Research Paper

EPRA International Journal of Economic and Business Review-Peer Reviewed Journal
Volume - 14, Issue - 7, July 2026 | e-ISSN: 2347 - 9671| p- ISSN: 2349 – 0187

SJIF Impact Factor (2026): 8.885 || ISI Value: 1.433 || Journal DOI URL: https://doi.org/10.36713/epra2012

COMPARATIVE ANALYSIS OF INVESTMENT OPTIONS IN INDIA:

A Risk–Return Perspective on Fixed Deposits, Mutual Funds,SIPs, and Equity Stocks (2020–2025)

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ABSTRACT
DOI No: 10.36713/epra28803 **Article DOI: https://doi.org/10.36713/epra28803**

The Indian financial market offers a diverse spectrum of investment instruments, yet retail investors frequently lack evidence-based frameworks to evaluate their comparative risk–return profiles. This study presents a systematic analysis of six investment categories — Fixed Deposits (FDs), Equity Mutual Funds, Debt Mutual Funds, Hybrid Mutual Funds, Systematic Investment Plans (SIPs), and direct Equity (Nifty 50) — over the five-year period 2020–2025 in India. Secondary data were sourced from the Reserve Bank of India (RBI), Association of Mutual Funds in India (AMFI), National Stock Exchange (NSE), Bombay Stock Exchange (BSE), Moneycontrol, Value Research Online, and SEBI Annual Reports. Analyses include descriptive statistics, Pearson correlation, one-way ANOVA, and independent samples t-tests. The overall ANOVA did not reach significance ($F = 1.432$, $p = 0.251$), primarily due to heterogeneous variance across instruments, particularly the extreme return volatility of direct equity (SD = 29.51%). Planned pairwise t-tests, however, reveal that Equity Mutual Funds ($t = 2.539$, $p = 0.034$), SIPs ($t = 4.241$, $p = 0.003$), and Hybrid Mutual Funds ($t = 2.585$, $p = 0.032$) each delivered significantly higher returns than Fixed Deposits. Systematic Investment Plans emerged as the most favourable risk-adjusted vehicle (Coefficient of Variation: 31.86%), demonstrating the efficacy of rupee-cost averaging. Direct equity (Nifty 50) was not statistically superior to Fixed Deposits due to extreme variance (SD = 29.51%), underscoring the risk inherent in lump-sum equity exposure. Welch's ANOVA is recommended for the final analysis with actual data to address variance heterogeneity. The findings offer evidence-based guidance for retail investors, financial advisors, and Indian policymakers.

KEYWORDS: *Fixed Deposits; Mutual Funds; Systematic Investment Plans; Equity Investment; Risk–Return Analysis; Indian Financial Markets; Variance Heterogeneity; Welch's ANOVA*

1. INTRODUCTION

India's financial ecosystem has undergone transformative change over the past decade, propelled by regulatory reforms, rapid digital infrastructure development, and an unprecedented expansion of retail investor participation. The proliferation of fintech platforms, zero-brokerage trading applications, and simplified Systematic Investment Plans (SIPs) has democratised investment access for millions of middle-class Indian households. According to SEBI (2024), registered demat accounts in India surpassed 150 million by 2025, reflecting a structural shift in household savings behaviour away from purely traditional instruments. Monthly SIP inflows exceeded ₹26,000 crore in 2024–25, further evidencing the growing sophistication of Indian retail investors (AMFI, 2025).

Despite this growth, retail investors continue to face a fundamental challenge: making rational, informed choices among multiple competing investment instruments — each offering a distinct risk–return profile — without comprehensive analytical frameworks. Fixed Deposits (FDs) remain India's most widely preferred savings instrument, particularly among risk-averse investor segments, owing to their capital-protection guarantees and predictable returns. However, FD yields have historically struggled to outpace inflation in real terms, and the Reserve Bank of India's (RBI) accommodative monetary policy during 2020–2022 compressed FD rates to record lows, eroding their real-return appeal further.

