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Research Article

Fama French Three Factor Analysis of Balanced Mutual Fund in India

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Abstract
Balanced Mutual Funds were established with an objective of generating regular income and long term capital appreciation by investing in shares, bonds and sometimes money market instruments in a single portfolio. Balanced Mutual Fund is an avenue which offers an investor the opportunity to invest in equity as well as fixed income securities. All Balanced Mutual Fund schemes have the similar objective but each differs in terms of return generation and risk involved. As such, an analysis have been made in this paper for Balanced Mutual Funds in Indian mutual fund industry using Fama French three factor model. In particular 24 regular- growth oriented Balanced Mutual Funds have been taken for this study. The wide array of funds often makes it a little difficult for investors to choose the best scheme for them. The present study will act as a guide to overcome such problem and to make good investment decision regarding Mutual fund selection.
Key words: Balanced Mutual Fund, Risk, Return, Regular-growth oriented, investor, Equity, Debt, Fama French Three Factor Model.

Introduction
According to Association of Mutual Funds in India (AMFI)
"A mutual fund is a trust that pools the savings of a number of investors with a common investment objective. Anybody with an investible surplus of as little as a few thousand rupees can invest in mutual funds. The investor can buy units of a particular mutual fund scheme that has a definite investment objective and strategy." The mutual fund in India started its roots with an establishment of Unit Trust of India (UTI) in 1963. In 1964, the UTI came into operation with the introduction of its first scheme US-64. Till 1980s UTI enjoyed Monopoly and experienced consistent growth with rupees 6700 crore in Asset under Management. In 1987 public sector banks and insurance companies were allowed to enter the market and by the end of 1996, six public sector banks and two insurance companies entered the Mutual Fund industry and raised the Assets Under Management (AUM) to rupees 47004 crore. Indian MF industry's AUM has increased from INR 4.17 trillion (4.17 lakh crore) in March 31, 2009 to INR 23.80 trillion (23.80 lakh crore) by March 31, 2019, more than 5 times in just 10 years. More and more investors have begun to keep their faith in Mutual Funds in the last ten years. During this period, the opening of Mutual Fund accounts has increased steadily. Mutual Fund is a financial product which claim to provide higher return with lower risk. It is an ideal

investment avenue for those investors who either lack large funds for investment or for those who neither have the inclination nor the time to reach the market, yet want to grow their wealth. In this financial product small amount of funds can be employed depending upon the risk appetite of investor in order to get good return. The Indian Mutual Fund industry caters to all types of investors needs by offering plethora of schemes. Investors should take into consideration the risk return trade off and should do proper diligence of the fund, as selecting the right fund can be challenging. The purpose of this study is to make an analysis of Balanced Mutual Fund based on Fama French three factor model.

Balanced Mutual Funds

A Balanced fund gives amix of low- to medium-risk equity and derivative exposure in a single portfolio. These funds usually have a fixed mix of stock and bonds that reflect either a higher equity component or a debt component orientation. These funds invest in a mix of equities and debt, giving the investor best of both worlds. The debt portion of balanced mutual fund schemes fortifies investors against any downturn, whereas investors gains from a healthy dose of equities. These funds are suitable for investors who are seeing modest capital appreciation and regular income along with the safety of their investment.

Advantages

i. Diversified, constantly rebalanced portfolio
ii. Low expense ratios
iii. Little volatility
iv. Low-risk

Disadvantages

i. Asset allocation proportions
ii. Unsuited for long term investment
iii. Hidden risk
iv. Safe but lower returns

Literature review

Fama and French (1993) identified five common risk factors in the returns on stock and bonds. Among the five, three factors are related to stock market namely, market, firm size (SMB) and value (HML). The other two factors related to bond market are maturity and default risk. Stock returns are influenced by bond market factors as well as stock market factors.

Bhuvaneswari (2010) evaluated the performance of 21 equity schemes for the period January 1, 2002 to December 31, 2007 and found that only 50% of the selected schemes performed better than the market index and majority of the fund managers could not provide the market timing and stock selection advantages to the investor.

Kantilala (2012) suggested that past performance, age and size of the fund, fund manager performance, types of services offered and fees charged by funds were the factors to be considered before making investment.

Biswas (2013) in his paper evaluated the performance of 10 selected gilt funds and revealed that Baroda Pioneer Gilt Fund had the highest return with lower beta and suggested that gilt funds could be better option for investment during low interest regime.

