

Assessing the performance of mutual funds

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Abstract. *An open-ended mutual fund is an institution designed to provide both diversification and professional management at a relatively low cost. The directors consider issuing new shares or withdrawing old shares at any time, depending on the evolution of the capital market. In this context, in the article we started from identifying the possibilities to consider mutual portfolios as diversified ones, being included, as a rule, over 100 different titles. This is due more to the size of the fund than to the desire to minimize risk. In these circumstances, given that most funds diversify extensively, volatility should provide a good arrangement for variability to ensure a fairly high return on capital market placement. The purpose of this article was to clarify the issues related to these mutual funds, so that the analysis focuses on determining what is the prospect of achieving a reasonable return from the point of view of the holder of the invested portfolios. The methodology used was, by taking brief but important examples, what the situations are and how the mutual portfolios placed on the market behave. We used the graphical representations, but also a method of analysis by using the Dow-Jones portfolio, consisting of 23 funds with low rates. We also used the logical method of interpreting and comparing the results obtained in different circumstances, indicating through some models what should be the analytical capacity of investors of asset portfolios on the capital market.*

Keywords: mutual funds, portfolios, capital market, investor, yield.

JEL Classification: G11, G17.

Introduction

In this article, we started by defining the concept of mutual fund context in which, then, we performed an evaluation of the performance of such a placement. Of course, we have presented various cases, taking and processing a small amount of data that can be further extended, so that we can reach a conclusion on the return that the investor can expect by placing mutual portfolios.

The mutual fund portfolio is more conservative than the standard securities portfolio. This is because a certain perspective is assigned to such a placement.

We have also dealt with this as a special situation, when several funds are represented below the yield line that any portfolio investor considers to be the desired one or the one that provides a convenient financial solution.

Of course, differences in diversification may not have resulted in poor results, as risk was measured by volatility, not variability. The volatility of a portfolio and its variability are two notions that have different meanings, but which can have influences on mutual fund investments in the capital market.

Literature review

The capital market and the prospects of investors to get the best returns are topics that have been in the attention of many researchers. Amenc and Le Sourd (2003) approached portfolio theory, and in 2013 M.G. Anghel has published a paper on portfolio management and analysis models. Anghelache, Anghel and Bodo (2016) published a study on the static model of portfolio choice. Armeanu (2008) was concerned with the profitability and risk of the portfolio consisting of two securities. Baule (2010) presented a paper on the selection of the optimal portfolio for a small investor, given the risk and cost of the transaction. Clemenccon and Skanderbeg (2009) conducted a study on the selection of a portfolio at extreme risk of measurement. Cox and Huang (1989) analyzes the optimal consumption and the policies of placing portfolios according to the share price. Dragotă et al. (2009) published a paper in which he gives a comprehensive presentation on how to manage securities portfolios. In 2011 Geromichalos and Simonovska analyzed a number of aspects regarding the liquidity of assets in the formation of international portfolios, and Harvey et al. (2010) focus on the analysis of portfolio selection with high moments. Li and Smetters (2011) published a study on choosing the optimal portfolio in the context of ensuring social security indexation. Markowitz (1959) published extensive material on portfolio selection in the context of investment diversification. Merton (1971) was concerned with optimal consumption and portfolio rules when using a continuous time model. Stancu (2007) published a paper in which he presents a study on the financial market and portfolio management. In 2012 K.D. West performed an econometric analysis using a model in which the reduction factor is close to one.

Methodology, data, results and discussions

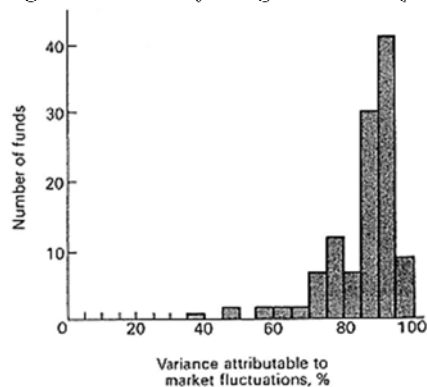
An open-ended mutual fund is an institution designed to provide both diversification and professional management at a relatively low cost. Administrators are prepared to issue new shares or withdraw old shares at any time. The net asset value per share is calculated by dividing the current market value of the fund's holdings by the number of its outstanding shares. In general, old shares can be redeemed for the total (current) net asset value. New shares are usually sold for an amount equal to the net asset value plus an 8 to 10 percent tax that is intended for sale. When securities are bought or sold, additional brokerage fees are incurred. Such costs are not explicitly reported. They are simply added to the purchase price when calculating purchase costs and are deducted from the selling price when calculating sales proceeds.

Mutual funds are important for two reasons. First of all, managers invest a lot of money for many investors. Secondly, the performance of a mutual fund is a matter of public record. The results can be reasonably considered typical for the performance of professional securities analysts and investment managers.

