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A Study On the Performance Evaluation Of National Pension System with Reference to Scheme E

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Abstract

The National Pension System (NPS) has risen to prominence retirement savings instrument in India, offering market-linked returns through professionally managed pension funds. The present study evaluates the performance of Scheme E under both Tier I and Tier II accounts The study covers a ten-year period and utilizes secondary data obtained from the official NPS Trust website. Eleven pension fund managers were selected for the study, while DSP Pension Fund Managers Private Limited was excluded due to the non-availability of consistent data. The Sharpe ratio has been used as the primary tool to measure risk-adjusted performance. The findings reveal considerable variation in performance among fund managers, with ICICI, HDFC, and Kotak consistently delivering superior returns relative to risk across both tiers. In contrast, Axis, Max Life, and Tata exhibited lower efficiency in terms of risk–return trade-off. The study highlights the importance of risk-adjusted evaluation in retirement investment decisions and provides insights for investors in selecting efficient pension fund managers.

Keywords: National Pension System, Scheme E, Tier I, Tier II, Sharpe Ratio, Risk-adjusted return, Pension funds.

1. Introduction

India's pension sector has undergone a major transformation with the introduction of the National Pension System (NPS), shifting from a defined benefit framework to a defined contribution structure. This reform was initiated to ensure long-term fiscal sustainability, expand retirement coverage, and encourage individual participation in old-age income planning. NPS provides subscribers with multiple investment options managed by professional pension fund managers, enabling them to allocate their savings across equity, corporate debt, and government securities according to their risk preferences.

Among the available investment choices, Scheme E plays a crucial role as it primarily invests in equity and offers higher return potential compared to debt-oriented schemes, though it is associated with greater market risk. Since retirement planning is a long-term financial commitment, evaluating the performance of pension fund managers on a risk-adjusted basis becomes essential for informed decision-making.

In this context, the present study attempts to analyse the performance of Scheme E under Tier I and Tier II of the NPS. The Sharpe ratio has been employed to assess how efficiently different fund managers generate excess returns for the level of risk undertaken. By comparing the performance across fund houses, the study provides useful insights into the relative efficiency and consistency of pension fund management in India

Review Of Literature

Pension reforms in India have attracted significant scholarly attention due to their implications for fiscal sustainability and old-age income security. **Dave (2006)** analysed the structural transformation of India's pension system and highlighted its socio-economic relevance in the context of a rapidly ageing population. The study emphasised that the shift from a defined benefit to a defined contribution framework was intended to address long-term financial pressures while expanding retirement coverage. Focusing on the financial architecture of the new system, **Kalarwala (2011)** examined the feasibility of providing a minimum return guarantee under the New Pension System (NPS). The results suggested that incorporating contributory and market-linked features into the scheme might help lower the government's pension obligations and lessen the pressure on public spending. From an implementation perspective, **Sonkusare and Rajesh (2019)** identified several administrative and operational challenges in the execution of NPS. Their study suggested that, in order to accumulate an adequate retirement corpus, subscribers should complement NPS investments with other financial instruments such as mutual funds. An institutional perspective was provided by **Markandan (2016)**, who reviewed the functioning of the National Old Age Pension Scheme (NOAPS) and traced the evolution of pension reforms through the OASIS project. The analysis outlined the foundational principles of India's pension restructuring and pointed towards the need for broader coverage and improved delivery mechanisms. Performance evaluation of pension fund managers has also been a major area of research. **Krishna (2020)** used portfolio performance measures such as the Sharpe ratio, Treynor ratio, and Jensen's alpha and observed mixed results, indicating variations in risk-adjusted returns. Cost efficiency is another important dimension in retirement planning. **Kamath and Rupali (2017)** conducted a comparative cost–benefit analysis between NPS and other retirement schemes and found that processing charges constituted a major differentiating factor influencing investor preference. With regard to old-age income security, **Kali (2017)** argued that the NPS represents a more sustainable alternative to the traditional defined benefit pension system. The study further noted that the growth of NPS could contribute to the deepening of India's capital markets by mobilizing long-term funds. At the behavioral level, **Jain and Sharma (2018)** compared NPS with other pension products and examined subscriber perceptions. Their findings revealed a growing acceptance of NPS, attributed to its flexibility, low cost structure, and tax advantages.

