TEN MYTHS OF PERFORMANCE EVALUATION OF MUTUAL FUNDS: A SNAPSHOT VIEW

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Introduction
The measure of performance of financial instruments is basically dependent on the myths that (1) all investors are averse to risk, and are single period expected utility of terminal wealth maximizers, (2) all investors have identical decision horizons and homogeneous expectations regarding investment opportunities, (3) all investors are able to choose among portfolios solely on the basis of expected returns and their variance, (4) all transactions costs and taxes are zero, and (5) all assets are infinitely divisible.

Myths of Evaluation Models
The following paragraphs indicate a brief description of the studies on ‘performance evaluation of mutual funds’.

1. Myth - Benchmark funds will always perform better. We understand that benchmark fund is also based on market fluctuations, hence we can not take is as granted that it will perform always better. Friend et al. (1962) offered the first empirical analysis of mutual funds’ performance. This study showed that the average returns of mutual funds were almost similar to that delivered by the benchmark index. It concluded that since the managed funds were not able to outsmart the benchmark index, and therefore it indicated towards the presence of market efficiency in the stock markets. Eun et al. (1991) study used various benchmarks links: the Standard and Poor’s 500 Index, the Morgan Stanley Capital International World Index, and a self-constructed index of U.S. multinational firms.

Chander (2006) study examined the investment performance of managed portfolios with regard to sustainability of such performance in relation to fund characteristics, parameter stationarity and benchmark consistency.

Statman Model (Statman, 2000), used for mutual funds, is described by the following equation:

\[ eSDAR = R_f + (R_p - R_f) \left( \frac{S_m}{S_p} \right) - R_m, \]  

where \( eSDAR \) – excess standard deviation and adjusted return; \( R_f \) – monthly return on three-month treasury bills; \( R_p \) – monthly return on fund portfolio; \( R_m \) – monthly return on the benchmark index; \( S_p \) – standard deviation of portfolio p’s return; \( S_m \) – standard deviation of return on the benchmark index.

This model used for short-term investment analysis. The performance is compared with it benchmark on monthly basis.

Chang et al. (2003) identified hedging factor in the equilibrium asset pricing model and used it as a benchmark to construct a new performance measure. The model
adopted by Jow-Ran Chang, Nao-Wei Hung and Cheng-Few Lee is based on
competitive equilibrium version of inter-temporal asset pricing model derived in
Campbell. The dynamic asset pricing model incorporates hedging risk. Formally, the
pricing restrictions on asset $i$ imported by the conditional version of the model are:

$$E_t r_{i,t+1} - r_{f,t+1} = -V_{i,t}/2 + \gamma V_{im} + (\gamma - 1)V_{ih}, \quad (2)$$

where $E_{tr_{i,t+1}}$ – log return on asset; $r_{f,t+1}$ – log return on riskless asset; $V_{ii}$
denotes $V_{art}(ri,t+1)$; $\gamma$ is the agent’s coefficient of relative risk aversion; $V_{im}$
denotes $Covt(ri,t+1, rm,t+1)$, and $V_{ih} = Covt(r_i,t+1, (Et+1 - Et), \sim j = 1 \rho j, rm,t+1+j)$, the
parameter: $\rho = 1 - \exp(c - w)$ and $c - w$ is the mean log consumption to wealth ratio.

2. Myth – Risk free assumed as constant return. There are several studies
evidenced that risk free is not constant and it is depended on the market conditions.
Sharpe (1964) measure is based on capital asset prices, market conditions with the help
of risk and return probabilities.

$$Sp = \frac{E(Rp) - Rf}{\sigma(Rp)} \quad (3)$$

where $E(Rp)$ denotes the expected return of the portfolio; $Rf$ denotes the return
on the risk-free asset; $\sigma(Rp)$ denotes the standard deviation of portfolio return.