Most mutual funds have diversified portfolios, usually including over 100 different securities. This may be due more to the size of the fund than to the desire to minimize risk. The very act of investing 1 or 2 percentage points in the capital of a large fund could bid for the price of a security to rob it of its original appeal.

As most mutual fund portfolios are highly diversified, their performance is closely correlated with that of the market as a whole. Figure 1 shows the proportion of change in the rate of return attributed to market fluctuations for a group of 115 mutual funds.

Figure 1. *The rate of change in the rate of return attributed to market fluctuations*



Source: The authors established conventional data that they represented graphically.

On average, about 85 percent of the variation could be attributed to market fluctuations. In other words:

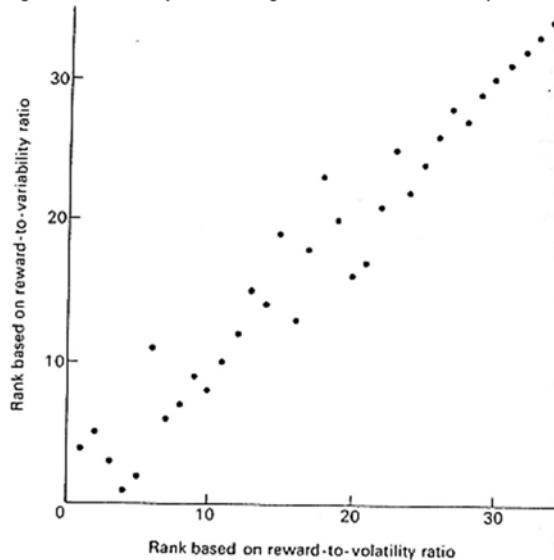
$$b_p^2 \sigma_M^2 \sim 0,85 \sigma_p^2$$

Considering the square root of both axes, we can rewrite the above relation as follows:

$$\sigma_p = (1,085 \sigma_M) b_p$$

As most funds diversify extensively, volatility (b_p) should provide a good arrangement for variability (σ_p). Figure 2 shows that the performance of each of the 34 mutual funds was assessed using the reward-variability ratio and the funds were ranked from best (1st place) to most unsatisfactory (34th place). The procedure was repeated, using the reward-volatility ratio. As Figure 2 shows, the rankings were very similar.

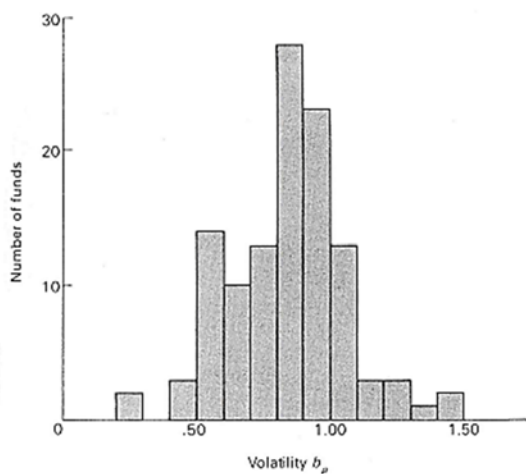
Figure 2. Mutual funds using the reward-variability ratio



Source: The authors established conventional data that they represented graphically.

Although the funds differ slightly in terms of market correlation, they differ considerably in terms of volatility, as shown in Figure 3. The mutual fund portfolio appears to be more conservative than that of the securities in the Standard and Poor's Composite Index, the average value of b_p was about 0.84.

Figure 3. Number of funds and volatility

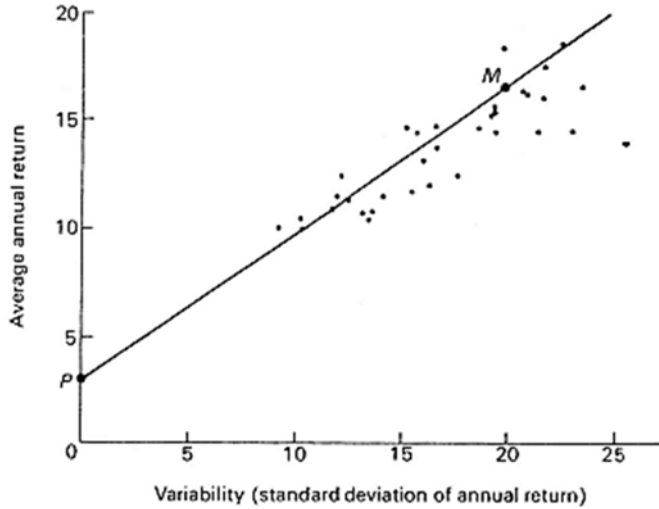


Source: The authors established conventional data that they represented graphically.

The differences in volatility shown in Figure 3 are not solely due to chance.

Figure 4 provides some evidence that each unlabeled item indicates the performance of one of the 34 mutual funds. Point *M* shows the results that would have been obtained from a portfolio of the 30 stocks used to calculate the Dow-Jones Industrial Average. Point *P* represents the approximate level of the pure interest rate during that period. The *PM* line is the empirical counterpart of the capital market line.