Objectives Of The Study

The primary objective of this research is to analyze the performance of E Tier I and II schemes under the National Pension System

Methodology

This study is entirely based on secondary data obtained from the official website of the National Pension System (NPS). The analysis covers a period of ten years and includes eleven pension fund managers selected on the basis of their availability under Scheme E for both Tier I and Tier II accounts. The Sharpe ratio was used as the main metric to evaluate the risk-adjusted performance of the schemes. DSP Pension Fund Managers Private Limited was omitted from the analysis because reliable historical data for the study period was not available

Table 1- Scheme E- Tier I and II

Sr. No	Pension funds chosen for the study
1	Aditya Birla Sun Life Pension Fund Management Limited
2	Axis Pension Fund Management Limited
3	HDFC Pension Fund Management Ltd.
4	ICICI Pru. Pension Fund Management Co. Ltd.
5	Kotak Mahindra Pension Fund Ltd.
6	LIC Pension Fund Ltd.
7	SBI Pension Funds Pvt. Ltd
8	Tata Pension Fund Management Pvt. Ltd.
9	UTI Pension Fund Ltd.

Source: https://npstrust.org.in

ANALYSIS AND INTERPRETATION

Scheme E- Tier I

Scheme E – Tier I, is one of the investment options available under the National Pension System (NPS) for building retirement savings. This scheme mainly invests your money in the equity (share) market, which means the funds are used to buy shares of companies. Because of this, it has higher growth potential compared to debt-based schemes, but it also carries higher risk due to market fluctuations

Table-2. Scheme E- Tier I

	AXIS	BIRLA	HDFC	ICICI	KOTAK	LIC	MAX LIFE	SBI	TATA	UTI
MEAN RETURN	4.105	11.666	14.855	14.936	14.824	14.257	4.084	13.527	4.521	11.991
SD	13.495	0.599	23.80677	25.3638	24.4015	25.6819	15.26	23.4146	17.145	24.3722
RISK FREE RETURN	7.26	7.26	7.26	7.26	7.26	7.26	7.26	7.26	7.26	7.26
SHARPE RATIO	3.90	11.46	14.64	14.75	14.62	14.05	3.88	13.31	4.34	10.84

Source – Author Compilation

****DSP Pension Fund Managers Private Limited is excluded***

The table provides a comparative evaluation of Scheme E – Tier I across ten fund houses like Axis, Birla, HDFC, ICICI, Kotak, LIC, Max Life, SBI, Tata, and UTI for the period 2015–2025. The analysis considers Mean Return, Standard Deviation (SD), Risk-Free Rate, and Sharpe Ratio to measure both performance and risk-adjusted efficiency.

Mean Return

Mean return represents the average annual return earned by each fund during the study period. Among the selected fund houses, ICICI (14.936%) records the highest mean return, closely followed by HDFC (14.855%), Kotak (14.824%), and LIC (14.257%). These funds demonstrate strong long-term growth potential under Scheme E – Tier I. SBI (13.527%) and UTI (11.991%) show moderate but consistent returns. In contrast, Axis (4.105%), Max Life (4.084%), and Tata (4.521%) report relatively low mean returns, indicating weaker return performance during the period.

Standard Deviation (Risk)

Standard deviation quantifies how much returns vary, indicating the degree of risk or volatility for each fund. Higher SD values indicate greater fluctuations in returns. ICICI (25.36), LIC (25.68), Kotak (24.40), HDFC (23.81), SBI (23.41), and UTI (24.37) exhibit higher volatility, suggesting that investors in these funds are exposed to higher risk. On the other hand, Birla (0.599) shows exceptionally low volatility, indicating highly stable returns. Axis (13.50) and Max Life (15.26) also display comparatively lower risk levels.