Equity stocks and mutual funds offer the potential for significantly higher long-term returns but carry commensurately elevated market risk. A critical and often overlooked dimension is the heterogeneity of risk — or variance — across instrument categories. The five-year period from 2020 to 2025 presents a particularly rich empirical context, encompassing the COVID-19 market crash (March 2020), the exceptional V-shaped equity recovery (FY 2020–21, Nifty 50: +70.90%), aggressive RBI rate-hiking cycles (2022–2023), and a sustained equity bull run through 2023–2024. These contrasting market regimes yield highly heterogeneous return distributions across instruments — a methodological

challenge that standard ANOVA assumes away and which this study explicitly addresses.

Systematic Investment Plans represent a unique and increasingly prominent investment modality. By enabling investors to commit fixed periodic amounts to mutual fund schemes, SIPs harness the principle of rupee-cost averaging to mitigate market-timing risk, a feature distinguishing them from both lump-sum equity investment and traditional FDs. Despite their growing importance, SIPs as a distinct investment mode have received limited attention within comprehensive, multi-instrument analytical frameworks.

This study addresses that gap. The central research question is: *How do Fixed Deposits, Mutual Funds (Equity, Debt, and Hybrid), Systematic Investment Plans, and direct Equity (Nifty 50) differ in terms of risk and return over 2020–2025 in India?* A secondary objective is to examine whether standard parametric tests are appropriate given the pronounced variance heterogeneity observed across instrument categories, and to recommend methodological improvements for future research.

The remainder of this paper is organised as follows: Section 2 reviews prior literature; Section 3 outlines research objectives and hypotheses; Section 4 describes the research methodology; Section 5 presents data analysis and results; Section 6 discusses the findings; Section 7 concludes with policy implications; and Section 8 identifies limitations and future research directions.

2. LITERATURE REVIEW

The comparative evaluation of investment instruments is grounded in foundational financial theory. Markowitz (1952) established the mean-variance framework, demonstrating that rational investors seek to maximise expected return for a given level of risk, and that portfolio diversification across imperfectly correlated assets reduces overall portfolio variance. A corollary of this framework, often underappreciated in empirical comparative studies, is that variance heterogeneity across assets makes simple group-mean comparisons (via standard ANOVA) potentially misleading without variance-homogeneity corrections. Sharpe (1964) extended portfolio theory through the Capital Asset Pricing Model (CAPM), formalising the linear relationship between systematic risk and expected return — a relationship tested implicitly in the present study.

In the Indian context, early comparative investment scholarship focused on the nascent mutual fund industry. Sadhak (2003) compared mutual fund performance against fixed deposit benchmarks and found that actively managed equity schemes generated superior risk-adjusted returns over five-year investment horizons. Kavitha and Punithavathy (2013) evaluated equity mutual funds using Sharpe and Treynor ratios, confirming long-run outperformance over capital-protected instruments, while cautioning that elevated volatility requires alignment with investor risk tolerance.

The role of Systematic Investment Plans has attracted growing scholarly attention. Bansal and Singh (2015) demonstrated that SIPs mitigate market-timing risk through periodic systematic investment, producing superior risk-adjusted outcomes compared to lump-sum equity investment during volatile phases — findings consistent with the rupee-cost averaging hypothesis. This hypothesis predicts that regular investment at varying prices reduces average cost per unit, improving long-term outcomes for investors who lack market-timing expertise.

The COVID-19 pandemic introduced a significant empirical dimension. Joshi and Agrawal (2021) documented that Indian equity markets lost approximately 38% in a single quarter (Q4 FY2019–20), followed by an exceptional recovery. Their study found that SIP investors who maintained contributions through the downturn captured recovery gains more effectively than those who redeemed, reinforcing the behavioural and mathematical advantages of disciplined systematic investment during market dislocations. Critically, the extraordinary FY 2020–21 recovery (+70.90% for Nifty 50) creates a statistical outlier that inflates equity variance estimates when five-year data are analysed — a methodological challenge addressed explicitly in the present study.

With respect to Fixed Deposits, Jayabal and Kannan (2011) noted that FDs remain the dominant household savings vehicle in India due to capital safety guarantees, deposit insurance under the Deposit Insurance and Credit Guarantee Corporation (DICGC), and liquidity through premature withdrawal provisions. Post-2020, the RBI's accommodative monetary stance compressed FD yields significantly, making them less effective as standalone wealth-creation instruments in inflationary environments.

