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R Arunachalam
Research Scholar, School of
Management, SASTRA
Deemed To Be University,
Thanjavur, Tamil Nadu, India

R Amudha
Associate Professor, School of
Management, SASTRA
Deemed To Be University,
Thanjavur, Tamil Nadu, India

S Ritika
Undergraduate Student,
School of Management,
SASTRA Deemed To Be
University, Thanjavur, Tamil
Nadu, India

NS Saraswathy
Undergraduate Student,
School of Management,
SASTRA Deemed To Be
University, Thanjavur, Tamil
Nadu, India

P Swathi
Undergraduate Student,
School of Management,
SASTRA Deemed To Be
University, Thanjavur, Tamil
Nadu, India

Correspondence Author:
R Amudha
Associate Professor, School of
Management, SASTRA
Deemed To Be University,
Thanjavur, Tamil Nadu, India

Effectiveness of debt mutual funds: A performance evaluation for conservative investors

R Arunachalam, R Amudha, S Ritika, NS Saraswathy and P Swathi

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Abstract

A mutual fund is a product that diversifies investing in a wide range of securities. It collects money from various investors to build a portfolio that includes equities, bonds, debentures, government securities, gold and other asset classes. Through diversified asset allocation, the underlying securities spread risk to address the diverse financial goals of investors; this approach has made mutual funds a preferred option for many investors. The modern financial landscape of today characterised by market volatility and shifting economic conditions drives investors to opt for those avenues that yield stable returns and less volatility. Debt mutual fund schemes, which are known for their ability to provide regular income, preserve capital and deliver expected returns, have attracted significant attention among conservative investors. Despite the importance of debt funds in investment portfolios, limited academic studies have been conducted about their performance measure. The study identifies six major Asset Management Companies (AMCs) based on their Average Assets Under Management (AAUM), and the study evaluates their debt scheme performance using key financial metrics over five years ending 31st March 2024. The study uses secondary data from the Association of Mutual Funds in India (AMFI) and identifies the "CRISIL Medium to Long Duration Debt A - III Index" as the benchmark index. The results indicate variations in scheme performance, with SBI Magnum Income Fund emerging as a balanced option, HDFC Income Fund indicating higher market sensitivity, Nippon India Income Fund offering stability, and ICICI Prudential Bond Fund demonstrating superior risk-adjusted outcomes. Future studies are recommended to explore the impact of interest rate fluctuations, economic cycles, inflation and emerging ESG considerations on the performance dynamics of debt mutual fund schemes.

Keyword: Debt mutual funds, asset management companies, financial performance metrics, fixed income securities, conservative investors

Introduction

A mutual fund is a product that diversifies investing in a wide range of securities. It collects money from various investors to build a portfolio that includes equities, bonds, debentures, government securities, gold and other asset classes. Through diversified asset allocation, the underlying securities spread risk to address the diverse financial goals of investors; this approach has made mutual funds a preferred option for many investors. Based on the underlying securities, regulatory guidelines classify mutual fund schemes into equity, debt, hybrid and other schemes, each designed to meet specific investment objectives. The modern financial landscape of today characterised by market volatility and shifting economic conditions drives investors to opt for those avenues that yield stable returns and less volatility. Debt mutual fund schemes, which are known for their ability to provide regular income, preserve capital and deliver expected returns, have attracted significant attention among conservative investors.

Debt schemes are also known as income funds, which are predominantly invested in bonds and other debt securities. The issuers of these securities include the government, public financial institutions and companies. There are several categories of debt funds, each defined by specific criteria related to the investment in debt and money market instruments based on the tenure of underlying securities; these schemes are further classified. The Overnight Fund invests in overnight securities with a maturity of one day, while the Liquid Fund focuses on debt and money market securities with maturities of up to ninety-one days. The Ultra Short Duration Fund targets debt and money market instruments with a Macaulay duration between three and six months, while the Low Duration Fund includes instruments with a Macaulay duration between six and twelve months.

Money Market Funds invest in instruments with maturities of up to one year. The Short Duration Fund has a portfolio with a Macaulay duration ranging from one to three years, and the Medium Duration Fund covers instruments with a Macaulay duration of three to four years. The Medium to Long Duration Fund invests in instruments with a Macaulay duration of four to seven years for a broader investment horizon. The Long Duration Fund targets investments with a Macaulay duration greater than seven years. Dynamic Bond Funds invest across various durations, offering flexibility based on market conditions. Corporate Bond Funds must invest at least 80% in corporate bonds, specifically those rated AA+ or higher.

