A STUDY ON PERFORMANCE EVALUATION OF ASSET ALLOCATION FUNDS IN INDIA

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Abstract

During the last few years, many changes have been seen in the mutual fund industry which were extraordinary. Due to the changed environment, it becomes important to investigate the mutual fund performance. The need for evaluating the performance of mutual fund schemes in India to see whether the mutual fund schemes are outperforming or underperforming than the benchmark and to see the competency of schemes to make out a strong case for investment.

The present paper investigates the performance of all mutual fund which comes under the category of asset allocation for the period from January 2011 to December 2015 (five years) of transition economy. Data have been used to calculate the returns from the fund schemes. Nifty 50 has been used as benchmark to calculate market portfolio. The risk and return relationship and market volatility is measured of selected mutual funds. The historical performance of the selected schemes were evaluated on the basis of Sharpe, Treynor, Jensen's measure and Fama's measure whose results will be useful for investors for taking better investment decisions.

KEYWORDS: Jensen measure, Mutual funds, performance evaluation, Sharpe measure, Treynor measure, Fama measure.

Intoduction

The Indian mutual funds industry is witnessing a rapid growth as a result of infrastructural development, increase in personal financial assets, and rise in foreign participation. With the growing risk appetite, rising income, and increasing awareness, mutual funds in India are becoming a preferred investment option compared to other investment vehicles like Fixed Deposits (FDs) and postal savings that are considered safe but give comparatively low returns, according to "Indian Mutual Fund Industry". Mutual fund industry has seen a lot of changes in past few years with multinational companies coming into the country, bringing in their professional expertise in managing funds worldwide.

Development of an economy necessarily depends upon its financial system and the rate of new capital formation, which can be achieved by mobilising savings and adopting an investment pattern, be it self-financing(i.e. direct or indirect) where financial intermediaries like banks, insurance and other financial companies come in the picture and mediate between savers and borrowers of funds. The last decade has seen enormous expansion in the size of mutual fund industry in India. Especially, the private sector has shown galloping growth. Now investors have a wide range of Schemes to choose from depending on their individual profiles.

Asset allocation is an investment strategy that aims to balance risk and reward by apportioning a portfolio's assets according to an individual's goals, risk tolerance and investment horizon. The three main asset classes - equities, fixed-income, and cash and equivalents - have different levels of risk and return, so each will behave differently over time. An asset allocation fund is a mutual fund that provides investors with a portfolio of a fixed or variable mix of the three main asset classes - stocks, bonds and cash equivalents - in a variety of securities. Some asset allocation funds maintain a specific proportion of asset classes over time, while others vary the proportional composition in response to changes in the economy and investment markets.

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Objectives

The major objective of the study was to evaluate performance of asset allocation mutual fund schemes floated by various asset management companies in India.

1. To evaluate performance of all asset allocation schemes of the mutual funds based on based on the Sharpe, Treynor, Jensen ratios and Fama's measure.
2. To analyse the risk and return relationship of these mutual fund schemes .

Research Methodology

Data collection: The study is purely based on secondary data which was collected through the official website of Mutual Fund India and Ace mutual funds.

Sample size: A period of five years data i.e. January 2011 to December 2015 were consider for analysis. In this paper, an attempt has been made to evaluate the performance of 54 mutual fund schemes which belong to the category of Asset allocation. Performance has been analyzed by comparing the average returns of the funds with that of Indian stock market benchmark NIFTY 50. The risk free rates are calculated from three month treasury bill rates taken from RBI website.

Methodology: To analyse the data, statistical techniques are used. Parameters like coefficient of determination (R2), systematic risk i.e. beta, intercept, average return for the scheme and the market, standard deviation , their correlation and time tested models given by Sharpe, Treynor, Jensen and Fama's measure were applied. The study basically concentrates on return - risk analysis and performance measurement.