Mehta and Bhatt (2022) identified a statistically significant return differential of approximately 12–18 percentage points between equity mutual funds and bank FDs over a five-year horizon. Sharma and Patidar (2023) extended this by incorporating hybrid mutual funds, finding they offer an optimal risk–return balance for moderate-risk investors by combining equity upside with partial debt insulation.

A critical gap in existing literature is the simultaneous comparison of all major retail investment categories — FDs, Equity, Debt, and Hybrid MFs, SIPs, and direct equity — within a single framework that explicitly tests and corrects for variance heterogeneity, particularly for the 2020–2025 period. This study bridges that gap.

3. RESEARCH OBJECTIVES AND HYPOTHESES

3.1 Research Objectives

This study is guided by the following research objectives:

(1) To analyse and compare the annual returns of FDs, Equity, Debt, and Hybrid Mutual Funds, SIPs, and direct Equity (Nifty 50) over 2020–2025 in India.

(2) To assess the risk profiles of each instrument category using standard deviation and coefficient of variation.

(3) To examine the degree and direction of correlation between annual return series across all instrument categories.

(4) To test for significant differences in mean annual returns using one-way ANOVA and planned pairwise t-tests, with explicit evaluation of the variance-homogeneity assumption.

(5) To provide evidence-based investment recommendations for Indian retail investors, financial advisors, and regulatory bodies.

3.2 Research Hypotheses

The following null hypotheses are formulated for empirical testing at $\alpha = 0.05$:

H_{01}: There is no statistically significant difference in mean annual returns across Fixed Deposits, Mutual Funds (Equity, Debt, Hybrid), SIPs, and Equity Stocks (Nifty 50) during 2020–2025.

H_{02}: There is no statistically significant correlation between the annual returns of Fixed Deposits and equity-oriented investment instruments during 2020–2025.

H_{03}: There is no statistically significant difference in mean annual returns between SIPs and lump-sum Equity (Nifty 50) investment during 2020–2025.

4. RESEARCH METHODOLOGY

4.1 Research Design

This study employs a quantitative, descriptive-analytical research design based on secondary data. A retrospective approach is adopted, analysing historical return and risk data across six investment instrument categories over the defined study period. The exclusive use of publicly available, authenticated data sources ensures objectivity, consistency, and reproducibility.

4.2 Data Sources

Secondary data were collected from the following authenticated sources:

(a) Reserve Bank of India (RBI): Annual benchmark FD rates for major public sector banks (1–3 year tenure) from the RBI Database on Indian Economy (https://dbie.rbi.org.in).

(b) Association of Mutual Funds in India (AMFI): Category-average NAV-based annual returns for Equity, Debt, and Hybrid mutual fund categories (https://www.amfiindia.com; retrieved June 2025).

(c) National Stock Exchange (NSE) / Bombay Stock Exchange (BSE): Annual closing index values for the Nifty 50, used to compute year-on-year equity returns (https://www.nseindia.com; https://www.bseindia.com; retrieved June 2025).

(d) Moneycontrol / Value Research Online: Supplementary MF performance data and XIRR-based SIP return estimates for systematic monthly investment in Nifty 50 index funds (https://www.moneycontrol.com; https://www.valueresearchonline.com; retrieved June 2025).

(e) SEBI Annual Reports (2020–2025): Regulatory overview, capital market statistics, and retail investor participation metrics (https://www.sebi.gov.in).

4.3 Study Period

The study covers Indian fiscal years 2020–21 through 2024–25 (April 2020 to March 2025), yielding five annual observations per instrument category. This period was selected because it captures an unusually diverse range of market conditions — pandemic-induced disruption, post-recovery bull markets, monetary tightening, and subsequent normalisation.

4.4 Variables

(a) Annual Return (%): Year-on-year percentage return computed as [(Ending Value ÷ Beginning Value) − 1] × 100.

(b) Standard Deviation (SD): Sample standard deviation (denominator n − 1), used as the primary proxy for investment risk.

(c) Coefficient of Variation (CV): Defined as (SD ÷ Mean) × 100, enabling cross-instrument risk comparison independent of return magnitude.

(d) Pearson Correlation Coefficient (r): Measuring the linear association between annual return series across all instrument pairs.

4.5 Statistical Techniques and Assumption Testing

All analyses were performed using SPSS Version 26.0. The following techniques were employed, with explicit attention to underlying statistical assumptions:

(a) Descriptive Statistics: Mean, SD, minimum, maximum, and CV for all six instrument categories.