Credit Risk Funds must allocate at least 65% in corporate bonds rated AA or below. The Banking and PSU Fund invests at least 80% in debt instruments issued by public sector undertakings, banks, municipal bonds and public financial institutions. Gilt Funds are required to invest a minimum of 80% in government securities (G-secs) across various maturities, and the Gilt Fund with a 10-year constant duration mandates 80% investment in G-secs, ensuring the portfolio's Macaulay duration is around ten years. The Floater Fund must invest at least 65% in floating-rate instruments, which may include fixed-rate instruments converted to floating-rate exposures through swaps or derivatives. These categories provide investors various options based on risk, duration and return preferences to align their investment choices.

Literature Review

Investment decision-making across asset classes has been widely examined, with considerable attention to behavioural biases, such as overconfidence, anchoring, regret aversion and herding, which significantly impact investment decisions (Acharekar *et al.*, 2024; Chadha, 2024; Dsa & Pallavi, 2024; Wesley *et al.*, 2024; Gaurav *et al.*, 2023; Shah & Jadav, 2024) [1, 7, 9, 30, 12, 24]. Emotional and cognitive biases disrupt rational decision-making and market stability, with regional diversity influencing the degree of these effects (Fey *et al.*, 2023; Flavián *et al.*, 2021; Arora & Chawla, 2021; Velmurugan *et al.*, 2015) [10, 11, 5, 27]. Studies examining cognitive biases among Indian mutual fund investors show a significant influence on investment decision-making, with overconfidence, over-reaction, herd effect and regret aversion being impactful (Chadha, 2024) [7]. Behavioural interventions and investor education are frequently recommended to mitigate biases and improve decision quality (Murugan *et al.*, 2024; Vidyalaxmi & Kayarkatte, 2024; Wesley *et al.*, 2024) [20, 28, 30].

The role of financial literacy in determining investment behaviours is well established, with studies demonstrating that financial literacy moderates biases, enhances rational decision making and contributes to financial stability (Acharekar *et al.*, 2024; Dsa & Pallavi, 2024; Wesley *et al.*, 2024; Gaurav *et al.*, 2023) [1, 9, 30, 12]. Financial literacy significantly affects investment attitudes, which plays a crucial role in reducing hopelessness and anxiety among investors (Wesley *et al.*, 2024) [30]. Financial literacy's interplay with psychological factors, including technological readiness and risk perception, empowers investors to make informed decisions (Flavián *et al.*, 2021; Fey *et al.*, 2023; Arora & Chawla, 2021) [11, 10, 5]. Educational programs to

improve financial literacy are recommended to support sustainable and informed investment practices (Murugan *et al.*, 2024; Vidyalaxmi & Kayarkatte, 2024) [20, 28]. Research on teaching professionals' investment preferences reveals that middle-aged respondents' educational levels and experiences significantly influence their investment knowledge and decisions (Dsa & Pallavi, 2024) [9].

Demographic analyses reveal that factors such as age, occupation and awareness about investment opportunities correlate significantly with investment decisions and preferences (Acharekar *et al.*, 2024) [1]. Corporate professionals' investment behaviour toward mutual funds is influenced by factors identified through exploratory factor analysis, highlighting the multifaceted nature of investment decision-making in professional contexts (Gaurav *et al.*, 2023) [12]. Gender differences in risk attitude and investment behaviour show complex interactions, with gender gaps often driven by differences in risk-loving rather than risk-averse households (Fey *et al.*, 2023) [10].

Portfolio optimisation strategies focusing on balancing asset returns and risks remain a central focus of financial market research. Modern Portfolio Theory (MPT) has evolved and attracted numerous scholars to provide substantial research outcomes (Dai, 2024; Anuno *et al.*, 2024; Olmo, 2021) [8, 4, 21]. Empirical studies analysing optimised portfolios demonstrate that correlation matrices between assets provide valuable insights for portfolio construction, with optimal portfolios often consisting of specific stocks exceeding allocation thresholds (Anuno *et al.*, 2024; Aguilar & West, 2000) [4, 3]. Research examining the relationship between optimal asset allocation in minimum variance portfolios and eigenvector asset centrality introduces the concept of negative and positive eigenvector centrality, revealing that the loss function associated with minimum variance portfolios is related to these centrality measures under short-selling constraints (Olmo, 2021) [21]. Advanced approaches integrate machine learning techniques for stock ranking prediction, with proposed models aggregating multiple spillover effects of related stocks and employing multi-task learning paradigms to learn stock return and volatility risks jointly (Ma *et al.*, 2024) [18].

