

COMPARISON BETWEEN DEBT AND EQUITY INVESTMENT IN INDIA BASED ON FIXED INCOME AND EQUITY INDICES ON NATIONAL STOCK EXCHANGE

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ABSTRACT

Equity and Debt are two of the asset classes which could be looked at by a retail investor for generating returns. Liquidity and Risks associated with returns are also important. Along with nominal returns, an investor should look at real returns considering inflation. Equity Investment awareness has increased over the years, which is reflected by direct or indirect investment in equity markets by retail investors. Nevertheless, debt investments remain restricted mainly to savings accounts, fixed deposits, Employee Provident Fund, Public Provident Fund etc. Few investors invest in debt mutual funds, but there is expense ratio and distributor commission for indirect investment in debt products. Some of these traditional debt investments have lock in periods, upper limit to investment etc. Reserve Bank of India (RBI) launched RBI retail direct scheme in November 2021, which allows retail investors to invest directly in Government of India Treasury Bills, Government of India Bonds, State Development Loans (SDL), Sovereign gold bonds. This study explored risk and return based on daily data from 1st April 2018 till 8th May 2023 for the following five indices (i) Nifty 50 Equity Index (indicator towards large -caps) ii) Nifty 100 Equity Index (indicator towards all large caps and mid-caps) (iii) Nifty 500 Equity Index (indicator towards large, mid and small -caps) (iv) Nifty 10 Year Benchmark G-sec index (indicator towards investment in Central government bonds) (v) Nifty 10 Year SDL Index (indicator towards investment in state government bonds). Study examined all these indices for the Sharpe ratio assuming a risk-free rate of 0%. The study found investment in SDL's favorable from the return to risk point of view. Drawdown risk was lower in debt as an asset class as compared to equity. Debt investment could be considered through RBI retail direct platform for the short to medium term.

KEYWORDS

Debt, Equity, Retail Investor, Return to Risk Ratio, Sharpe Ratio

INTRODUCTION

Nifty 50 denotes companies selected from the top 100 companies based on full market capitalisation (or large-cap companies*). Liquidity and availability of derivative contracts are also considered for inclusion in Nifty 50. Nifty 100 denotes companies selected from the top 100 companies based on full market capitalisation (or large-cap companies these might include mid-caps* which have become large caps recently.) Nifty 500 represents companies selected from the top 500 companies based on full market capitalisation. (It included large-cap, mid-cap and small-cap stocks).

**As per October 6th, 2017 Securities and Exchange Board of India (SEBI) circular Large Cap are 1st to 100th company in terms of full market capitalisation, Mid Cap is 101st to 250th company in terms of full market capitalisation and Small cap are 251st company onwards in terms of full market capitalisation.*

The Nifty 10 Year Benchmark G-sec index is composed of 10-year bonds the Central Government of India. It considers the run G-sec issued by the central government. The Nifty 10 Year SDL Index measures the performance of SDL's with a residual maturity of about 10 years. Most recently issued SDLs from 14 states are considered for inclusion in the index. Security is part of the index till residual maturity is above or equal to 9.75 years. Both are either backed by the Central or State government in the case of SDL's making them risk-free from the default risk point of view.

RBI Retail Direct (RBI -RD) scheme was activated on November 12, 2021 to make G-secs within easy reach of the common man by simplifying the process of investment. Under this scheme, retail investors were given the opportunity to open a Retail Direct Gilt (RDG) account with RBI using the online portal rbiretaildirect.org.in. Retail investors could directly invest in the primary issuance of government securities as well as in the secondary market.

REVIEW OF LITERATURE

The applicable review of literature was done based on asset classes in consideration and risks and returns associated with them.

Volatility clustering was evident in Indian markets as observed by Aggarwal and Jha (2023), Mahajan *et al.* (2022), Sharma *et al.* (2021), Chaudhuri and Ghosh (2016), Jindal (2020) and Karmakar (2005). Over the years, Auto-Regressive Conditional Heteroskedasticity (ARCH) by Professor Engle (1982; 2001), Generalized Auto- Regressive Conditional Heteroskedasticity (GARCH) by Bollerslev (1986). There was lot of work done by many researchers challenging the linearity of risk-return relationship. Characteristics such as “sharp peak” and “fat tail” were observed in the financial data associated with equity markets. As Taleb (2007) focused on extreme impact of rare and unpredictable events leading to risky skewness in returns. This skewness was more than what was predicted by normal distribution.

Reddy (2002) gave an outlook for developing debt market based on reforms focused in the areas of transparency, efficiency and liquidity.

Akram and Das (2019) concluded that central banks actions in short term interest rates and other tools of monetary policy were main drivers of the long-term interest rates.