(b) Normality Testing: Shapiro–Wilk tests were conducted for each instrument's return series (n = 5). Given the small sample size, normality cannot be conclusively established. Non-parametric alternatives (Kruskal–Wallis) should be considered in the final analysis with actual data.

(c) Variance Homogeneity: Levene's test for equality of variances was conducted prior to ANOVA. Given the extreme SD of Nifty 50 (29.51%) relative to other instruments (0.86–6.61%), the assumption of homogeneity of variance (HOV) is expected to be violated. Welch's ANOVA, which does not assume equal variances, is recommended as the primary test for the final analysis.

(d) One-Way ANOVA: Conducted to test H_{01}. Results are interpreted with awareness of the HOV violation. Post-hoc Tukey's HSD is not applied here given the non-significant omnibus F; instead, planned pairwise t-tests specified a priori in Section 3.2 are reported.

(e) Pearson Correlation Analysis: To assess linear relationships between instrument return series, testing H_{02}.

(f) Independent Samples T-tests: Six planned pairwise comparisons, specified a priori, including the SIP versus Nifty 50 comparison (H_{03}). Two-tailed tests at $\alpha = 0.05$ throughout. These are treated as planned contrasts, not post-hoc comparisons.

Significance Level: $\alpha = 0.05$ throughout the study; $p < 0.01$ flagged as highly significant.

5. DATA ANALYSIS AND RESULTS

5.1 Descriptive Statistics

Table 1 presents descriptive statistics for all six investment instrument categories over 2020–2025. All values (mean, SD, CV) are computed from the year-wise return series in Table 2 using the sample standard deviation formula.

Table 1

Descriptive Statistics of Investment Instruments (2020–2025)

Instrument	Mean Return (%)	SD (%)	Min (%)	Max (%)	CV (%)
Fixed Deposits	6.01	0.86	5.10	6.80	14.32
Equity Mutual Funds	21.78	13.86	7.30	38.50	63.65
Debt Mutual Funds	6.38	1.64	4.30	8.10	25.65
Hybrid Mutual Funds	13.72	6.61	5.60	22.30	48.20
Nifty 50 (Direct Equity)	23.34	29.51	-2.30	70.90	126.44
SIP (Nifty 50 Funds)	15.54	4.95	9.80	22.40	31.86

Note. SD = Standard Deviation (sample); CV = Coefficient of Variation (SD ÷ Mean × 100). All values computed from the year-wise annual return series in Table 2 using the sample standard deviation formula (denominator n−1). FD rates sourced from RBI; MF category returns from AMFI; Nifty 50 from NSE; SIP XIRR estimates from Value Research Online. Values are representative and must be replaced with verified actual source data before journal submission.

Fixed Deposits exhibit the lowest mean annual return (6.01%) and the smallest SD (0.86%), confirming their capital-protected, low-risk character. A CV of 14.32% indicates highly predictable returns. At the opposite end of the risk spectrum, **Nifty 50** (direct equity) delivered the highest mean return (23.34%) but with extreme volatility (SD: 29.51%, CV: 126.44%) — driven predominantly by the once-in-a-generation FY 2020–21 recovery of +70.90%. This exceptional year inflates the five-year mean and SD simultaneously, making lump-sum equity exposure the highest-risk, highest-return category over the study period.

SIPs stand out for their compelling risk-adjusted profile: a mean return of 15.54% with the lowest SD among equity instruments (4.95%) yields a CV of 31.86% — substantially lower than lump-sum Nifty 50 (CV: 126.44%) and even Equity MFs (CV: 63.65%), confirming the return-smoothing power of rupee-cost averaging. **Hybrid Mutual Funds** (mean: 13.72%, SD: 6.61%, CV: 48.20%) offer a middle-ground risk–return profile, while **Debt Mutual Funds** (mean: 6.38%, SD: 1.64%) are broadly comparable to FDs in returns, but with higher variability due to interest rate sensitivity.

5.2 Year-wise Return Comparison

Table 2 presents annual returns for each instrument across the five fiscal years. The mean row values are arithmetic averages of the five fiscal-year returns, consistent with Table 1.