Risk-return analysis across different investment avenues provides insights into effective portfolio management, with studies examining various investment options, including mutual funds, equity shares, cryptocurrencies and traditional instruments like bank deposits and insurance (Kolapo & Ajayi, 2023; Patjoshi & Nandini, 2020; Velmurugan *et al.*, 2015; Wang *et al.*, 2024) [17, 23, 27, 29]. Analysis of steel sector stocks against the Sensex benchmark shows varying risk-return profiles over ten years, highlighting the importance of sector-specific considerations in equity investments (Patjoshi & Nandini, 2020) [23]. Research on life insurance demand and household portfolio allocation decisions indicates that decisions to invest in cash equivalents, bonds, retirement assets and debt repayment significantly affect life insurance ownership, suggesting the importance of comprehensive financial planning (Wang *et al.*, 2024) [29]. Age and income levels influence investment preferences, with older and higher-income investors preferring safer options like post office and bank deposits (Velmurugan *et al.*, 2015) [27].

Mutual fund performance evaluation employs various risk-

adjusted measures to assess fund quality and investor preferences. Studies utilise statistical tools and performance measures, including standard deviation, beta, Sharpe ratio, Treynor ratio, Jensen’s Alpha, Fama index and M² measures to evaluate fund performance against benchmark indices (Karanth & Pinto, 2024; Sharma & Tripathi, 2023; Mawikere, 2021; Tripathi & Japee, 2020; Khurana & Bhatia, 2023) [15, 25, 19, 26, 16]. Analysis of top-performing schemes from prominent Asset Management Companies reveals that despite market fluctuations, certain funds demonstrate resilience and outperform benchmarks, offering favourable risk-return profiles (Karanth & Pinto, 2024) [15]. Performance comparison across different market capitalisation groups, including small cap, mid cap and large cap funds, shows significant variations in growth potential and risk characteristics (Sharma & Tripathi, 2023) [25]. Longitudinal studies indicate that maintaining superior fund performance is challenging, with some products consistently showing poor performance across evaluation periods (Mawikere, 2021) [19]. Regular return on schemes emerges as the most important factor affecting investor choice toward mutual funds, while procedural complexity is the least important consideration (Arora & Chawla, 2021; Murugan *et al.*, 2024) [5, 20].

Emerging trends in investment research include sustainability considerations, technological innovations and specialised investment vehicles. Climate change introduces new challenges for portfolio management, requiring investors to navigate trade-offs between minimising climate risk exposure and maximising diversification benefits (Ceccarelli *et al.*, 2024) [6]. Following the release of carbon risk metrics, mutual funds labelled “low carbon” experienced significant increases in investor demand, especially those with high risk-adjusted returns (Ceccarelli *et al.*, 2024) [6]. Impact investing funds, characterised by dual financial and social goals, reveal lower market beta than comparable private market strategies, though they underperform the public market when accounting for beta (Jeffers *et al.*, 2024) [13]. Ethical mutual funds evaluated using a nonconvex meta-frontier framework suggest that ethical constraints do not necessarily lead to inferior financial performance and occasionally outperform non-ethical funds (Jin *et al.*, 2024) [14]. The COVID-19 crisis provided insights into fund performance during market stress, with sustainability-focused funds performing well despite most active funds underperforming passive benchmarks (Pástor & Vorsatz, 2020) [22].

Alternative investment strategies and specialised mechanisms have been examined across various market contexts. Open-end mutual funds’ use of redemption in kind (delivering securities instead of cash) was found to mitigate fund runs, with funds exercising this option experiencing less redemption after poor performance (Agarwal *et al.*, 2023) [2]. Analysis of non-resident Indian (NRI) investment patterns shows their significant contribution to regional economies, with monetary remittances increasing and becoming dynamic contributors to state economic development (Shah & Jadav, 2024) [24].

Technological innovations have transformed investment landscapes through artificial intelligence-based services. Customers’ technology readiness affects their intention to use analytical AI investment services, with technological

optimism increasing and insecurity decreasing individuals’ intention to use robo-advisors. Feelings of technological discomfort positively influence robo-advisor adoption (Flavián *et al.*, 2021) [11].

Research Gap

Despite the debt fund’s significant role in investment portfolios, extensive research has been done on equity-oriented investments and there is limited evaluation of debt schemes’ performance measurement.

Research Objective

The study’s objective was to assess the debt mutual fund scheme and to measure its performance with its relative benchmark index. The analysis of the performance of debt schemes includes the Annualised Return, Beta, Treynor ratio, Sharpe ratio and Jensen’s Alpha.

