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Investor Behavior in Pension Choices: Evidence from Life Cycle Fund Preferences under India's National Pension System

Ranjan Paul[1] and Bhartendu Singh[2]
[1]*Deparment of Commerce, Mizoram University*
[2]*Deparment of Commerce, Mizoram University*

Abstract— The National Pension System (NPS), India's flagship market-linked retirement scheme, offers age-adjusted life-cycle fund options—LC25 (Conservative), LC50 (Moderate), and LC75 (Aggressive)—that reflect varying risk appetites. This study analyzes sector-wise subscriber behavior from FY 2019–2020 to 2023–2024 using cross-sectional administrative data. Chi-Square Tests of Independence reveal statistically significant associations between employment sector and fund choice, indicating divergent risk preferences. LC50 remains the most preferred option across sectors, suggesting a widespread inclination toward balanced portfolios. Notably, LC75 subscriptions have surged in Corporate and All Citizen sectors, while LC25 has seen a sharp decline, particularly a 70% drop in the All-Citizen category in 2023–2024 alone. These trends suggest a behavioral shift toward higher-risk allocations, possibly influenced by financial literacy, default options, and sectoral dynamics. The findings emphasize the importance of sector-specific financial education and adaptive default mechanisms to improve retirement outcomes under the NPS.

Index Terms— National Pension System, Life Cycle Funds, Risk Preference, Investment Behaviour

I. INTRODUCTION

The National Pension System (NPS), introduced in India in 2004, is a market-linked, defined contribution pension scheme designed to reduce the government's long-term financial burden. The responsibility of investment risk is shifted from the government to the individuals [1]. While this structure offers potential for higher returns, it also introduces more uncertainty.

A key feature of NPS is the life-cycle fund, or target-date fund. These funds gradually reduce equity exposure and increase allocations to safer assets like bonds as the subscriber nears retirement [2]. Managed by professional fund managers, these funds suit individuals lacking the time or expertise for active management [3], [4].

However, performance varies based on fund design and market conditions. Research indicates that dynamic allocation models adjusting to economic shifts may outperform static strategies [5]. Despite critiques, life-cycle funds offer a balanced solution for long-term investment goals [6], [7].

II.LITERATURE SURVEY

Investment behaviour in pensions often reflects more than just economic rationality. The Life Cycle Hypothesis (LCH), developed by Modigliani and Brumberg, posits that individuals save and invest differently at each life stage, taking more risk when young and shifting to safer assets as they age [8].

Yet, real-world behaviour diverges from theory due to behavioural and institutional influences. Studies have shown that default options greatly affect savings decisions due to status quo bias [9], [10]. Strategies like "Save More Tomorrow" leverage present bias to improve retirement outcomes [11]. Such behavioural nudges are increasingly popular globally, though less common in India.

NPS offers three life-cycle fund options—LC25 (Conservative), LC50 (Moderate), and LC75 (Aggressive). tailored by age and risk preference. LC75's rising popularity among younger investors reflects changing attitudes or better financial literacy [12].

In India, several barriers hinder the uptake of life cycle funds under NPS. These include low levels of financial literacy, mistrust in financial institutions, and limited digital literacy, especially in rural areas [13]. Sectoral differences exist, with corporate employees leaning more toward aggressive options [14]. Additionally, gender differences influence investment behavior, with women generally displaying greater risk aversion compared to men [15]. This study extends existing literature by examining sector-wise subscription trends and assessing their alignment with the LCH, using recent NPS data.

III. RESEARCH GAP

Previous research focuses on behavioural factors like risk aversion and default bias, mostly in Western contexts with employer-sponsored plans [10], [16]. Indian studies are mostly survey-based and do not analyse actual NPS data. Additionally, there is limited focus on sector-wise fund preferences and the behavioural influence of default options like LC50. This study addresses these gaps.

IV. OBJECTIVES

There are three main objectives of the study categorized as *A B & C*

A. To test for statistically significant associations between employment sector and life-cycle fund selection.

B. To examine time-series trends in risk preference among subscribers from FY 2019–2020 to FY 2023–2024, and assess behavioral shifts across fund types.