Risk-Free Rate

The risk-free rate is maintained at 7.26% for all fund houses, acting as a standard benchmark for returns. This consistent rate allows for meaningful evaluation of risk-adjusted performance using the Sharpe Ratio.

Sharpe Ratio (Risk-Adjusted Performance)

The Sharpe Ratio measures how much additional return an investment generates for each unit of overall risk taken, with a greater Sharpe Ratio signaling better risk-adjusted results.. Among all funds, HDFC (14.64), ICICI (14.75), Kotak (14.62), and LIC (14.05) record the highest Sharpe Ratios, signifying excellent efficiency in balancing risk and return. SBI (13.31) and Birla (11.46) also demonstrate strong risk-adjusted performance. In contrast, Axis (3.90), Max Life (3.88), and Tata (4.34) show relatively low Sharpe Ratios, indicating weaker compensation for the risk undertaken.

Overall Interpretation

Overall, Scheme E – Tier I exhibits varied performance across fund houses. From a return maximization perspective, ICICI, HDFC, and Kotak emerge as top performers. From a risk-adjusted performance perspective, ICICI, HDFC, Kotak, and LIC are the most efficient funds under this scheme. Funds such as Axis, Max Life, and Tata may appeal to investors seeking lower volatility, but their comparatively low returns and Sharpe Ratios reduce their attractiveness from an investment efficiency standpoint.

Scheme E- Tier II

Scheme E – Tier II is an investment option available under the National Pension System (NPS) for subscribers who have opened a Tier II account. This scheme mainly invests in equity (shares of companies) and is designed for investors who want higher growth and are willing to accept market risk.

Table-3 - Scheme E- Tier II

	AXIS	BIRLA	HDFC	ICICI	KOTAK	LIC	MAX LIFE	SBI	TATA	UTI
MEAN RETURN	4.105	11.666	14.855	14.936	14.824	14.257	4.084	13.527	4.521	11.991
SD	13.11	26.85	23.77	25.33	24.01	25.89	15.19	23.5	16.93	25.42
RISK FREE RETURN	7.26	7.26	7.26	7.26	7.26	7.26	7.26	7.26	7.26	7.26
SHARPE RATIO	3.72	11.52	14.63	14.64	14.41	13.86	3.54	13.50	4.08	14.59

Source – Author Compilation

****DSP Pension Fund Managers Private Limited is excluded***

Table-3 presents a comparative performance analysis of Scheme E – Tier II across ten fund houses, namely Axis, Birla, HDFC, ICICI, Kotak, LIC, Max Life, SBI, Tata, and UTI, over the period 2015–2025. The evaluation is carried out using Mean Return, Standard Deviation (SD), Risk-Free Return, and Sharpe Ratio, enabling an assessment of both return generation and risk-adjusted efficiency.

Mean Return

Mean return represents the average annual return earned by each fund during the study period. The table reveals that ICICI (14.936%) records the highest mean return, closely followed by HDFC (14.855%), Kotak (14.824%), and LIC (14.257%). These funds demonstrate strong and consistent long-term growth under Scheme E – Tier II. SBI (13.527%) and UTI (11.991%) also show satisfactory performance, indicating stable returns. In contrast, Axis (4.105%), Max Life (4.084%), and Tata (4.521%) report comparatively low mean returns, reflecting weaker return-generating capacity during the study period.

Standard Deviation (Risk)

Standard deviation measures the volatility of returns and serves as an indicator of risk. Higher SD values imply greater fluctuations in returns. Birla (26.85), LIC (25.89), ICICI (25.33), UTI (25.42), and Kotak (24.01) show relatively high volatility, suggesting higher risk exposure for investors. On the other hand, Axis (13.11) and Max Life (15.19) exhibit lower standard deviation values, indicating comparatively stable and less risky returns.

Risk-Free Return

The risk-free rate is constant at 7.26% for all fund houses. This uniform benchmark enables effective comparison of excess returns generated by each fund relative to risk-free investments such as government securities.