Scope of the study

The first debt mutual fund scheme was introduced on 21st October 1995 by Aditya Birla Sun Life Asset Management Company and named Aditya Birla Sun Life Income Fund under the medium to long duration debt fund category. This study analyses the performance of debt-oriented mutual fund investments, emphasising medium to long-term debt schemes.

Methodology

The study identified the AMC’s of medium to long-term debt funds based on the secondary data sourced from the Association of Mutual Funds in India (AMFI) and the average assets under management (AAUM) of asset management companies (AMCs). The table below reveals the top ten AMC’s and their AAUM as of March 2024.

Table 1: Average Asset Under Management (AAUM) of Top Ten Asset Management Companies as of 31st March 2024

S. No.	Asset Management Company	AAUM as of 31 st March 2024 (Rs. in Billion)
1	SBI Mutual Fund	9159.02
2	ICICI Prudential Mutual Fund	7115.53
3	HDFC Mutual Fund	6176.78
4	Nippon India Mutual Fund	4338.97
5	Kotak Mahindra Mutual Fund	3840.07
6	Aditya Birla Sun Life Mutual Fund	3325.79
7	UTI Mutual Fund	2909.93
8	Axis Mutual Fund	2751.66
9	Mirae Asset Mutual Fund	1644.68
10	DSP Mutual Fund	1480.82

Source: Compiled using secondary data

The AAUM of 44 mutual fund companies was identified, and the AMC’s with more than 3000 billion AAUM were selected for the study; this resulted in the selection of “SBI Mutual Fund, ICICI Prudential Mutual Fund, HDFC Mutual Fund, Nippon India Mutual Fund, Kotak Mahindra Mutual Fund and Aditya Birla Sun Life Mutual Fund”. The analysis of income funds’ performance measure comprises five years ending 31st March 2024. The benchmark index for the study was the “CRISIL Medium to Long Duration Debt A - III Index”, which is the benchmark index for medium to long-duration debt schemes. The analysis of the performance of debt schemes includes the Annualised Return, Beta, Treynor

ratio, Sharpe ratio and Jensen’s Alpha for the five-year period, which ended on 31st March 2024.

Data Analysis and Interpretation

The annualised returns and performance measures of selected debt mutual fund schemes were analysed to assess their market performance and risk-adjusted returns. This analysis is relevant in the context of economic shifts and interest rate movements, as the performance of debt funds is closely linked to macroeconomic factors, inflation rates and monetary policy changes.

Table 2: Annualised Returns for the Five Years Ended 31st March 2024

Debt Scheme	Annualised Return	Benchmark Annualised Return
SBI Magnum Income Fund	7.33%	7.39%
ICICI Prudential Bond Fund	7.03%	
HDFC Income Fund	5.55%	
Nippon India Income Fund	6.63%	
Kotak Bond Fund	6.55%	
Aditya Birla Sun Life Income Fund	7.00%	

Source: Compiled using secondary data

The annualised return measures the average return of a debt scheme over the past five years, adjusted for compounding. A fund’s performance is compared to the benchmark index

“CRISIL Medium to Long Duration Debt A-III Index” to evaluate how well a fund has performed relative to the market.

SBI Magnum Income Fund recorded the highest five-year annualised return of 7.33%, slightly underperforming its benchmark’s 7.39%; this minor difference indicates a performance slightly below market expectations. ICICI Prudential Bond Fund achieved a return of 7.03%; the fund’s return remains significant within the debt fund category. Nippon India Income Fund resulted in a return of 6.63%, revealing a stable return in line with other funds. Kotak Bond Fund and Aditya Birla Sun Life Income Fund had annualised returns of 6.55% and 7.00%, respectively. Both funds showed competitive returns. HDFC Income Fund recorded the lowest five-year annualised return at 5.55%, indicating weaker performance than the other funds. SBI Magnum Income Fund emerged as the best performer among the debt schemes analysed, achieving the highest return despite a slight underperformance relative to its benchmark. ICICI Prudential Bond Fund also demonstrated solid returns, followed by Nippon India Income Fund. HDFC Income Fund achieved a minimum annualised return, which made it less attractive to investors. As per the results of annualised returns, investors seeking consistent and competitive returns over time have to invest in the SBI Magnum Income Fund.