Dr Vikas Choudhary, and Preeti Sehgal Chawla (2014) analysed the performance of the growth oriented equity diversified schemes on the basis of return and risk evaluation. The analysis was done by assessing various financial tests like Average Return, Sharpe Ratio, Treynor Ratio, Standard Deviation, Beta and Coefficient of Determination (R2). They concluded that majority of funds selected for study have outperformed under Sharpe Ratio as well as Treynor Ratio.

Sahi (2014) evaluated the experience , perception and expectations of mutual fund investors of Punjab and observed that brokers expectedinvestor's education programs, awareness campaigns and reduction in number of schemes for better understanding whereasinvestors expected changes in product features in terms of simplicity.

Bhayasree and Kishori (2016) investigated the performance of 30 open-ended equity schemes and found that 14, 9 and 12 schemes out of 30 schemes outperformed the market return according to Sharpe, Treynor and Jensen models respectively.

Jaspal Gidwani and Dr. Ramesh P.Gan (2016) has done the risk and performance analysis of selected balanced mutual schemes and concluded that all funds have outperformed except HDFC Arbitrage Fund. Fall in Nifty 50 during 2011 has impacted the performance of all selected funds.

Research Gap

After going through various studies, it is evident that many reviews were conducted on mutual funds. Some of them were related to investors' behaviour, some specified their study on sectorial basis and some analysed the performance various types of mutual funds on combined basis. Most of the performance evaluation studies are conducted in context of Equity funds, Equity Large Cap funds, Open Ended Schemes, Gilt funds. But no work had been done specifically on the performance evaluation of Balanced Mutual funds and no analysis on these particular schemes had been done using Fama French Three Factor model in Indian Mutual Fund Industry. The Performance Evaluation tools used earlier are Sharpe Ratio, Treynor Ratio and Jensen alpha but this study uses Fama French three factor Model as a tool for analysing the performance of Balanced Mutual funds.

Research Methodology

- ❑ Scope of study

  The period of this study is for three years 1April, 2017 - 31stMarch,2020 and will include those Mutual Funds which will have at least 3 year track record. The study uses 24 Mutual Funds schemes out of 32 schemes comprising of all Balanced Advantage Mutual Fund (Regular Growth).

- ❑ **Source of data**

- For Analyzing the current performance trends of Indian mutual fund Industries, secondary data related to NAV history, risk free rate of interest and benchmark index (S&P 500)have been used and collected from the fact sheets, newspaper, journals, books and periodicals. The

data were also collected from various websites of AMCs, AFMI, moneycontrol.com, valueresearch.com etc. The yield of 364 Day Treasury bill was considered as risk-free rate of return and S&P 500 has been used as a benchmark for comparative study.

- Data regarding NAV were obtained from the website of www.amfiindia.com
- Data regarding AUM were obtained from the website of www.mutualfundindia.com
- Data regarding benchmark index were obtained from the website of www.yahoofinance.com

Tools and Techniques used for Risk-Return Analysis

The risk return analysis under this study is done in order to evaluate the performance of Balanced Mutual Fund Schemes. Daily NAV is used for computing annual returns of Balanced Mutual Fund Schemes. Mean returns are calculated by averaging the monthly returns over the relevant period of time. Fama-French three factor model is used to evaluate the performance of Balanced Mutual Fund Scheme.The Eugene Fama and Kenneth French challenge the risk and return relation depicted by the Capital Asset Pricing Model(CAPM) and subsequently develop three-factor model based on three variables namely market (Rm-Rf) , size based on market capitalisation (SMB)and value based on book-to-market ratio,customarily called value stocks, contrasted with growth stocks (HML) to describe stock returns.

$$r = Rf + \beta 3\ (Rm - Rf) + bs\ .\ SMB + bv.\ HML + \alpha$$

here,
r = Portfolio's expected rate of return
Rf = Risk-free return rate
Rm = Return of the market
SMB = Small [market capitalization] Minus Big
HML = High [book-to-market ratio] Minus Low

