.



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Statement of Sharpe's Index [MF]

Table 2

	MF Scheme -- Equity Fund					
Equity Hybrid Mutual Fund	KOTAK	SBI	HDFC	UTI	ICICI	LIC
Mean Return (2014-2022) (Rp)	11.66	16.89	17.62	14.22	18.28	10.48
SD (σ)	15.03	13.87	17.63	16.28	18.97	10.48
Risk-Free Return (Rf)	7.26	7.26	7.26	7.26	7.26	7.26
Sharpe's Index	0.29	0.69	0.59	0.43	0.21	0.31

[Source - www.moneycontrol.com]

Sharpe's ratios of corporate debt and government debt funds under mutual funds were calculated following the same technique as in Table -2 and the results were shown in table-3.

Table 3

Consolidated Statement of Sharpe's Index			
Equity Scheme			
Funds	NPS	Funds	Mutual Fund
	Sharpe's Index		Sharpe's Index
Kotak Mahindra	0.75	Kotak Mahindra	0.29
SBI	0.50	SBI	0.69
HDFC	0.55	HDFC	0.59
UTI	0.52	UTI	0.43
ICICI	0.49	ICICI	0.21
LIC	0.41	LIC	0.31
Average	0.54	Average	0.42
Corporate Bond Scheme			
Funds	NPS	Funds	Mutual Fund
	Sharpe's Index		Sharpe's Index
Kotak Mahindra	0.73	Kotak Mahindra	0.10
SBI	0.88	L&T	0.20
HDFC	0.94	HDFC	0.70
UTI	0.75	Franklin India	0.70



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ICICI	0.94	ICICI	0.58
LIC	0.80	Nippon India	0.60
Average	0.84	Average	0.48
Govt. Bond Scheme			
Funds	NPS	Funds	Mutual Fund
	Sharpe's Index		Sharpe's Index
Kotak Mahindra	0.56	Kotak Mahindra	0.32
SBI	0.60	SBI	0.59
HDFC	0.62	HDFC	0.27
UTI	0.50	UTI	0.51
ICICI	0.25	ICICI	0.53
LIC	0.83	LIC	0.22
Average	0.56	Average	0.41

Inter Fund Analysis
Table 4

Group Statistics					
Sharpe's Index	Name of Funds	N	Mean	Standard Deviation	Standard Error Means
Equity Scheme	NPS	6	17.8083	1.09511	.44708
	MF	6	22.5667	3.81806	1.55671
Corporate Bond Scheme	NPS	6	6.5417	13.41845	5.47806
	MF	6	43200	7.74572	3.16218
Government Bond Scheme	NPS	6	5.1983	2.51580	1.02707
	MF	6	1.2867	6.43900	2.62871

Table 5

Independent 't' Test				
Sharpe's Index	Test	Sig.	Equal Variance Assumed	Equal Variance not Assumed
Equity Scheme	Levene's Test of Equality of Variances	Sig.	.053	-
	t-test for equality of Means	(2 tailed)	.015	.027
Corporate	Levene's Test of Equality of	Sig.	.448	-



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Bond Scheme	Variances			
	t-test for equality of Means	(2 tailed)	.733	.734
Government Bond Scheme	Levene's Test of Equality of Variances	Sig.	.093	-
	t-test for equality of Means	(2 tailed)	.196	.211

SPSS

Levene's Test (Equality of Variances)

Levene's test (Levene1960) is the test used to determine whether or not variances are homogenous. Statistical tests such as the t-test, the analysis of variance, and others make the assumption that variances are comparable across samples. It has been determined from table -5 that the p-values for all of the schemes have a value greater than 0.05. This indicates that the samples of all of the schemes have satisfied the homogeneity assumption of the variances, also known as the equality of variances.

Independent t-test (Equality of Means)

In each of the scenarios shown in table 5, the p-values of the t-test produced by significance (2-tailed) of the equity scheme are below the threshold of significance, which is set at 0.05. These p-values are 0.015 and 0.027 respectively. As a result, the researchers decided that the null hypothesis should not be accepted, and they came to the conclusion that there is a statistically significant difference in the mean risk-adjusted returns of the various funds that fall under the NPS and MF equity schemes.

Again, looking at table-5, we can see that the p-values of the t-test produced by significance (2-tailed) for both corporate (0.733 and 0.734) and government (0.196 and 0.211) bond schemes are higher than the threshold of significance, which is 0.050.

As a result, it is not possible to infer that the null hypothesis should be rejected; rather, it is possible to draw the conclusion that there is no statistically significant difference between the mean risk-adjusted returns of the various funds offered by NPS and MF that invest in corporate and government bonds.

Limitations of the Study

- For the present study, only the Tier-I account of NPS has been considered.
- Only six mutual fund schemes are considered for the study.
- Trailing returns of 9 years have been considered due to the non-availability of NAV information of certain funds under study.
- Apart from risk and return, the other parameters of comparison such as tax benefit, management fees, flexibility, and liquidity have not been considered in this study.

Conclusions/Findings

Equity Fund

According to Sharpe's ratio, the average risk-adjusted return on equities funds held by NPS was higher (0.54 percent) than that of equity funds held by mutual fund companies (0.42 percent).

According to the findings of the Sharpe ratio, the Kotak Mahindra Pension Fund (.75) beat all of the other funds in the MF and NPS categories. This was followed by the SBI Equity Hybrid Fund (.69), the HDFC Equity Hybrid Fund (.59), the HDFC Pension Management Fund (.55), the UTI Equity Hybrid Fund (.52), and other funds.



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• Corporate Bond Fund

According to Sharpe's ratio, the average risk-adjusted return on corporate bond funds held by NPS was higher (0.84 percentage points) than that of corporate bond funds held by mutual funds (0.48 percentage points).

The results of Sharpe's ratio indicated that the HDFC Pension Fund (.94) and the ICICI Pension Fund (.94) were the best performers in the corporate debt fund section among all of the funds that were considered for the NPS and MF categories. This was followed by the SBI Pension Fund (.88), the LIC Pension Fund (.80), the UTI Pension Fund (.80), the UTI Retirement Solution Fund (.75), and other funds.

• Government Bond/Gilt Fund

According to Sharpe's ratio, the average risk-adjusted return on government bond funds held by NPS was higher (0.56 percentage points) than that of government bond funds held by mutual funds (0.41 percentage points).

The LIC Retirement plan generated the greatest return (.83) according to Sharpe's risk-adjusted returns, followed by the HDFC Pension Plan (.62), the SBI Pension plan (.60), the SBI Hybrid mutual fund (.59), and other retirement plans.

In addition, the performance of the corporate debt funds offered by NPS was superior to that of every other fund that was analysed. Within the corporate debt category, the HDFC Pension plan (.94) and the ICICI Prudential Pension plan (.94) achieved the greatest total risk-adjusted returns.

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