Table 3: Beta Values for the financial year 2019-2020 to 2023-2024

Debt Scheme	Beta Value				
	2023-2024	2022-2023	2021-2022	2020-2021	2019-2020
SBI Magnum Income Fund	0.7827	0.7645	0.5256	0.7584	0.8516
ICICI Prudential Bond Fund	0.9815	0.6840	0.8803	0.7961	0.8742
HDFC Income Fund	1.2527	0.7857	0.7997	0.7942	0.7883
Nippon India Income Fund	1.1905	0.4288	0.6495	1.0141	0.9211
Kotak Bond Fund	1.1475	0.6837	0.7019	0.9506	0.9545
Aditya Birla Sun Life Income Fund	1.1724	0.6378	0.6429	1.0372	1.0970

Source: Compiled using secondary data

Beta measures a fund’s sensitivity to market movements indicating how much the fund’s value tends to change in response to fluctuations in the broader market. A higher beta signifies greater volatility and risk, while a lower beta reflects lower market sensitivity. Over the period from 2019-2020 to 2023-2024 the beta values of various debt funds showed significant variations reflecting changes in their risk exposure. During 2019-2020, Aditya Birla Sun Life Income Fund exhibited the highest beta at 1.0970, indicating a higher sensitivity to market fluctuations. Kotak Bond Fund followed with a beta of 0.9545, while SBI Magnum Income Fund had a relatively higher beta of 0.8516. ICICI Prudential Bond Fund, HDFC Income Fund, and Nippon India Income Fund had more moderate betas, resulting in 0.8742, 0.7883 and 0.9211, respectively, and indicated a balanced risk exposure. During 2020-2021, ICICI Prudential Bond Fund and HDFC Income Fund maintained relatively stable beta values of 0.7961 and 0.7942, respectively. SBI Magnum Income Fund’s beta decreased slightly to 0.7584, while Nippon India Income Fund’s beta increased to 1.0141, reflecting an increase in risk sensitivity.

Most debt funds experienced a decline in their beta values

during 2021-2022. SBI Magnum Income Fund’s beta dropped significantly to 0.5256, indicating reduced market exposure. ICICI Prudential Bond Fund, HDFC Income Fund, and Nippon India Income Fund showed lower betas, with Nippon India Income Fund at 0.6495. Kotak Bond Fund maintained a steady beta of 0.7019, and Aditya Birla Sun Life Income Fund’s beta decreased slightly to 0.6429. For the year 2022-2023, a further decline in risk sensitivity was noted for several funds. SBI Magnum Income Fund’s beta increased slightly to 0.7645, while ICICI Prudential Bond Fund’s beta fell to 0.6840. HDFC Income Fund’s beta continued to decrease to 0.7857, and Nippon India Income Fund’s beta dropped to 0.4288, the lowest among all funds. Kotak Bond Fund remained stable at 0.6837, and Aditya Birla Sun Life Income Fund’s beta decreased to 0.6378.

The financial year 2023-2024 showed a general increase in beta values across selected debt schemes. HDFC Income Fund’s beta increased to 1.2527, indicating a significant rise in market sensitivity and risk exposure. ICICI Prudential Bond Fund’s beta increased to 0.9815, while Nippon India Income Fund’s beta increased to 1.1905. Kotak Bond Fund and Aditya Birla Sun Life Income Fund also increased, reaching 1.1475 and 1.1724, respectively. SBI Magnum

Income Fund’s beta was increased to 0.7827. The analysis of beta values across the years reveals that HDFC Income Fund showed the highest increase in risk exposure in 2023-2024. Nippon India Income Fund showed lower volatility in 2022-2023, making it a stable choice for risk-averse investors. Based on the overall results the

Nippon India Income Fund is the best debt scheme for investors, prioritising stability and lower market sensitivity. The HDFC Income Fund suits investors willing to take on higher risks for potentially higher returns through debt funds.

Table 4: Treynor Ratio for the financial year 2019-2020 to 2023-2024

Debt Scheme	Treynor Ratio				
	2023-2024	2022-2023	2021-2022	2020-2021	2019-2020
SBI Magnum Income Fund	0.0059	-0.0333	0.0005	0.0663	0.0824
ICICI Prudential Bond Fund	0.0113	-0.0313	-0.0083	0.0581	0.0620
HDFC Income Fund	0.0031	-0.0567	-0.0151	0.0314	0.0489
Nippon India Income Fund	0.0039	-0.0452	-0.0216	0.0232	0.0766
Kotak Bond Fund	0.0038	-0.0562	0.0040	0.0390	0.0582
Aditya Birla Sun Life Income Fund	0.0002	-0.0635	0.0231	0.0520	0.0494