Table-1. Balanced Mutual Fund Schemes - Regular Growth

#	Balanced Mutual Fund Schemes	Inception Date
1	LIC MF Equity Hybrid Fund	01-Jan-91
2	Canara Robeco Equity Hybrid Fund	01-Feb-93
3	UTI Hybrid Equity Fund	20-Jan-95
4	Aditya Birla Sun Life Equity Hybrid 95 Fund	10-Feb-95
5	Tata Hybrid Equity Fund	08-Oct-95
6	SBI Equity Hybrid Fund	09-Oct-95
7	DSP Equity & Bond Fund	27-May-99
8	ICICI Prudential Equity & Debt Fund	03-Nov-99
9	Franklin India Equity Hybrid Fund	10-Dec-99
10	Principal Hybrid Equity Fund	14-Jan-00
11	Sundaram Equity Hybrid Fund	23-Jun-00
12	Quant Absolute Fund	04-Apr-01
13	Baroda Hybrid Equity Fund	12-Sep-03

14	PGIM India Hybrid Equity Fund	29-Jan-04
15	HDFC Hybrid Equity Fund	06-Apr-05
16	Nippon India Equity Hybrid Fund	08-Jun-05
17	Edelweiss Balanced Advantage Fund	20-Aug-09
18	L&T Hybrid Equity Fund	07-Feb-11
19	Shriram Hybrid Equity Fund	29-Nov-13
20	DSP Dynamic Asset Allocation Fund	06-02-2014
21	Kotak Equity Hybrid Fund	05-Nov-14
22	Mirae Asset Hybrid Equity	29-Jul-15
23	IDBI Hybrid Equity Fund	18-Oct-16
24	IDFC Hybrid Equity Fund	30-Dec-16
25	BNP Paribus Substantial Equity Hybrid Fund	07-Apr-17
26	Essel Equity Hybrid Fund	30-Apr-18
27	Invesco India Equity &Bond Fund	30-Jun-18
28	Axis Equity Hybrid Fund	09-Aug-18
29	Motilal Oswal Dynamic Fund	14-Sep-18
30	HSBC Equity Hybrid Fund	22-Oct-18
31	Indiabulls Equity Hybrid Fund	13-Dec-18
32	Mahindra Manulife Hybrid Equity Nivesh Yojana	19-Jul-19

Fama French Three Factor Model

In this model SMB based on market capitalization is used for “small minus big”. A positive SMB denotes that small cap stocks outperformed large cap stocks whereas a negative SMB denotes the large caps outperformed in a particular period. The assets of 24 schemes as on March 2020 have been considered for the study. SMB is the difference between the average return of smallest 30% of Balanced Mutual Fund Schemes and the average return of the largest 30% of the schemes assets (Kent Womack and Ying Zhang, 2003). The five schemes with least assets areQuant Absolute Fund, Shriram Hybrid Equity Fund, PGIM India Hybrid Equity Fund, LIC MF Equity Hybrid Fund and IDBI Hybrid Equity Fundwhich is having less than 300 crore assets. The schemes with greatest assets are Nippon India Equity Hybrid Fund, Aditya Birla Sun Life Equity Hybrid 95 Fund, ICICI Prudential Equity & Debt Fund, HDFC Hybrid Equity Fund and SBI Equity Hybrid Fund which is having more than 5000 crores. Table 2 shows the assets of the schemes.

Table-2. Assets of the Balanced Mutual Fund Schemes

#	Balanced mutual fund schemes	Assets (INR in crores)
1	Quant Absolute Fund	0.9
2	Shriram Hybrid Equity Fund	45.0
3	PGIM India Hybrid Equity Fund	87.5
4	LIC MF Equity Hybrid Fund	189.1
5	IDBI Hybrid Equity Fund	209.4
6	BNP Paribus Substantial Equity Hybrid Fund	334.0
7	Baroda Hybrid Equity Fund	368.8
8	IDFC Hybrid Equity Fund	490.4

9	Sundaram Equity Hybrid Fund	619.1
10	Principal Hybrid Equity Fund	736.6
11	Edelweiss Balanced Advantage Fund	770.2
12	Kotak Equity Hybrid Fund	969.9
13	Franklin India Equity Hybrid Fund	1193.5
14	Canara Robeco Equity Hybrid Fund	1694.8
15	Tata Hybrid Equity Fund	2112.0
16	UTI Hybrid Equity Fund	2352.6
17	Mirae Asset Hybrid Equity	2660.1
18	DSP Equity & Bond Fund	3796.1
19	L&T Hybrid Equity Fund	5009.1
20	Nippon India Equity Hybrid Fund	5081.0
21	Aditya Birla Sun Life Equity Hybrid 95 Fund	6332.4
22	ICICI Prudential Equity & Debt Fund	10415.9
23	HDFC Hybrid Equity Fund	13171.5
24	SBI Equity Hybrid Fund	24527.0