Andritzky (2012) studied the database of investors for government securities and found that foreign investment in the G20 advanced economies and the euro area between 2000 to 2010. However in the later part of the decade post 2008 Financial crisis Domestic Financial institutes allocated a larger share of government securities in their portfolio. Same trend was observed in Japan in 1990s.

Roy (2016) studied liquidity adjustment value in Indian markets and found that the Indian context liquidity risk was a critical element of the combined risks absorbed by the financial institutes. Liquidity risk was neglected by standard Value at Risk Model.

Deuskar and Johnson (2021) studied database of orders and trades in the Indian government bond market and presented new evidence of funding liquidity on market liquidity. The unexpected finding was that there was no evidence that a higher RBI repo rate or other short-term rates was associated with lower market liquidity. According to them, RBI repo rate did not affect the government bond market. They documented a strong and robust positive relation between market liquidity and primary dealer borrowing.

OBJECTIVE OF THE STUDY

NEED FOR STUDY

As per United Nation’s report, India, as a country, is expected to overtake China in terms of population in 2023. Significant portion of this population is youth and middle-class making investment in inflation

beating asset classes vital both from their own individual point of view and national point of view. Over the years, equity has gained momentum as a liquid asset class which has generated inflation beating returns in medium to long term. Importance and Awareness of equities has increased, which is reflected in increased number of demat accounts and mutual fund polios. But, it remains a risky asset class which can lead to negative returns as well, principally in short term and even in medium to long term, particularly, if there is direct investment in few selected stocks. So, Debt needs to be studied as a direct investment avenue, particularly with emergence of RBI retail direct scheme. The study is focused on G-Sec and SDL investments which have remained default risk free so far in Indian context. Hence, both these assets need to be studied on two most important aspects of any investment, viz. Risk and Return.

OBJECTIVES

1. To Quantify Risk and Return of investments in selected Equity and Debt indices.
2. To compare Risk and Returns of investments in selected Equity and Debt indices from using Single factor ANOVA.

HYPOTHESIS TESTING

Based on daily returns of five indices considered under study

Null Hypothesis (Ho): There was no significant difference in daily returns of 5 indices viz. 1) Nifty 50 Equity Index 2) Nifty 100 Equity Index 3) Nifty 500 Equity Index 4) Nifty 10 Year Benchmark G-sec index 5) Nifty 10 Year SDL Index

Alternative Hypothesis (Ho): There was significant difference in daily returns of 5 indices viz. 1) Nifty 50 Equity Index 2) Nifty 100 Equity Index 3) Nifty 500 Equity Index 4) Nifty 10 Year Benchmark G-sec index 5) Nifty 10 Year SDL Index

RESEARCH METHODOLOGY

RESEARCH DESIGN

Descriptive and Explanatory research was used in the study. In Descriptive research, what is happening in terms of data for five indices was observed to infer the results. As an explanatory research ANOVA and other measures of central tendency were used to infer the results.

POPULATION AND SAMPLE

Population: All the equity and debt indices listed on NSE since inception (Based to 1000) at different points of time.

Sample: Based on Availability of Data and keeping in mind minimum five-year cycle to measure the performance of particularly equity as an Asset class, Data was taken from 1st January 2018 to 8th May 2023. Daily returns are considered, which capture many important events such as central and state government results in India, outbreak of Covid 19 pandemic, which lead to fall in markets initially, but

the recovery post reduction in interest rates and subsequent rise in interest rate from January 2022 onwards to tackle inflation are considered. Geopolitical tensions also increased in the period under study. There were 1318 to 1382 daily observations based on index.

Equity and Bond returns can be negative, but prices cannot be negative hence log normal distribution was used to analyse the data. Daily returns were multiplied by 252 (Assuming 252 trading days in a year) to get annualised return. Daily risk (Standard deviation) was multiplied by square root of 252 (Assuming 252 trading days in a year) to get annualised return. As in case of normal distribution, returns get added linearly but variances (square of standard deviation gets added)

TOOLS FOR DATA ANALYSIS

Statistical tool used- ANOVA with 95% confidence to infer the statistical difference in the returns of various indices. Other measures of central tendency and dispersion such as Mean, Median, Minimum and Maximum were also used to make observations, conclusions and recommendations.

FINDINGS AND ANALYSIS

Secondary data was collected from the NSE website and used for research. The period of study was from 1st January 2018 to 8th May 2023. There were 1318 to 1382 daily observations based on the index.

Single-factor ANOVA with 95% confidence results is shown in Table 1.