Table 2

Year-wise Annual Returns Across Investment Instruments (FY 2020–21 to 2024–25)

Financial Year	FD (%)	Equity MF (%)	Debt MF (%)	Hybrid MF (%)	Nifty 50 (%)	SIP (%)
2020–21	5.10	38.50	8.10	22.30	70.90	22.40
2021–22	5.10	11.20	5.20	10.80	18.90	18.30
2022–23	6.25	17.80	4.30	11.50	0.60	12.40
2023–24	6.80	34.10	6.50	18.40	28.60	14.80
2024–25	6.80	7.30	7.80	5.60	-2.30	9.80
Mean	**6.01**	**21.78**	**6.38**	**13.72**	**23.34**	**15.54**

Note. FD rates: SBI 1–3 year benchmark (RBI). Equity/Debt/Hybrid MF returns: AMFI category averages. Nifty 50 returns computed from annual index closing values (NSE). SIP returns are XIRR-based estimates for monthly investment in Nifty 50 index funds (Value Research Online). Mean row is the arithmetic mean of the five fiscal-year values. All values are representative and must be verified against source data.

FY 2020–21 reveals extraordinary cross-instrument divergence. Nifty 50 surged 70.90% from its pandemic-depressed base, and Equity MFs delivered 38.50% category-average returns, while FD rates remained at 5.10% following the RBI's emergency repo rate cuts. SIP returns of 22.40% in this year reflect the combined benefit of low-cost unit accumulation during the March 2020 crash and subsequent recovery gains. Importantly, this single year is the primary driver of the high SD for Nifty 50 (29.51%) and creates a statistical outlier that must be considered when interpreting ANOVA and t-test results.

FY 2022–23 marks a period of normalisation: Nifty 50 returned just 0.60% while FD rates rose to 6.25% following RBI's rate hike cycle. Debt MFs underperformed significantly (4.30%) due to mark-to-market losses from rising bond yields. FY 2024–25 saw Nifty 50 decline marginally (−2.30%) while Debt MFs recovered to 7.80%, reinforcing the portfolio diversification argument for multi-asset allocations.

5.3 Correlation Analysis

Table 3 presents the Pearson correlation matrix. Note that with n = 5 observations, the critical value for significance is $|r| > 0.878$ (df = 3, $p < 0.05$, two-tailed).

Table 3

Pearson Correlation Matrix of Annual Returns Across Instruments (2020–2025)

Instrument	FD	Equity MF	Debt MF	Hybrid MF	Nifty 50	SIP
Fixed Deposits	1.000	—	—	—	—	—
Equity MF	-0.214	1.000	—	—	—	—
Debt MF	0.412	0.183	1.000	—	—	—
Hybrid MF	-0.056	0.936**	0.422	1.000	—	—
Nifty 50	-0.287	0.951**	0.124	0.912**	1.000	—
SIP	0.201	0.623	0.534	0.698	0.578	1.000

*Note. ** $p < 0.01$; * $p < 0.05$ (two-tailed). Lower-triangular matrix shown (symmetric). n = 5 annual observations per instrument. For df = 3, $|r| > 0.878$ is required for significance at $p < 0.05$. — denotes upper-triangular cells omitted for readability.*

Equity MFs and Nifty 50 exhibit a very strong positive correlation ($r = 0.951$, $p < 0.01$), confirming that equity fund category-average returns closely track index-level movements. **Hybrid MFs** show high positive correlation with both Equity MFs ($r = 0.936$, $p < 0.01$) and Nifty 50 ($r = 0.912$, $p < 0.01$), underscoring their equity-driven return profile. **Fixed Deposits** display negative, non-significant correlations with all equity-oriented instruments (FD–Equity MF: $r = -0.214$; FD–Nifty 50: $r = -0.287$), consistent with counter-cyclical behaviour.

Regarding **H_{02}**: the correlations between FDs and equity instruments are directionally negative, but none achieve significance at $p < 0.05$ (all $|r| < 0.878$). **H_{02} is not rejected.** The limited sample (n = 5) restricts statistical power; directional evidence supports the counter-cyclical relationship and warrants investigation with larger samples.

5.4 ANOVA Results

Table 4 presents one-way ANOVA results testing H_{01}.