C. To analyze sector-wise investment behavior in the National Pension System (NPS) by examining subscriber preferences across life-cycle fund types

V. DATA AND METHODOLOGY

This study employs cross-sectional administrative data from the NPS. The data was extracted from the statistics section, *Table 20: Sector-wise Subscribers of Life Cycle Funds for the period of five-year data from financial year 2019-2020 to 2023–24*. Although the table does not explicitly mention whether the data pertains to Tier I or Tier II accounts, it is reasonable to assume that the figures represent Tier I subscriptions, as life cycle funds (LC25, LC50, LC75) are primarily applicable to Tier I accounts under the NPS. Which also serves as the default investment option for new subscribers [1]. The dataset includes information on subscriber fund choices within four key sectors: Central Government (CG), State Government (SG), Corporate, and All Citizen. The primary focus is on the selection among three predefined life cycle fund options—LC25 (Conservative),LC50(Moderate),andLC75(Aggressive)—which differ in equity allocation, reflecting varying degrees of risk appetite.

To assess the relationship between employment sector and fund preference under the NPS, Chi-Square Tests of Independence were applied. This non-parametric test evaluates associations between categorical variables without assuming normality. with significance determined at $p < 0.01$.

In order to fulfill the first objective two hypothesis was set as:

H_1: There is a significant difference between employment sector and the preference for conservative (LC25) vs. moderate (LC50) life-cycle funds and H_2: There is a significant association between employment sector and the preference for moderate (LC50) vs. aggressive (LC75) life-cycle funds.

Two comparisons were made:

(1) LC25 vs. LC50 preferences across Central Government, State Government, Corporate, and All Citizen sectors; and

(2) LC50 vs. LC75 preferences within the Corporate and All Citizen sectors.

Chi-Square statistics, degrees of freedom, and p-values were calculated, this methodological approach enables the identification of sector-wise heterogeneity in risk preferences, as inferred from fund selection behavior under the NPS framework.

IV. FINDINGS & DISCUSSIONS

Section I: Findings of objective A

To investigate whether life cycle fund preferences vary across employment sectors under the NPS, using subscriber data for FY 2023–24.

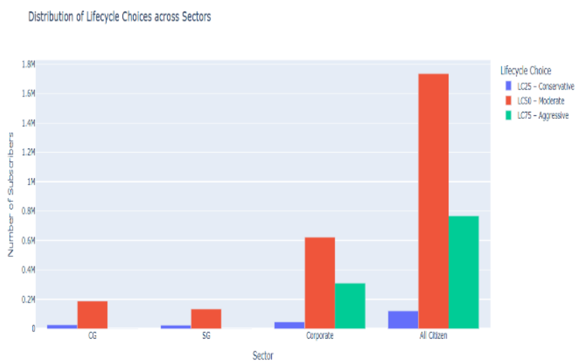
- The test yielded a Chi-Square statistic of $\chi^2 = 14{,}892.5$, with 3 degrees of freedom and a p-value < 0.01, indicating a statistically significant association between sector and fund type selection. This result suggests that fund choice behavior is not uniform across sectors and may reflect varying levels of risk aversion or awareness.

- Second Chi-Square Test produced a Chi-Square value of $\chi^2 = 14{,}657.9$, with 1 degree of freedom and a p-value < 0.01, confirming a significant relationship between sector and inclination toward higher equity exposure. These results, indicating that investor risk preferences, as inferred from life cycle fund choices, differ significantly by employment sector under the NPS framework.

Section II: Findings of objective B & C

This section presents a detailed analysis of subscribers across different life cycle fund types from FY 2019–2020 to FY 2023–2024 with the the help of a figure 1

Fig. 1:



A. Growth in Total Subscribers

Across all sectors, there has been a consistent and significant increase in the number of subscribers under all fund types, indicating a growing awareness and adoption of life cycle-based pension investments. For instance, total LC50 (Moderate) fund subscribers under the All-Citizen category increased from 5.74 lakh in FY 2019–2020 to 17.35 lakh in FY 2023–2024, registering more than a 200% growth.