In order to calculate the risk-adjusted returns of investment portfolios the most important widely used measures of performance are:

Sharpe's Model : In this model, performance of a fund is evaluated on the basis of Sharpe ratio, which is the ratio of returns generated by the fund over the risk free rate of return and the total risk associated with it. According to Sharpe, it is the total risk of the fund that investors are more concerned about. So, the model evaluates funds on the basis of reward per unit of total risk. Symbolically, it can be written as:

Sp = (RP - RF)/? p

SP = Sharpe's index

RP= Portfolio average return

Rf =Risk free rate of return

?P= Standard deviation of the return

Treynor's performance index: It was given by Jack Treynor in 1965, it is expressed as a ratio of returns to systematic risk i.e. beta. It adjusts return based on systematic risk; therefore it is relevant for performance measurement when evaluating portfolios separately or in combination with other portfolios

Treynor Index =

$$\frac{\text{Portfolio Average Return(Rp) - Risk Free Rate of Return (Rf)}}{\text{Beta Coefficient of Portfolio}}$$

Jensen's performance index: It is a regression of excess fund return with market return given by MC Jensen in 1968. It is also popularly known as Jensen's alpha based on Capital Asset Pricing Model (CAPM). It reflects the difference between the return actually earned on a portfolio and the return of the fund was expected to earn, given its beta as per the CAPM.

Alpha (?) = (Rx^{-} - Rf)-?(Rm^{-}-Rf)

The Risk free rate is chosen based on the Treasury bill rates and it is calculated on daily basis to get the time series data. The standard deviation of company return and market return is calculated on the basis of five yearly moving average as it will be a better representation of data than taking one data as average of the entire data of ten years. Standard deviation is the deviation of returns from their moving averages. Beta for Treynor ratio is been calculated using the regression analysis of dependent variable(company return) and independent variable(market return). How Beta for Jensen's measure is based on the regression analysis of their excess return. The top twelve fund schemes

is been identified from these ratios and a portfolio is constructed which has shown a better performance. The summary measures of the funds are analysed and interpreted.

Fama's Measure : The Fama's Net Selectivity Measure is an absolute measure of performance. It is given by the annualized return of the fund, deducted the yield of an investment without risk, minus the standardized expected market premium times the total risk of the portfolio under review.

$$NS_{p,t} = \left[E_t(R_{p,t}) - R_f\right] - \left\{\left[\frac{E_t(R_{m,t}) - R_f}{\hat{\sigma}_{R_m}}\right] \times \hat{\sigma}_{R_p}\right\},$$

where NSpt is net selectivity

$R_{p,t}$ is the return on the fund considered over period;

$R_{m,t}$ is the return on the market portfolio considered over period;

R_f is a proxy for the riskless rate;

$R_p\hat{}$ is the standard deviation of the fund return over period;

$R_m\hat{}$ is the standard deviation of the market portfolio return over period.

The Fama's Index gives the excess return obtained by the manager that cannot have been obtained investing in the market portfolio. It compares the extra return obtained by the portfolio manager with a specific risk and the extra return that could have been obtained with the same amount of systematic risk.

Literature review

According to mean-variance performance measures, fund manager's main concern is the return and the associated risk of his investment.

Treynor (1965) examined the performance of mutual funds on a characteristic line graphically by developing Treynor index (Tn) which measures the risk premium of the portfolio using the measure of systematic risk in the denominator. This measure shows that higher index number is an indicator of better performance. Sharpe (1966) developed the Sharpe index (Sn) to measure the performance of the mutual funds by using the measure of total risk in the denominator and risk premium in the numerators. Like Tn, the higher Sn index shows better performance. McDonald and John (1974) identified the existence of positive relationship between return and risk which indicated that more aggressive funds experienced better results. Carlson (1970) examined the market efficiency and also the predictability of the future performance of mutual funds and found that the past performance showed predictive value of past results in forecasting future performance. Elton, Gruber, Grindblatt and Titman (1989) also found some empirical evidence that mutual fund investors make purchase decision on the basis of past performance. Some studies reveal that there is only a slight positive relationship or no relationship at all between previous performance and current returns. Blake et al (1993), Bogle (1992), Brown and Goetzmann (1995) raised the question of why poorly performing funds still survive for which Harless and Peterson (1998) explained that investors tend to choose funds based on previous performance but stick to these funds despite their poor return in a recent study of consumers and the mutual fund purchasing decisions. Grinblatt and Sheridan (1992) also concluded that the past performance of a fund is useful for investors while investing in mutual funds.