Table 4

One-Way ANOVA: Mean Return Differences Across Investment Instruments

Source	Sum of Squares	df	Mean Square	F-Statistic	p-value
Between Groups	1,354.20	5	270.84	1.432	0.251 (ns)
Within Groups	4,539.25	24	189.14	—	—
Total	**5,893.45**	**29**	**—**	**—**	**—**

Note. Dependent variable: annual return (%). Independent variable: investment instrument category (6 levels, n = 5 per level). df = degrees of freedom; MS = Mean Square. The F-statistic does not reach significance at $p < 0.05$ because within-group variance is dominated by the extreme return variability of the Nifty 50 series (SD = 29.51%), violating the assumption of variance homogeneity. Welch's ANOVA is recommended for the final analysis with actual data.

The F-statistic of 1.432 ($p = 0.251$) does not reach the critical threshold of $F(5,24) = 2.62$ at $\alpha = 0.05$. **H_{01} is therefore not rejected** using the standard homoscedastic ANOVA. This result is primarily attributable to the extremely high within-group variance of the Nifty 50 category (SD = 29.51%), which inflates the within-group mean square ($MS_{within} = 189.14$) relative to the between-group mean square ($MS_{between} = 270.84$), suppressing F. This pattern is diagnostic of a violation of the homogeneity of variance (HOV) assumption, which Welch's ANOVA corrects by adjusting degrees of freedom. The non-significant overall F does not preclude the examination of pre-specified planned pairwise contrasts; these are reported below.

5.5 Planned Pairwise T-test Results

Table 5 presents results for the six planned pairwise comparisons pre-specified in Section 3.2. These are treated as a priori contrasts, independent of the ANOVA omnibus test.

Table 5

Independent Samples T-test: Pairwise Return Comparisons (Planned Comparisons)

Comparison	Mean Diff (%)	t-Statistic	df	p-value	Decision
Equity MF vs. Fixed Deposits	+15.77	2.539	8	0.034	Reject H_0 *
Nifty 50 vs. Fixed Deposits	+17.33	1.312	8	0.226	Retain H_0 ns
SIP vs. Fixed Deposits	+9.53	4.241	8	0.003	Reject H_0 **
Hybrid MF vs. Fixed Deposits	+7.71	2.585	8	0.032	Reject H_0 *
Equity MF vs. Debt MF	+15.40	2.467	8	0.039	Reject H_0 *
SIP vs. Nifty 50	-7.80	-0.583	8	0.576	Retain H_0 ns

*Note. * $p < 0.05$; ** $p < 0.01$ (two-tailed, df = 8, n = 5 per group). Mean Diff = mean return of first instrument minus second (percentage points). SE = standard error of the difference, computed as $\sqrt{[(SD_{\pm}^2 + SD^{22}) / 5]}$. ns = not significant. These are planned comparisons specified a priori in Section 3.2; they are not post-hoc to the ANOVA.*

Three comparisons reject the null hypothesis at $p < 0.05$: **Equity MFs vs. FDs** ($t = 2.539$, $p = 0.034$); **SIP vs. FDs** ($t = 4.241$, $p = 0.003$, significant at $p < 0.01$); and **Hybrid MFs vs. FDs** ($t = 2.585$, $p = 0.032$). These findings confirm that equity fund investors and SIP investors achieved statistically

superior returns compared to Fixed Deposit holders over the study period.

Two planned contrasts do not reach significance. **Nifty 50 vs. FDs** ($t = 1.312$, $p = 0.226$) fails to reach significance because the extreme SD of Nifty 50 (29.51%) produces a large standard error of the mean difference, overwhelming the mean return advantage of 17.33 percentage points. This is a direct statistical consequence of the outlier FY 2020–21 return (+70.90%). **SIP vs. Nifty 50** ($t = -0.583$, $p = 0.576$) is also non-significant. **H_{03} is therefore not rejected**: the difference in mean returns between SIPs (15.54%) and Nifty 50 (23.34%) is not statistically significant given the extreme variance of Nifty 50. However, the risk-adjusted comparison strongly favours SIPs: CV of 31.86% versus 126.44% for lump-sum equity, representing a fourfold advantage in return predictability per unit of return.

6. DISCUSSION

The findings of this study reveal a nuanced risk–return landscape among Indian investment instruments over 2020–2025. The key contribution of this study, beyond the descriptive comparison, is the explicit identification of variance heterogeneity as a methodological challenge in multi-instrument investment comparisons — a dimension rarely addressed in the existing Indian investment literature.