TABLE 1. ANOVA: SINGLE FACTOR

SUMMARY				
<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
Nifty 10 Year Benchmark G-sec index	1318	29.4%	0.02%	0.00%
Nifty 10 Year SDL Index	1382	41.6%	0.03%	0.00%
Nifty 50 Equity Index	1322	56.0%	0.04%	0.01%
Nifty 100 Equity Index	1322	50.8%	0.04%	0.01%
Nifty 500 Equity Index	1322	49.2%	0.04%	0.01%

ANOVA						
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	0.00%	4	0.00%	0.10	0.98	2.37
Within Groups	58.02%	6661	0.01%			
Total	58.02%	6665				

Analysis based on Table 1:

As the F value is less than F critical and a P value of 0.98 indicates a 98% probability with which the null hypothesis should not be rejected.

Hence, it can be inferred that There was no significant difference in daily returns of 5 indices viz. 1) Nifty 50 Equity Index 2) Nifty 100 Equity Index 3) Nifty 500 Equity Index 4) Nifty 10 Year Benchmark G-sec Index 5) Nifty 10 Year SDL Index.

Data based on measures of central tendency and dispersion such as Mean, Median, Minimum and Maximum is indicated in Table 2.

TABLE 2. MEASURES OF CENTRAL TENDENCY FOR THE DATA

	Nifty 10 Year Benchmark G-sec Index	Nifty 10 Year SDL Index	Nifty 50 Equity Index	Nifty 100 Equity Index	Nifty 500 Equity Index
Minimum Daily Return (X min)	-1.76%	-2.14%	-13.90%	-13.70%	-13.71%
Maximum Daily Return (X max)	1.99%	2.18%	8.40%	8.09%	7.41%
Daily Risk (s)	0.30%	0.25%	1.21%	1.19%	1.17%
C= Annualised Risk (s * sqrt (252))	4.78%	4.02%	19.15%	18.84%	18.58%
Daily Mean Return (X mean)	0.02%	0.03%	0.04%	0.04%	0.04%
Daily Median Return (x median)	0.02%	0.02%	0.08%	0.08%	0.12%
A= Annualised Median Return (x median) * 252	4.90%	6.23%	19.95%	20.29%	30.04%
B =Annualised Return (X mean) * 252	5.62%	7.58%	10.67%	9.69%	9.37%
Daily Return to Risk Ratio (X mean to s)	7.41%	11.86%	3.51%	3.24%	3.18%
Annualised Return to Risk Ratio (A/C)	117.57%	188.35%	55.73%	51.43%	50.44%
Annualised Return to Risk Ratio Median (B/C)	102.56%	154.84%	104.18%	107.67%	161.65%
Skewness	-0.04	-0.60	-1.52	-1.58	-1.75
Kurtosis	4.61	12.76	20.70	20.44	20.60

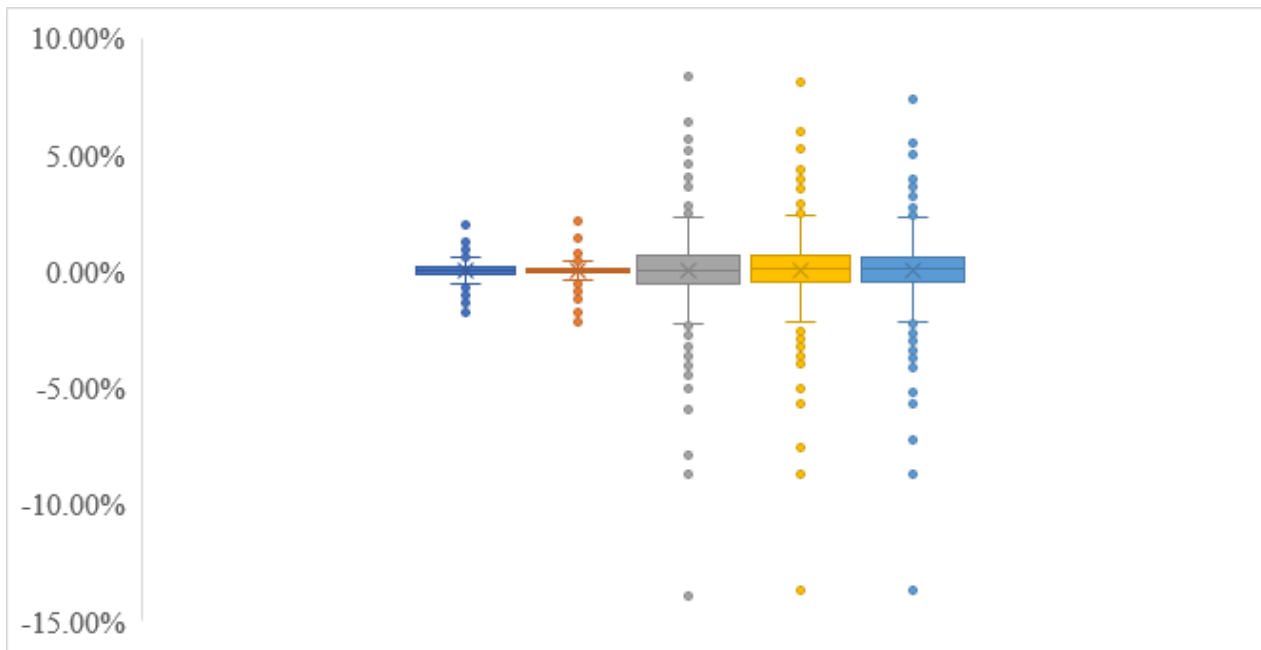
Analysis based on Table 2:

Debt indices are less volatile (i.e., risky) as compared to equity indices. Based on particular Minimum and Maximum values of daily return it can be seen equity indices can have substantial drawdowns in a short period. This drawdown was better reflected in Daily Mean returns as compared to Daily Median returns. Based on Annualised Return to Risk Ratio Debt Indices have performed better as compared to equity indices. The Nifty 10 Year SDL Index was the best-performing index in terms of Annualised Return to Risk Ratio. Nifty 500 Equity Index was the best-performing index in terms of Annualised Return to Risk Ratio based on median values but it was the worst performing index in terms of Annualised Return to Risk Ratio for mean values. In investments, extremities cannot be ignored or are important from the returns point of view considering this fact Nifty 10 Year SDL Index clearly was the best-performing index. Median values may reflect the traditional financial wisdom that the higher the risk, the higher the return which was challenged particularly in Annualised Return to Risk Ratio based on mean values.

Negative skewness implies that standard deviation underestimates the risk which can be seen for all three equity indices. All three have skewness negative skew which is more negative as compared to Debt indices. Kurtosis data also indicates heavy (extreme) tails for equity indices as compared to debt.

GRAPHICAL ANALYSIS

GRAPH 1. BOX AND WHISKER PLOT



As shown in the Graph 1 from left to right,

1. Nifty 10 Year Benchmark G-sec index
 2. Nifty 10 Year SDL Index
 3. Nifty 50 Equity Index
 4. Nifty 100 Equity Index
 5. Nifty 500 Equity Index
- are plotted.

Both the debt indices show a majority of the data close to mean indicating limited risk and significantly lower outlier points, particularly on the negative side. Equity indices show many points significantly away from the mean and many outliers, particularly on the negative side which is a risk for retail investors.

LIMITATIONS AND FUTURE SCOPE OF FURTHER STUDY

The study considered selected five indices which could be extended to other sectorial, thematic, and broader indices as well.

The period of study was from 1st January 2018 to 8th May 2023, which covers many economic, social, political, and other events which have happened, but it is a sample period. The period could be extended. Some other timeframes, like Mid 2003 to 2007 equity bull run, may give a different picture.

Gold, which is considered a hedge against inflation, was not considered in the study.

CONCLUSION AND IMPLICATIONS

Debt and Equity can give inflation beating returns in the medium to long run. Reserve Bank of India (RBI) target for inflation is 4% with plus or minus 2% as a tolerance range. Since the first half of 2022, inflation has exceeded upper end of the range and has come close to upper end of tolerance range of 6% recently. By tradition, investors have ignored direct investment in central and state government securities because of lack of awareness, liquidity, and easy availability of investment platforms. However, with RBI retail direct scheme retail investors could start investing in Debt markets which are offering better return to risk reward as compared to equity. However, Taxation in India remains in favor of equity as on date. Withing debt indices Nifty 10 Year SDL Index has outperformed Nifty 10 Year Benchmark G-sec index. Since government debt securities are issued on the run (or are auctioned on the run) savvy institutional investors in debt market mostly ensure they get retail inflation beating returns on newly issued securities which may not be the case in other fixed income instruments, particularly saving bank accounts and bank fixed deposits. From the risk point of view, the major risk of default is not applicable for securities (i.e., Bills, Notes, Bonds) issued by central or state government. The dynamic nature of news flow was better adjusted in government securities, and they tend to give higher returns on most timeframes as compared to bank deposits.

It is highly recommended for investors with a time horizon of 91 days to 3 years to consider investment in these securities through RBI retail direct platform. Retail investors investing directly/indirectly in equity for short to medium should consider extreme reactions based on events which impact equity markets more than debt markets. Drawdown in short span of time in equity markets can lead to significant wealth destruction and impact financial planning of retail investors.

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