HML basedon book-to-market ratio is used for “high minus low”. It measures the excess returns of value stocks (highbook-to-market ratio) over growth stocks (low book-to-market ratio). HML has been constructed to measure value premium between value stocks and growth stocks. HML is the difference between the average return of the 30% of the schemes with the highest book-to-market and the 30% of the schemes with the lowest book-to-marketratio (Kent Womack and Ying Zhang, 2003). A positive HML denotes value scheme outperformed whereas a negative HML denotes growth schemes outperformed in a particular period. Table 3 shows the book-to-market ratio of the Balanced Mutual Fund Schemes. The five schemes with least Book to Market Ratio are Aditya Birla Sun Life Equity Hybrid 95 Fund, Tata Hybrid Equity Fund, Canara Robeco Equity Hybrid Fund, DSP Equity & Bond Fund andUTI Hybrid Equity Fund. The schemes with high book to market ratio are IDFC Hybrid Equity Fund,BNP Paribus Substantial Equity Hybrid Fund, IDBI Hybrid Equity Fund, Shriram Hybrid Equity Fund and Edelweiss Balanced Advantage Fund.

Table-3. Book to Market of Balanced Mutual Fund Schemes

#	Balanced mutual fund scheme	Book to Market
1	IDFC Hybrid Equity Fund	1.10865
2	BNP Paribus Substantial Equity Hybrid Fund	0.91512
3	IDBI Hybrid Fund Equity	0.88321
4	Shriram Hybrid Equity Fund	0.69715
5	Edelweiss Balanced Advantage Fund	0.68930
6	Mirae Asset Hybrid Equity	0.67128
7	Kotak Equity Hybrid Fund	0.49329
8	L&T Hybrid Equity Fund	0.46736
9	Nippon India Equity Hybrid Fund	0.28272
10	HDFC Hybrid Equity Fund	0.23556
11	Baroda Hybrid Equity Fund	0.22297

12	PGIM India Hybrid Equity Fund	0.18155
13	Principal Hybrid Equity Fund	0.16026
14	Sundaram Equity Hybrid Fund	0.13072
15	LIC MF Equity Hybrid Fund	0.11187
16	Franklin India Equity Hybrid Fund	0.10236
17	ICICI Prudential Equity & Debt Fund	0.09438
18	Quant Absolute Fund	0.09023
19	SBI Equity Hybrid Fund	0.08425
20	UTI Hybrid Equity Fund	0.07836
21	DSP Equity & Bond Fund	0.07505
22	Canara Robeco Equity Hybrid Fund	0.06980
23	Tata Hybrid Equity Fund	0.05824
24	Aditya Birla Sun Life Equity Hybrid 95 Fund	0.01745

Table 4provides the results of Fama French three factor analysis. The tables shows the coefficients of Rm-Rf, SMB and HML that is obtained by regressing Ri-Rf with Rm-Rf, SMB and HML. These coefficients are substituted in Fama French three factor model to obtain the Expected Rate of Return. Additionally, Actual Rate of Return of these schemes have been calculated by using the historical values of past three years from 2017-18 to 2019-20. Table 4 shows that SBI Equity Hybrid Fund,Canara Robeco Equity Hybrid Fund, BNP Paribus Substantial Equity Hybrid Fund,Mirae Asset Hybrid Equity and Edelweiss Balanced Advantage Fund performed well with high difference in expected and actual return. Franklin India Equity Hybrid Fund, IDBI Hybrid Equity Fund, Aditya Birla Sun Life Equity Hybrid 95 Fund, UTI Hybrid Equity Fund and Shriram Hybrid Equity Fund were not performed well. The actual return of these schemes was lower than the expected return.