B. Sector-wise Growth

CG: The number of subscribers in LC50 increased from 2,422 in 2019–2020 to 1,87,952 in 2023–2024, while LC25 subscribers grew from 1,200 to 26,154 in the same period. This reflects an overall increase, with stronger preference for the moderate-risk LC50 fund. Notably, no CG subscriber opted for LC75 during the period under study.

*SG***:** The growth pattern is similar to CG, with LC50 subscribers rising from 9,530 in 2020–2021 (no data in 2019–2020) to 1,34,550 in 2023–2024. LC25 subscribers also increased from 3,567 to 24,410. Again, LC75 is entirely absent, pointing to conservative fund selection among government subscribers.

CG: The corporate segment shows participation across all three life cycle fund types. LC50 remains dominant, increasing from 2.74 lakh to 6.22 lakh. LC75 subscriptions witnessed steady growth from 58,771 in 2019–2020 to 3.09 lakh in 2023–2024. However, LC25 saw an increase until 2022–2023 (91,882), followed by a sharp decline to 46,572 in 2023–2024, indicating a shift away from conservative allocations.

All Citizen: This segment exhibits strong participation in all three fund types. LC50 grew steadily and is the most subscribed option (from 5.74 lakh to 17.35 lakh). LC75 increased significantly from 2.03 lakh to 7.68 lakh, while LC25 grew until 2022–2023 (4.30 lakh) but fell drastically to 1.20 lakh in 2023–2024, indicating a marked preference shift toward riskier funds in recent years.

C. Changing Risk Preferences

The distribution of subscribers indicates evolving risk preferences over time. LC50 remains the most preferred choice across all sectors, reflecting a steady preference for a balanced equity-debt mix. especially suitable for individuals with moderate risk tolerance. This is consistent with earlier research suggesting that balanced portfolios serve well for those seeking growth without excessive volatility [18]. LC75, offered only in the Corporate and All Citizen sectors, has grown significantly, suggesting a rising risk appetite, especially among younger or financially literate individuals. Previous studies have found that younger individuals and those with greater financial literacy are more inclined toward equity-heavy investments, given their longer investment horizon and greater risk tolerance [19][20]. In contrast, LC25, once favored by conservative investors, has seen stagnation or sharp decline—most notably a 70% drop in the All-Citizen sector between 2022–2023 and 2023–2024. Pension economists have long warned that overly conservative strategies may result in insufficient retirement wealth due to low investment returns[21][22]. These observed shifts may indicate a broader behavioral transition where risk-taking is becoming more normalized, especially among non-government sector participants.

V. RECOMMENDATIONS

Customized risk education campaigns and default fund design reforms are essential to enhance retirement outcomes under the NPS. Sector-specific financial literacy programs should target government employees, who typically exhibit higher risk aversion, to highlight the long-term benefits of moderately aggressive options like LC50. Likewise, subscribers in the All Citizen and Corporate sectors should be informed about the risk-return dynamics of aggressive allocations like LC75[10][11]. Additionally, reforms in Tier II are necessary, where no default fund mechanism currently exists. Drawing on behavioral finance insights, implementing a dynamic life-cycle default option that adjusts equity exposure with age could guide investors more effectively and improve overall retirement preparedness [9][11]

VI. CONCLUSION

The findings indicate a significant variation in life cycle fund preferences across sectors under the National Pension System (NPS), as evidenced by the Chi-Square Tests showing strong associations between sector type and fund choice. LC50 continues to dominate due to its balanced nature, while LC75 has grown sharply in the Corporate and All Citizen sectors, reflecting an increasing risk appetite—particularly among younger or financially literate individuals [12][14] On the other hand, the decline in LC25 subscriptions, especially a 70% drop in the All-Citizen sector between 2022–23 and 2023–24, indicates a shift away from conservative options.

This evolving trend suggests that while financial awareness is increasing, there remains a risk of under preparedness due to inadequate understanding of long-term implications. Therefore, aligning pension fund design with behavioral insights and enhancing investor education are critical to ensuring financial security in retirement [11][17]

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