Sharpe Ratio (Risk-Adjusted Performance)

The Sharpe Ratio measures how much additional return an investment generates for each unit of overall risk taken, serving as an important gauge of how efficiently returns are achieved. Higher Sharpe Ratios

signify superior risk-adjusted performance. Among the funds, ICICI (14.64), HDFC (14.63), UTI (14.59), and Kotak (14.41) record the highest Sharpe Ratios, indicating excellent risk-return trade-offs. LIC (13.86) and SBI (13.50) also demonstrate strong risk-adjusted performance. In contrast, Axis (3.72), Max Life (3.54), and Tata (4.08) record relatively low Sharpe Ratios, suggesting that the returns are insufficient for the risk undertaken.

COMPARISON OF SHARPE RATIO: TIER-I VS TIER-II FUNDS

The Sharpe Ratio is a popular metric for evaluating risk-adjusted returns, showing how much additional return a portfolio earns for each unit of overall risk taken. A higher Sharpe Ratio indicates a more effective balance between risk and return.

Tier-I Funds

Tier-I funds exhibit generally strong risk-adjusted performance. ICICI (14.75), HDFC (14.64), Kotak (14.62), and LIC (14.05) record the highest Sharpe Ratios, indicating excellent fund management and effective risk control. SBI (13.31) and Birla (11.46) also demonstrate sound risk-return efficiency. However, Axis (3.90), Max Life (3.88), and Tata (4.34) show relatively low Sharpe Ratios, suggesting weaker compensation for the risk undertaken.

Tier-II Funds

Tier-II funds also display strong overall performance, with ICICI (14.64), HDFC (14.63), UTI (14.59), and Kotak (14.41) emerging as the top performers. These values indicate a highly efficient risk-return trade-off comparable to Tier-I leaders. LIC (13.86) and SBI (13.50) maintain consistent risk-adjusted returns. Similar to Tier-I, Axis (3.72), Max Life (3.54), and Tata (4.08) record low Sharpe Ratios, reflecting inferior performance in terms of risk compensation.

Interpretation

- **Consistency Across Tiers**
  ICICI, HDFC, and Kotak consistently record high Sharpe Ratios in both Tier-I and Tier-II, indicating stable and superior risk-adjusted performance across fund categories.
- **Marginal Variation Between Tiers**
  The Sharpe Ratios in Tier-II are slightly lower or comparable to Tier-I, suggesting that risk-return efficiency remains largely uniform across tiers for top-performing funds.
- **Underperforming Funds**
  Axis, Max Life, and Tata show persistently low Sharpe Ratios in both tiers, implying that their returns are not sufficient to justify the level of risk taken.
- **Investor Implication**
  Funds maintaining high Sharpe Ratios across both tiers tend to be more appropriate for conservative investors, as they deliver greater return for each unit of risk assumed.

Conclusion

This study evaluated Scheme E's performance in Tier I and Tier II of the National Pension System, employing the Sharpe ratio to measure returns adjusted for risk.. The analysis results indicate that a few pension fund managers consistently outperform others in both return generation and risk management. ICICI, HDFC, and Kotak emerged as the most efficient fund managers across both tiers, demonstrating a strong ability to balance risk and return. LIC and SBI also showed stable and satisfactory performance. On the other hand, Axis, Max Life, and Tata recorded relatively lower Sharpe ratios, suggesting that the returns generated by these funds were not adequate in relation to the level of risk undertaken. The comparison between Tier I and Tier II reveals that the risk-adjusted performance of the leading funds remains largely consistent across both categories, indicating uniform fund management strategies. The study emphasizes that evaluating pension funds solely on the basis of returns may be misleading, and risk-adjusted measures provide a more realistic assessment of performance. From an investor's perspective, selecting funds with higher and consistent Sharpe ratios can lead to more efficient long-term wealth accumulation for retirement. The study's results add to the current body of research on pension fund performance, offering valuable insights that can help policymakers, fund managers, and subscribers make better-informed decisions about retirement investments.

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