Carhart (1997) used Capital Asset Pricing Model described in Sharpe (1964) and Lintner (1965), his own four-factor model and Fama and French's (1993) three factor model for performance measurement and found his model more efficient in finding a strong negative relation between performance and size, expense ratios, turnover and load fees. Tripathy and Sahu(1998) evaluated 17 Indian mutual fund schemes with one year data using the measure developed by Treynor, Sharpe, Jensen and Fama and suggested that performance analysis should lead to adjustment of portfolios. Sapar & Narayan(2003) examines the performance of Indian mutual funds in a bear market through relative performance index, risk-return analysis, Treynor's ratio, Sharp's ratio, Sharp's measure, Jensen's measure, and Fama's measure with a sample of 269 open ended

schemes (out of total schemes of 433). The results of performance measures suggest that most of the mutual fund schemes in the sample of 58 were able to satisfy investor's expectations by giving excess returns over expected returns based on both premium for systematic risk and total risk. Hsu & Lin(2007) applied data envelopment analysis (DEA) to measure the performance of Taiwan domestic equity funds to test performance persistence and the results showed that there exists a significant the technical efficiency measure but not under sharpe's ratio. Agrawal Deepak & Patidar Deepak (2009) studied the empirically testing on the basis of fund manager performance and analyzing data at the fund-manager and fund-investor levels. The study revealed that the performance is affected by the saving and investment habits of the people and at the second side the confidence and loyalty of the fund Manager and rewards- affects the performance of the mutual fund industry in India. Mehta (2010) analyze the performance of mutual fund schemes of SBI and UTI and found out that SBI schemes have performed better then the UTI in the year 2007-2008.Petajisto(2013) used active share and tracking error to sort equity funds based on various categories of active management and found that most active stock pickers outperformed their benchmark indices.

Analysis and Discussion

The 54 asset allocation schemes which belong to various asset management companies are tested based on their average returns, standard deviation, beta, correlation and four different ratios which analyses the performance of these funds.

Scheme Name	Average	σ	Beta	Corr	Tr	F	S	α
DSPBR Dynamic Asset Allocation Fund-Reg(G)	0.06	0.15	0.15	0.81	0.24	0.02	0.24	0.02
DSPBR Dynamic Asset Allocation Fund-Reg(MD)	0.06	0.15	0.15	0.81	0.24	0.02	0.24	0.02
DSPBR Dynamic Asset Allocation Fund(G)-Direct Plan	0.06	0.15	0.15	0.81	0.26	0.03	0.26	0.02
DSPBR Dynamic Asset Allocation Fund(MD)-Direct Plan	0.06	0.15	0.15	0.81	0.26	0.03	0.26	0.02
Birla SL Asset Alloc-Aggr(D)	0.13	0.71	0.76	0.86	0.14	0.06	0.15	0.04
Birla SL Asset Alloc-Aggr(G)	0.13	0.71	0.76	0.86	0.15	0.06	0.15	0.04
Birla SL Asset Alloc-Cons(D)	0.08	0.29	0.88	0.59	0.07	0.02	0.21	0.02
Birla SL Asset Alloc-Cons(G)	0.08	0.29	0.88	0.59	0.07	0.02	0.21	0.02
Birla SL Asset Alloc-Mod(D)	0.11	0.55	0.99	0.36	0.09	0.01	0.17	0.04
Birla SL Asset Alloc-Mod(G)	0.11	0.55	0.99	0.36	0.09	0.01	0.17	0.04
FT India Asset Allocation Fund-Conservative Gth-Div	0.01	0.20	0.00	0.01	1.17	0.01	0.01	0.00
FT India Asset Allocation Fund-Balanced Growth	-0.01	0.26	0.04	0.64	-0.51	-0.04	-0.08	-0.03
FT India Asset Allocation Fund-Balanced Growth-Div	0.01	0.20	0.01	0.04	0.42	0.00	0.01	0.00
FT India Asset Allocation Fund-Conservative Growth	0.01	0.20	0.09	0.23	0.03	-0.02	0.01	0.00
FT India Asset Allocation Fund-Inflation Hedge	0.01	0.20	0.40	0.40	0.01	-0.02	0.01	-0.01
FT India Asset Allocation Fund-Inflation Hedge-Div	0.01	0.20	0.00	-0.01	-1.89	0.01	0.01	0.00
FT India Asset Allocation Fund-Pure Growth	0.01	0.20	0.02	0.16	0.11	-0.01	0.01	0.00
FT India Asset Allocation Fund-Pure Growth-Div	0.01	0.20	0.01	0.06	0.43	0.00	0.01	0.00
FT India Asset Allocation Fund-Steady Growth	0.01	0.20	0.03	0.16	0.09	-0.01	0.01	0.00
FT India Asset Allocation Fund-Steady Growth-Div	0.01	0.20	0.00	0.04	0.49	0.00	0.01	0.00
IDFC Asset Alloc-Aggr-Reg(G)	0.10	0.40	0.41	0.82	0.19	0.05	0.20	0.04
IDFC Asset Alloc-Mod-Reg(G)	0.08	0.26	0.59	0.44	0.10	0.02	0.23	0.03
IDFC Asset Alloc-Cons-Reg(G)	0.07	0.16	0.42	0.53	0.11	0.03	0.30	0.03
IDFC Asset Alloc-Aggr-Reg(D)	0.10	0.40	0.41	0.82	0.19	0.05	0.20	0.04
IDFC Asset Alloc-Mod-Reg(D)	0.08	0.26	0.59	0.44	0.10	0.02	0.23	0.03
IDFC Asset Alloc-Cons-Reg(D)	0.07	0.16	0.42	0.53	0.11	0.02	0.29	0.02
Kotak Asset Allocator Fund(D)	0.14	0.73	0.74	0.81	0.17	0.08	0.17	0.06
Kotak Asset Allocator Fund(G)	0.14	0.73	0.74	0.81	0.17	0.08	0.17	0.06
Kotak Multi Asset Allocation Fund(G)	0.05	0.17	0.37	0.42	0.09	0.01	0.18	0.01
Kotak Multi Asset Allocation Fund(MD)	0.05	0.18	0.37	0.42	0.08	0.01	0.18	0.01
Kotak Multi Asset Allocation Fund(QD)	0.05	0.17	0.37	0.42	0.08	0.01	0.18	0.01
Kotak Multi Asset Allocation Fund(AP)	0.05	0.18	0.37	0.42	0.08	0.01	0.17	0.01
Kotak Multi Asset Allocation Fund(AD)	0.05	0.18	0.37	0.42	0.08	0.01	0.17	0.01
Kotak Asset Allocator Fund(D)-Direct Plan	0.14	0.73	0.74	0.81	0.17	0.08	0.17	0.06