3. Myth – Beta coefficient is better than alpha coefficient. There are
divergent studies relating to alpha and beta coefficients. In other words, researchers
have diversified opinion regarding whether to consider total risk or market risk to
estimate efficiency of a mutual fund. Treynor (1965) advocated the use of Beta
Coefficient instead of the total risk.

$$Tp = \frac{E(Rp) - Rf}{\beta p} \quad (4)$$

where $E(Rp)$ denotes the expected return of the portfolio; $\beta p$ denotes the beta of
portfolio return.

study used the investment performance outcomes of 57 investment managers to find
out evidence of market timing abilities and found no statistical evidence that the
investment managers of any of the sample funds had successfully outguessed the
market. Treynor and Mazuy (1966) developed a prudent and exclusive model to
measure investment managers’ market timing abilities. This formulation is obtained by
adding squared extra return in the excess return version of the capital asset pricing
model as given below:

$$(R_{pt} - R_f) = \alpha + \beta p (R_{mt} - R_f) + yp (R_{mt} - R_f)^2 + e_{pt} \quad (5)$$

where $R_{pt}$ is monthly return on the fund; $R_f$ is monthly return on 91 days
treasury bills; Rmt is monthly return on market index; ept is an error term.

This model involves running a regression with excess investment return as dependent variable and the excess market return and squared excess market return as independent variables. The value of coefficient of squared excess return acts as a measure of market timing abilities that has been tested for significance of using t-test. Significant and positive values provide evidence in support of the investment manager’s successful market timing abilities.

5. Myth – Expected return is equal to the risk free rate plus a risk premium. Jensen (1967) finds that some funds are not able to predict security prices well enough to outperform a buy-the-market and hold policy. Jensen Model sates that given the additional assumption that the capital market is in equilibrium, all three models yield the following expression for the expected one period return on any security (or portfolio) j:

\[ E(R_j) = RF + \beta_J [E(R_m) - RF], \]

where RF is the one-period risk free interest rate; \( \beta_J = \text{cov}(j R_J, R_M) / \sigma^2 R_M \) – the measure of risk (hereafter called systematic risk), which the asset pricing model implies is crucial in determining the prices of risky assets; \( E(R_m) \) – the expected one-period return on the “market portfolio” which consists of an investment in each asset in the market in proportion to its fraction of the total value of all assets in the market. It implies that the expected return on any asset is equal to the risk free rate plus a risk premium given by the product of the systematic risk of the asset and the risk premium on the market portfolio.

6. Myth – Overall performance can be attributed to selectivity and risk. Fama (1972) devised mechanism for segregation part of an observed investment return due to managers’ ability to pick up the best securities at a given level of risk from part that is due to the prediction of general market price movements. In Fama’s decomposition performance evaluation measure of portfolio, overall performance can be attributed to selectivity and risk. The performance due to selectivity is decomposed into net selectivity and diversification. The difference between actual return and risk-free return indicates overall performance:

\[ Rp - Rf, \]

where \( Rp \) is actually return on the portfolio, which is monthly average return of fund; \( Rf \) is monthly average return on treasury bills 91-days.

The overall performance further can be bifurcated into performance due to selectivity and risk.

Thus,

\[ Rp - Rf = \{ Rp - Rp(\beta_p) + Rp(\beta_p - Rf) \}. \]

In other words, Overall performance = selectivity + risk. Modigliani and Modigliani (1997) Approach is better known as \( M^2 \) in the investment literature. This measure is developed adjusting portfolio return. This adjustment is carried on the
uncommitted (cash balances) part of the investment portfolio at the risk-less return so as to enable all portfolio holdings to participate in the return generation process. This adjustment is needed to bring out the level playing field for portfolio risk-return and vis-à-vis market return. The effect of this adjustment is reported below:

\[ M^2 = *R_p - R_m, \]  
\[ *R_p = (R_f * (1 - S_{dm}/S_{dp})) + (R_p * S_{dm}/S_{dp}), \]

where \(*R_p\) – expected return; \(R_f\) – risk free return; \(S_{dm}\) – standard deviation of market portfolio, and \(S_{dp}\) – standard deviation of managed portfolio.