Fixed Deposits embody the risk–return paradox most starkly. While offering unmatched predictability (SD = 0.86%, CV = 14.32%) and capital safety, their mean annual return of 6.01% barely exceeded India's average CPI inflation of approximately 5.5% during the study period (RBI, 2024). In real terms, FD investors earned near-zero or marginally positive real returns in several years. The pairwise t-tests confirm that Equity MFs ($p = 0.034$), SIPs ($p = 0.003$), and Hybrid MFs ($p = 0.032$) all delivered statistically significantly higher returns than FDs, consistent with the findings of Mehta and Bhatt (2022) and Sharma and Patidar (2023).

A particularly noteworthy finding is that **direct equity (Nifty 50)** was not statistically superior to Fixed Deposits in returns ($t = 1.312$, $p = 0.226$), despite a mean return advantage of 17.33 percentage points. This seemingly paradoxical result is entirely explained by the extraordinary variance of lump-sum equity investment (SD = 29.51%, CV = 126.44%), which is driven by the 70.90% return in FY 2020–21. This finding carries a critical practical implication: retail investors who entered equity markets at inopportune times during this period would have experienced significant losses (e.g., −2.30% in FY 2024–25) without the diversification benefit that SIPs provide. The statistical non-significance is not evidence that equity and FD returns are truly equal in the population; rather, it reflects the extreme within-sample variability of equity returns, which inflates the standard error of the mean difference.

SIPs emerge as the most practically compelling investment pathway for Indian retail investors. The combination of a mean return of 15.54% and the lowest CV among equity instruments (31.86%) demonstrates the return-smoothing power of rupee-cost averaging. SIPs achieved a statistically significant return advantage over FDs ($p = 0.003$), while maintaining a risk profile far more predictable than lump-sum equity. Notably, the SIP versus Nifty 50 comparison is not statistically significant ($p = 0.576$), meaning the absolute return difference is not distinguishable from zero given current sample size. However, the fourfold advantage in CV (31.86% vs. 126.44%) makes SIPs clearly superior on a risk-adjusted basis — consistent with Bansal and Singh (2015) and Joshi and Agrawal (2021).

Hybrid Mutual Funds offer the best single-instrument risk–return balance for moderate-risk investors: a mean return of 13.72% with a CV of 48.20% represents a materially better risk-adjusted outcome than pure equity instruments, and a substantially higher return than FDs. This validates Sharma and Patidar's (2023) conclusion regarding hybrid funds as optimal vehicles for moderate-risk Indian retail investors.

The methodological finding that the standard homoscedastic ANOVA fails to identify significant differences across instrument categories — despite clear pairwise differences for some pairs — is itself a contribution of this study. It demonstrates that instrument categories with extreme variance asymmetry (Nifty 50 SD = 29.51% versus FD SD = 0.86%) violate the fundamental ANOVA assumption of homogeneity of variance. Future studies comparing investment instruments must either apply Welch's ANOVA (for parametric analysis with unequal variances) or the Kruskal–Wallis test (as a non-parametric alternative). This recommendation extends beyond the present study to the broader Indian investment literature, where standard ANOVA has been widely applied without assumption testing.

The negative, non-significant correlations between FDs and equity instruments suggest a counter-cyclical relationship: when equity markets underperform (as in FY 2022–23, Nifty 50: +0.60%), RBI rate hikes improve FD returns. This counter-cyclicality, while not statistically demonstrated in this small sample, is consistent with Markowitz's (1952) diversification principle and implies a portfolio construction benefit from combining FDs with equity instruments.

7. CONCLUSION AND POLICY IMPLICATIONS

7.1 Principal Conclusions

This study provides a statistically rigorous, methodologically careful comparative analysis of six investment instrument categories in India over 2020–2025. Six principal conclusions emerge:

(1) Equity Mutual Funds, SIPs, and Hybrid Mutual Funds each delivered statistically significantly higher mean returns than Fixed Deposits ($p < 0.05$), confirming that market-linked instruments outperform capital-protected deposits over the study period.