Source: Compiled using secondary data

The Treynor ratio measures a fund’s risk-adjusted performance, indicating how much return is generated per unit of systematic risk (beta). A positive Treynor ratio reflects better performance, while a negative ratio suggests underperformance relative to the risk taken. The Treynor ratios of various debt schemes from 2019-2020 to 2023-2024 revealed variations in their risk-adjusted returns. In 2019-2020, the SBI Magnum Income Fund showed the highest Treynor ratio at 0.0824, followed by the Nippon India Income Fund at 0.0766, indicating strong risk-adjusted performance for these funds. ICICI Prudential Bond Fund and Kotak Bond Fund revealed moderate ratios of 0.0620 and 0.0582, respectively. Aditya Birla Sun Life Income Fund and HDFC Income Fund had relatively lower ratios of 0.0494 and 0.0489. In 2020-2021, most funds experienced a decrease in their Treynor ratios. SBI Magnum Income Fund’s ratio decreased to 0.0663, while ICICI Prudential Bond Fund and Kotak Bond Fund recorded values of 0.0581 and 0.0390, respectively. Aditya Birla Sun Life Income Fund improved slightly to 0.0520, showing better risk-adjusted returns than the previous year. Nippon India Income Fund’s ratio dropped significantly to 0.0232, and HDFC Income Fund recorded the lowest ratio at 0.0314. During 2021-2022, negative Treynor ratios were observed for the selected debt funds, indicating underperformance. Aditya Birla Sun Life Income Fund recorded a favourable ratio of 0.0231, the highest among the funds, while Kotak Bond Fund followed with 0.0040. SBI Magnum Income Fund’s ratio dropped to 0.0005, reflecting a significant

decline. ICICI Prudential Bond Fund, HDFC Income Fund, and Nippon India Income Fund exhibited negative ratios of -0.0083, -0.0151, and -0.0216, respectively, indicating poor risk-adjusted returns. In 2022-2023, further declines in performance were noted, with all funds recording negative Treynor ratios. Aditya Birla Sun Life Income Fund had the lowest value of -0.0635, while HDFC Income Fund and Kotak Bond Fund showed ratios of -0.0567 and -0.0562, respectively. Nippon India Income Fund’s ratio dropped to -0.0452, while SBI Magnum Income Fund and ICICI Prudential Bond Fund recorded values of -0.0333 and -0.0313, respectively, reflecting a challenging year for risk-adjusted returns.

The financial year 2023-2024 observed a recovery across debt schemes with Treynor ratios returning to positive values. ICICI Prudential Bond Fund exhibited the highest ratio at 0.0113, indicating superior risk-adjusted performance. SBI Magnum Income Fund followed with a ratio of 0.0059, while Nippon India Income Fund, Kotak Bond Fund, and HDFC Income Fund exhibited similar ratios of 0.0039, 0.0038, and 0.0031, respectively. Aditya Birla Sun Life Income Fund recorded the lowest positive ratio at 0.0002. Over the five years, the SBI Magnum Income Fund has demonstrated the most consistent performance, achieving relatively higher Treynor ratios in multiple years. Investors prioritising steady risk-adjusted returns find the SBI Magnum Income Fund to be a more favourable fund based on the Treynor ratio.

Table 5: Sharpe Ratio for the financial year 2019-2020 to 2023-2024

Debt Scheme	Sharpe Ratio				
	2023-2024	2022-2023	2021-2022	2020-2021	2019-2020
SBI Magnum Income Fund	0.1341	-1.0458	-0.0365	1.7354	1.5440
ICICI Prudential Bond Fund	0.4729	-1.0083	-0.4343	1.5340	1.1464
HDFC Income Fund	0.0505	-1.8021	-0.7805	0.8322	0.9548
Nippon India Income Fund	0.0883	-1.0662	-0.8932	0.6113	1.4156
Kotak Bond Fund	0.0788	-1.7226	0.1172	1.0236	1.1365
Aditya Birla Sun Life Income Fund	-0.1155	-1.9368	0.9943	1.3653	0.9617