Kotak Asset Allocator Fund(G)-Direct Plan	0.14	0.73	0.74	0.81	0.17	0.08	0.17	0.06
Kotak Multi Asset Allocation Fund(AD)-Direct Plan	0.05	0.18	0.37	0.42	0.09	0.01	0.18	0.01
Kotak Multi Asset Allocation Fund(G)-Direct Plan	0.05	0.18	0.38	0.42	0.09	0.01	0.19	0.02
Kotak Multi Asset Allocation Fund(MD)-Direct Plan	0.05	0.18	0.37	0.42	0.09	0.01	0.19	0.01
Kotak Multi Asset Allocation Fund(QD)-Direct Plan	0.05	0.17	0.37	0.42	0.09	0.01	0.19	0.01
LIC Nomura MF Systematic Asset Alloc Fund(D)-Direct Plan	0.06	0.13	2.46	0.40	-0.01	-0.17	-0.04	-0.12
LIC Nomura MF Systematic Asset Alloc Fund(G)-Direct Plan	0.06	0.15	2.13	0.39	-0.01	-0.17	-0.04	-0.12
Pramerica Dynamic Asset Allocation Fund(D)	0.07	0.46	0.55	0.95	0.08	0.02	0.10	0.00
Pramerica Dynamic Asset Allocation Fund(G)	0.07	0.46	0.55	0.95	0.08	0.02	0.10	0.00
Pramerica Dynamic Asset Allocation Fund(D)-Direct Plan	0.07	0.46	0.55	0.95	0.09	0.02	0.11	0.00
Pramerica Dynamic Asset Allocation Fund(G)-Direct Plan	0.07	0.46	0.55	0.95	0.09	0.02	0.11	0.00
Union KBC Asset Allocation Fund-Mod(G)	0.06	0.28	0.53	0.36	0.07	0.00	0.14	0.01
Union KBC Asset Allocation Fund-Mod(D)	0.06	0.28	0.53	0.36	0.07	0.00	0.14	0.01
Union KBC Asset Allocation Fund-Cons(G)	0.04	0.23	0.47	0.43	0.05	0.01	0.10	0.01
Union KBC Asset Allocation Fund-Cons(D)	0.04	0.23	0.47	0.43	0.05	0.01	0.10	0.01
Union KBC Asset Allocation Fund-Cons(D)-Direct Plan	0.05	0.23	0.47	0.43	0.06	0.01	0.11	0.01
Union KBC Asset Allocation Fund-Cons(G)-Direct Plan	0.05	0.23	0.47	0.43	0.06	0.01	0.11	0.01
Union KBC Asset Allocation Fund-Mod(D)-Direct Plan	0.06	0.28	0.53	0.37	0.08	0.00	0.15	0.02
Union KBC Asset Allocation Fund-Mod(G)-Direct Plan	0.06	0.28	0.53	0.37	0.08	0.00	0.15	0.02