7. Myth – Persistence of Performance is Evident. There are contradicting studies about the persistence of performance of mutual funds, for instance Dunn and Theisen (1983) study found no evidence that funds performed within the same quartile over the ten-year period. Bauman and Miller (1995) studied the persistence of pension and investment fund performance by type of investment organization and investment style. Volkman and Wohar (1995) extend this analysis to examine factors that impact performance persistence, which is negatively related to size and negatively related to levels of management fees. Carhart (1997) shows that expenses and common factors in stock returns such as beta, market capitalization, one-year return momentum, and whether the portfolio is value or growth oriented "almost completely" explain short term persistence in risk-adjusted returns. Smith (2009) showed that the large funds tend to perform better, which suggests the presence of significant economies of scale. The evidence indicates a positive relation between cash holding and performance.

8. Myth – Risk averse Manager performs better. Yoon (2006) proposed an incentive compatible portfolio performance evaluation measure. In this model, a risk-averse portfolio manager is delegated to manage a fund, and his portfolio construction (and information-gathering) effort is not directly observable to investors, in which managers are to maximize investors’ gross returns net of managerial compensation. He considers the effect of organizational elements such as economics of scale on incentive and, thus, on performance.

9. Myth – Performance can be compared with competition in the industry. Coates and Hubbard (2007) reviewed the structure, performance and dynamics of the mutual fund industry, and showed that they are consistent with competition. It was also found that concentration and barriers to entry are low, actual entry is common and continuous, pricing exhibits no dominant long-term trend, and market shares fluctuate significantly.

Wu et al. (2008) study adopts modified Delphi method and the analytical hierarchy process to design an assessment method for evaluating mutual fund performance. The most important criteria of mutual fund performance should be ‘mutual fund style’, following is ‘market investment environment’. This result indicates investor’s focus when they evaluate the mutual fund performance.
Khurshid et al. (2009) studied the structure of the mutual fund industry in India and analyzed the state of competition among all the mutual funds in private sector and public sector. The levels of competition and their trends have been obtained for the periods March, 2003 to March, 2009.

Masa and Zhang (2008) study found that more hierarchical structures invest less in firms located close to them and deliver lower performance. An additional layer in hierarchical structure reduces the average performance by 24 basis points per month.

Wahal and Wang (2010) found impact of the entry of new mutual funds on incumbents using the overlap in their portfolio holdings as a measure of competitive intensity.

10. Myth – Performance can be easily measured with market variables. Qiang and Lacey (2008) study found that mutual fund termination correlates with a variety of fund specific variables as well as with market variables such as the S&P 500 index and the short-term interest rate. Smith (2009) discussed the size and market concentration of the mutual fund industry, the market entry and exit of mutual funds, the benefits and costs of mutual fund size changes, principal benefits and costs of ownership from fund shareholders’ perspective etc.

Conclusion
This paper is intended to examine some basic myths about performance evaluation of mutual funds. There are several studies on this issue. It is observed that the opinions of scholars are deviating and not correlating with the results. For instance, persistence of performance is not confidently proved by the scholars. There are various reasons which are exhaustive and to mention a few like: market fluctuations, market timing ability, and competition in the industry.

References


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Abstract
There are numerous studies conducted to examine the performance of mutual funds of the developed capital markets based on age-old models. This paper is intended to examine the trends in modeling dimensions of measuring performance of mutual funds during last 50 years. This paper is intended to examine some basic myths about performance evaluation of mutual funds. There are several studies on this issue. It is observed that the opinions of scholars are deviating and not correlating with the results. For instance, persistence of performance is not confidently proved by the scholars. There are various reasons which are exhaustive and to mention a few like: market fluctuations, market timing ability, and competition in the industry.

Keywords: financial modeling, mutual funds, performance appraisal, global investments