Table-4. Coefficients, Expected Return & Actual Rate of Return of Balanced Mutual Fund Schemes

#	Balanced mutual fund schemes	Co-Efficient			Return		Difference
		RM-RF	SMB	HML	Expected	Actual	
1	SBI Equity Hybrid Fund	0.0271	-0.4727	1.7440	-0.1168	0.0852	0.2020
2	Canara Robeco Equity Hybrid Fund	0.0514	0.2772	2.3758	-0.1142	0.0877	0.2019
3	BNP Paribus Substantial Equity Hybrid Fund	0.0645	0.5419	2.5220	-0.1077	0.0903	0.1980
4	Mirae Asset Hybrid Equity	0.1255	-0.2730	1.8243	-0.1200	0.0586	0.1786
5	Edelweiss Balanced Advantage Fund	0.0192	0.2220	1.7753	-0.0663	0.0985	0.1648
6	DSP Equity & Bond Fund	0.0354	0.3430	2.9177	-0.1509	0.0093	0.1602
7	Sundaram Equity Hybrid Fund	0.1268	0.0995	2.3565	-0.1350	0.0170	0.1520
8	Principal Hybrid Equity Fund	0.0333	-0.1439	2.0884	-0.1205	-0.0102	0.1104
9	Quant Absolute Fund	0.0536	0.4361	2.7757	-0.1347	-0.0308	0.1039
10	LIC MF Equity Hybrid Fund	0.0988	0.7591	3.0402	-0.1371	-0.0509	0.0862
11	Kotak Equity Hybrid Fund	0.0990	0.2893	2.9156	-0.1624	-0.1000	0.0623
12	L&T Hybrid Equity Fund	0.0509	-0.0733	2.2955	-0.1340	-0.0829	0.0511
13	Baroda Hybrid Equity Fund	0.0589	0.6706	3.1114	-0.1447	-0.1039	0.0408
14	Nippon India Equity Hybrid Fund	0.1927	-1.1453	2.0211	-0.2092	-0.1774	0.0318
15	ICICI Prudential Equity & Debt	0.1421	-1.0232	1.2346	-0.1309	-0.0995	0.0313

	Fund						
16	Tata Hybrid Equity Fund	0.0783	0.2027	2.5388	-0.1361	-0.1112	0.0249
17	PGIM India Hybrid Equity Fund	0.1361	0.4879	2.8106	-0.1435	-0.1265	0.0169
18	HDFC Hybrid Equity Fund	0.0546	-0.6519	1.9146	-0.1472	-0.1445	0.0027
19	IDFC Hybrid Equity Fund	0.0560	-0.0866	2.4537	-0.1483	-0.1474	0.0009
20	Franklin India Equity Hybrid Fund	0.1299	-0.3737	1.8920	-0.1335	-0.1344	-0.0009
21	IDBI Hybrid Equity Fund	-0.0231	0.6182	2.7840	-0.1126	-0.1249	-0.0124
22	Aditya Birla Sun Life Equity Hybrid 95 Fund	0.0902	-0.2956	2.0856	-0.1385	-0.1618	-0.0233
23	UTI Hybrid Equity Fund	0.1027	-0.1220	2.2065	-0.1367	-0.1630	-0.0264
24	Shriram Hybrid Equity Fund	0.2414	-0.8902	-2.4106	0.1599	-0.0114	-0.1713

Limitations of study

1. This study is limited to balanced mutual fund only.
2. Data is collected from secondary source.
3. Only those mutual funds are considered for study which will have a track record of at least 3 years, so only 24 out of 32 balanced mutual funds are considered.

Conclusion

Performance of Balanced Mutual Fund Schemes were analysed by using Fama French three factor model and this performance has been compared with the market benchmark index (S&P 500). There is a difference between expected return and actual return of mutual funds. The lesser deviation between actual and expected return, the stable is the performance of fund in the market. There are certain funds where the investors expects maximum returns but the funds might give a lower return, on the other hand there are certain funds where the investor expect minimum returnbut the funds might give a higher return. It is examined that there are certain schemes which have been underperformed the market benchmark and there are certain funds that outperform the market benchmark. It is found that, SBI Equity Hybrid Fund, Canara Robeco Equity Hybrid Fund, BNP Paribus Substantial Equity Hybrid Fund,Mirae Asset Hybrid Equity and Edelweiss Balanced Advantage Fund have performed well with high difference in expected and actual return. From the analysis, it can be concluded that there has to be some other factors other than the factors considered by Fama French three factor model that would explain the performance of variation among the Indian Balanced mutual fund market.

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