Table 1 shows the performance measures of asset allocation measures

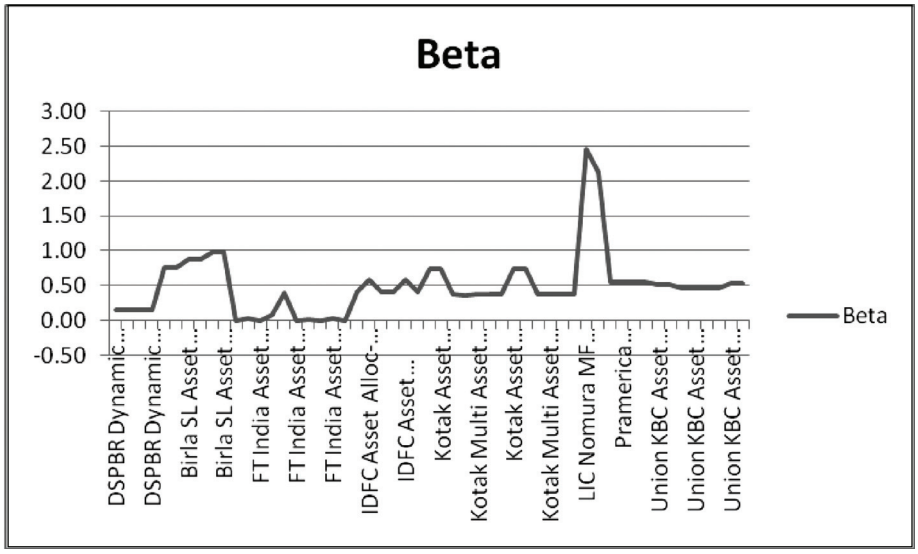

Fig.1 shows the beta values of asset allocation schemes.

Among 54 fund schemes, Kotak Asset Allocator Fund(D)-Direct Plan has the highest average return compared to other funds. Only two funds have highest beta values and sounds volatile when compared to all other schemes. LIC Nomura MF Systematic Asset Alloc Fund(D)-Direct Plan is the riskier fund with ?= 2.46 and LIC Nomura MF Systematic Asset Alloc Fund(G)-Direct Plan is the next riskier fund with ?= 2.13. This shows that majority of the funds are least risky in the market. Since Beta value is less than 1 in almost all funds, it means the fund reacts less than the market reaction and indicates that the security's price will be less volatile than the market.

Pramerica Dynamic Asset Allocation Fund both dividend and growth plans have high correlation when compared to other funds. Franklin Templeton India Asset Allocation Fund-Conservative Gth-Dividend plan has highest Treynor ratio, Kotak Asset Allocator Fund(D)-Direct Plan shows better performance when compared to Fama's measure, IDFC Asset Alloc-Cons-Reg(G) is comparatively better when measured with Sharpe's ratio and Kotak

Asset Allocator Fund(D)-Direct Plan has highest alpha when compared to all other asset allocation schemes.

The measures leads to different results because each tool has its own way of measuring performance which is important.

Findings and Suggestions

- Most of the selected funds show beta value of less than 1 which means that the funds will be less volatile than the market. Only two funds have high volatility with beta values more than two.
- Higher the Sharpe ratio, higher the performance of the fund. IDFC Asset Alloc-Cons-Reg(G) shows better performance in this regard.
- The higher the Jensen's measure value, the better the fund is performing. Kotak Asset Allocator Fund(D)-Direct Plan has highest alpha and is the best performing fund as it has the highest Jensen's measure value (0.0572) among all the funds. It is outperformer among others in case of net selectivity measure too.
- Based on Treynor ratio , Franklin Templeton India Asset Allocation Fund-Conservative Gth-Dividend plan has performed better than all other funds with the ratio of 0.285. The schemes have performed according to this ratio.
- Among all funds, Kotak Asset Allocator Fund(D)-Direct Plan is preferred as it has higher average returns along with better performer with respect to two performance measures, Fama's selectivity and Jensen's alpha.

Conclusion

Investors can invest in a mutual fund that matches their investment objective and analyze the fund based on various criteria such as risk prevailing in the market, variations on the return and deviations occur in the returns etc. Risk appetite of an investor plays an important role in the selection of mutual fund. The investor who needs regular income can invest in the one of the portfolios chosen according these measures.

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