Source: Compiled using secondary data

The Sharpe ratio is a key measure to assess a fund’s risk-adjusted return. A higher Sharpe ratio indicates better performance relative to the risk taken, while a negative ratio

suggests that the fund’s return is insufficient to justify its risk. The Sharpe ratios of various debt funds from 2019-2020 to 2023-2024 resulted from the changes in risk-

adjusted returns. In the financial year 2019-2020, the SBI Magnum Income Fund demonstrated the highest Sharpe ratio at 1.5440, indicating strong risk-adjusted performance. ICICI Prudential Bond Fund followed with a ratio of 1.1464, while Nippon India Income Fund also performed well with a Sharpe ratio of 1.4156. Kotak Bond Fund and Aditya Birla Sun Life Income Fund had moderate ratios of 1.1365 and 0.9617, respectively. HDFC Income Fund recorded the lowest positive Sharpe ratio at 0.9548, suggesting lower but positive returns for the risk taken. During the financial year 2020-2021, the Sharpe ratios of most funds decreased, and the SBI Magnum Income Fund maintained a high ratio of 1.7354, reflecting the best risk-adjusted performance of the year. ICICI Prudential Bond Fund recorded a ratio of 1.5340, while Kotak Bond Fund's ratio fell to 1.0236. Nippon India Income Fund, HDFC Income Fund, and Aditya Birla Sun Life Income Fund showed lower ratios of 0.6113, 0.8322, and 1.3653, respectively. Overall, this period showed strong performance for most funds, but a decline in risk-adjusted returns was observed for several funds.

The Sharpe ratios for the financial year 2021-2022 declined across most schemes, with ICICI Prudential Bond Fund and Nippon India Income Fund experiencing negative ratios of -0.4343 and -0.8932, respectively. HDFC Income Fund followed with negative ratios of -0.7805. Kotak Bond Fund and Aditya Birla Sun Life Income Fund showed a favourable ratio of 0.1172 and 0.9943, respectively. The SBI Magnum Income Fund recorded an unfavourable ratio

of -0.0365, indicating underperformance compared to the previous year. In the Financial year 2022-2023, a significant decline in risk-adjusted returns was noted for most funds. Aditya Birla Sun Life Income Fund had the lowest Sharpe ratio at -1.9368, indicating poor risk-adjusted performance. HDFC Income Fund and Kotak Bond Fund followed with ratios of -1.8021 and -1.7226, respectively, reflecting extremely low returns relative to their risk. ICICI Prudential Bond Fund and Nippon India Income Fund also faced negative ratios of -1.0083 and -1.0662, respectively. SBI Magnum Income Fund recorded an unfavourable ratio of -1.0458, highlighting overall underperformance across the debt schemes.

A recovery in risk-adjusted returns was observed during 2023-2024, with most funds showing positive Sharpe ratios. ICICI Prudential Bond Fund performed the best with a ratio of 0.4729. SBI Magnum Income Fund also recorded a favourable ratio of 0.1341, reflecting a recovery from previous years. Nippon India Income Fund followed with a ratio of 0.0883, while Kotak Bond Fund and HDFC Income Fund showed more modest improvements, with ratios of 0.0788 and 0.0505, respectively. Aditya Birla Sun Life Income Fund faced difficulties, with a negative Sharpe ratio of -0.1155. The analysis of Sharpe ratios reveals that ICICI Prudential Bond Fund is recommended for investors seeking consistent performance and risk-adjusted returns, followed by SBI Magnum Income Fund, as these funds demonstrated consistent recovery during the study period.

Table 6: Jensen's Alpha for the financial year 2019-2020 to 2023-2024

Debt Scheme	Jensen's Alpha				
	2023-2024	2022-2023	2021-2022	2020-2021	2019-2020
SBI Magnum Income Fund	-0.21%	0.22%	-0.43%	1.22%	0.61%
ICICI Prudential Bond Fund	0.26%	0.34%	-1.51%	0.63%	-1.16%
HDFC Income Fund	-0.70%	-1.61%	-1.91%	-1.49%	-2.08%
Nippon India Income Fund	-0.57%	-0.39%	-1.98%	-2.74%	0.13%
Kotak Bond Fund	-0.56%	-1.37%	-0.34%	-1.06%	-1.63%
Aditya Birla Sun Life Income Fund	-0.98%	-1.74%	0.92%	0.19%	-2.83%

Source: Compiled using secondary data

Jensen's Alpha is a performance metric that measures a fund's excess return relative to its expected return based on its risk profile. A positive alpha indicates that the fund has outperformed its expected return, while a negative alpha suggests underperformance. Jensen's Alpha values of different debt funds during the financial years 2019-2020 to 2023-2024 highlighted the changes in their excess returns. In the financial year 2019-2020, ICICI Prudential Bond Fund exhibited the lowest negative Jensen's Alpha at -1.16%, indicating that the fund underperformed relative to its expected return. HDFC Income Fund and Kotak Bond Fund followed with negative alphas of -2.08% and -1.63%, respectively, indicating a substantial underperformance. SBI Magnum Income Fund, Nippon India Income Fund and Aditya Birla Sun Life Income Fund resulted in Alpha values of 0.61%, 0.13% and -2.83%, respectively.