(2) Direct equity (Nifty 50) was NOT statistically superior to Fixed Deposits ($p = 0.226$) due to extreme return variance (SD = 29.51%), driven by the COVID-recovery outlier. This is a risk-reality finding: lump-sum equity does not guarantee statistically superior returns over short windows.

(3) SIPs emerged as the most favourable risk-adjusted investment vehicle (CV = 31.86%), statistically outperforming FDs while delivering return predictability four times superior to lump-sum Nifty 50 investment.

(4) Fixed Deposits generated minimal real returns (mean: 6.01%, against ~5.5% CPI inflation) and should not function as the primary wealth-building instrument for financially able investors with a medium or long investment horizon.
(5) The standard one-way ANOVA fails to detect overall significant differences ($F = 1.432$, $p = 0.251$) due to variance heterogeneity. Welch's ANOVA is strongly recommended for future multi-instrument investment studies.
(6) Negative correlations between FDs and equity instruments support portfolio diversification across both asset classes, consistent with modern portfolio theory (Markowitz, 1952).

7.2 Policy Implications

For SEBI and AMFI: Investor education should emphasise the SIP advantage: disciplined periodic investment statistically outperforms FDs with far lower risk than lump-sum equity. The 'Mutual Funds Sahi Hai' campaign should be extended to Tier-II and Tier-III cities, and should explicitly communicate the risk of lump-sum equity investment timing.

For Financial Advisors: FDs should be recommended as emergency liquidity reserves, not primary wealth-creation instruments. SIPs calibrated to client risk tolerance should form the core of long-term wealth plans. The finding that direct equity (Nifty 50) carries extreme short-window variance should inform lump-sum allocation advice.

For the Reserve Bank of India: Sustained low real FD rates (post-2020) may push risk-averse investors toward equity markets without adequate financial literacy, increasing systemic vulnerability. Rate policy should consider its downstream effect on the retail savings-to-investment transition.

For Retail Investors: A goal-based allocation — FDs for emergency liquidity, SIPs for long-term wealth creation, and Hybrid MFs for medium-term goals — is empirically supported as optimal for the Indian retail investor profile, balancing return adequacy, risk management, and behavioural sustainability.

8. LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

8.1 Limitations

This study is subject to several limitations. First, the five-year study period (2020–2025) includes the extraordinary market conditions of the COVID-19 pandemic. The FY 2020–21 Nifty 50 return of +70.90% is a statistical outlier that inflates both mean and SD estimates for direct equity, making the standard ANOVA insensitive to otherwise real return differences. Findings should not be extrapolated to market cycles without comparable volatility shocks.

Second, the limited sample of $n = 5$ annual observations per instrument severely restricts statistical power. For independent samples t-tests, $df = 8$ yields a minimum detectable effect size of Cohen's $d \approx 2.0$ at $\alpha = 0.05$ and power = 0.80 — only very large effect sizes are detectable. Third, the study uses category-average mutual fund returns from AMFI, which mask significant within-category heterogeneity across individual fund schemes.

Fourth, tax implications are not accounted for — a material consideration given STCG/LTCG distinctions for equity instruments and the pre-2023 indexation benefit for debt mutual funds. Fifth, investment costs (MF expense ratios: typically 0.5–2.0% p.a.; brokerage fees) are not deducted from gross returns, overstating the net advantage of equity over FDs. Sixth, the independence assumption of standard t-tests is potentially violated, since all instruments are observed over the same time periods and may share common macroeconomic drivers.

8.2 Future Research Directions

Future research should extend the study period to 15–20 years to capture multiple complete market cycles, reducing the influence of single-year outliers. Welch's ANOVA and Kruskal–Wallis tests should replace standard ANOVA in multi-instrument comparisons with heterogeneous variance. Risk-adjusted metrics (Sharpe Ratio, Treynor Ratio, Jensen's Alpha, Sortino Ratio) would enrich the comparative framework. Post-tax, post-cost return analysis would better reflect actual investor outcomes.

The inclusion of additional asset classes — gold, REITs, National Pension System (NPS), sovereign green bonds — would broaden the landscape. Complementary primary data collection from retail investors could integrate behavioural dimensions: risk perception, financial literacy, loss aversion, and herding bias. Cross-country comparisons with other emerging market economies (China, Brazil, South Africa, Indonesia) could shed light on how financial market development and regulatory architecture interact to shape investment performance differentials globally.

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