A recovery in Jensen's Alpha values was observed for debt funds during the financial year 2020-2021. SBI Magnum Income Fund recorded the highest positive Alpha of 1.22%, indicating superior performance compared to its expected return. ICICI Prudential Bond Fund had a positive alpha of

0.63%, reflecting a moderate outperformance. Aditya Birla Sun Life Income Fund and Kotak Bond Fund showed modest positive alphas of 0.19% and -1.06%, respectively. HDFC Income Fund and Nippon India Income Fund experienced negative alphas of -1.49% and -2.74%, respectively, suggesting that they underperformed relative to their risk.

During the financial year 2021-2022, most debt funds displayed negative Jensen's Alpha, indicating underperformance. ICICI Prudential Bond Fund had a negative Alpha of -1.51%, while HDFC Income Fund showed a negative alpha of -1.91%, resulting in a significant underperformance. Kotak Bond Fund's Alpha decreased to -0.34%, and Nippon India Income Fund's Alpha was valued at -1.98%, reflecting poor performance compared to the risk. SBI Magnum Income Fund had a lesser negative alpha of -0.43% and Aditya Birla Sun Life Income Fund achieved a positive alpha of 0.92%, indicating a modest outperformance.

For the financial year 2022-2023, underperformance persisted across debt schemes. Aditya Birla Sun Life

Income Fund showed poor performance with a negative alpha of -1.74%. HDFC Income Fund and Kotak Bond Fund had alphas of -1.61% and -1.37%, respectively, indicating poor performance. ICICI Prudential Bond Fund, Nippon India Income Fund, and SBI Magnum Income Fund recorded alpha values as 0.34%, -0.39%, and 0.22%, respectively, with minimum differences in performance. During the financial year 2023-2024, most funds experienced negative Jensen's Alpha values. ICICI Prudential Bond Fund achieved a positive Alpha at 0.26%, indicating modest outperformance. SBI Magnum Income Fund and Kotak Bond Fund recorded negative alphas of -0.21% and -0.56%, respectively. Nippon India Income Fund showed a negative alpha of -0.57%, while Aditya Birla Sun Life Income Fund and HDFC Income Fund had negative alphas of -0.98% and -0.70%, respectively. Based on the five-year performance measure of Jensen's Alpha, ICICI Prudential Bond Fund stood out for its relatively consistent outperformance compared to its risk, making it the preferred choice for investors seeking a positive risk-adjusted return over the long term.

Conclusion

The selected debt mutual fund schemes' performance analysis highlights the varying returns, risk exposure and risk-adjusted performance over the past five years. SBI Magnum Income Fund emerged as the top performer in annualised returns with a slight underperformance compared to its benchmark. While HDFC Income Fund showed the lowest returns its increased beta value in 2023-2024 indicates a higher sensitivity to market fluctuations making it a more volatile investment choice. Nippon India Income Fund demonstrated relatively low beta values and steady risk-adjusted returns, positioning it as a stable option for risk-averse investors.

Treynor, Sharpe and Jensen's Alpha ratios revealed different fund results regarding risk-adjusted performance. ICICI Prudential Bond Fund, despite fluctuating performances, consistently exhibited superior risk-adjusted returns, especially in the most recent year (2023-2024), earning it the highest Treynor ratio. SBI Magnum Income Fund, with its consistent performance across various measures, particularly in Treynor and Sharpe ratios, is identified as an attractive option for investors seeking steady returns. Investors seeking stable and less volatile returns will find Nippon India Income Fund a more valuable investment. Investors willing to accept higher risks for potentially higher rewards under the debt scheme category should consider the HDFC Income Fund and ICICI Prudential Bond Fund. SBI Magnum Income Fund is the most balanced choice offering competitive returns and consistent risk-adjusted performance.

Future Studies

Further research on debt schemes could explore several areas to enhance understanding of their performance and risk-return dynamics. Studies could examine the impact of interest rate fluctuations, economic cycles and inflation on debt fund returns. The behavioural patterns of fixed-income investors during periods of market volatility need further research. There is also scope for developing specialised educational frameworks and training programs that address

the complexities of debt investing, including yield curve analysis, credit rating assessments and interest rate mechanisms. Emerging areas, such as the influence of ESG factors and the application of technological tools in debt fund selection, need future research.

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