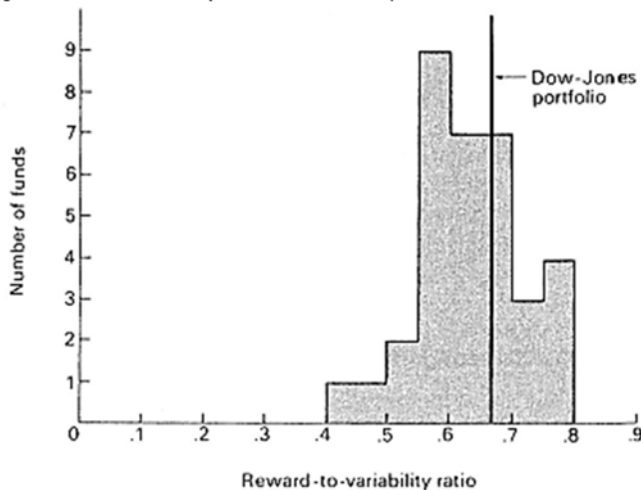
Figure 4. Average annual return and variability



Source: The authors established conventional data that they represented graphically.

More funds are represented below the line in Figure 4 than above. This is reflected in the distribution of reward-variability ratios shown in Figure 5. Only 11 funds had higher rates than the Dow-Jones portfolio, 23 funds had lower rates.

Figure 5. Distribution of reward-variability ratios



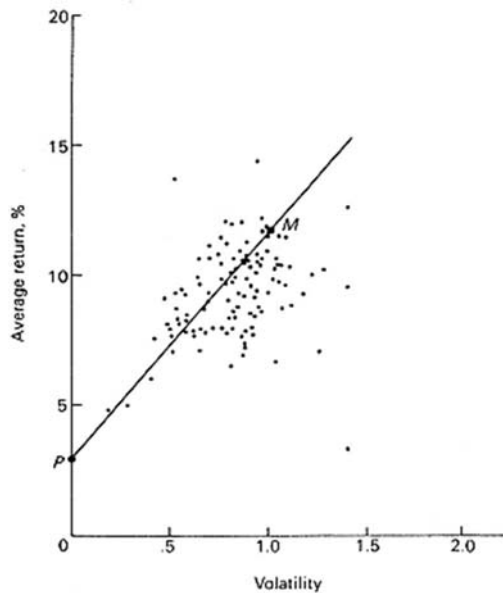
Source: The authors established conventional data that they represented graphically.

Such results are not particularly encouraging for the supporter of mutual funds. The underperformance could be attributed to insufficient diversification, but even the nature of the portfolios held and the high correlation of the fund's return with market fluctuations preclude this explanation. Mutual fund managers are unlikely to make uncertain judgments.

The results presented in Figures 4 and 5 are based on the net returns obtained by the investor after deducting management fees and broker fees. The reported figures make it difficult to determine the amounts spent on brokerage fees. Adding these costs provides the gross return for each year.

Reward-variability ratios based on gross yields are randomly scattered around the market portfolio. Of the 34 funds shown in Figures 4 and 5, nineteen had higher gross returns rates than the Dow-Jones portfolio (fifteen had lower ratios).

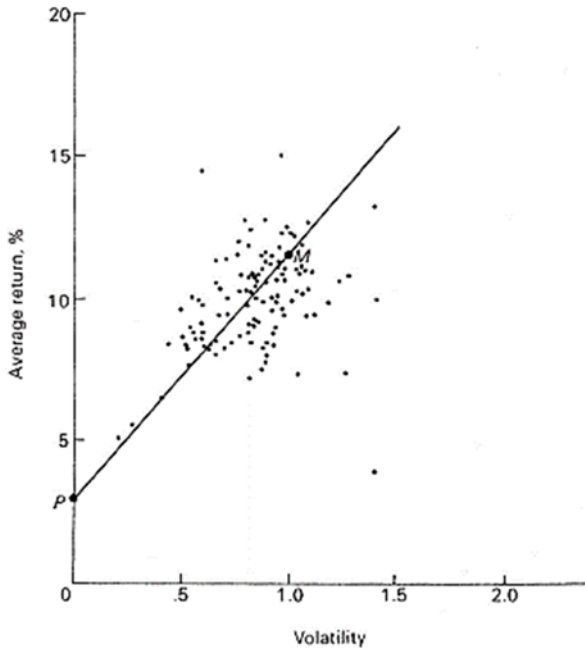
Figure 6. Average yield and volatility (net returns)



Source: The authors established conventional data that they represented graphically.

Figure 6 shows the average return and volatility for the 115 funds studied (values are based on net returns). Point *M* indicates the performance of a market portfolio composed of securities in the Standard and Poor's Composite Index. Point *P* represents the pure interest rate (based on the yield on a ten-year government bond). The *PM* line is the empirical counterpart of the securities market line. Figure 7 shows the results obtained using the gross returns.

Figure 7. Average yield and volatility (gross returns)

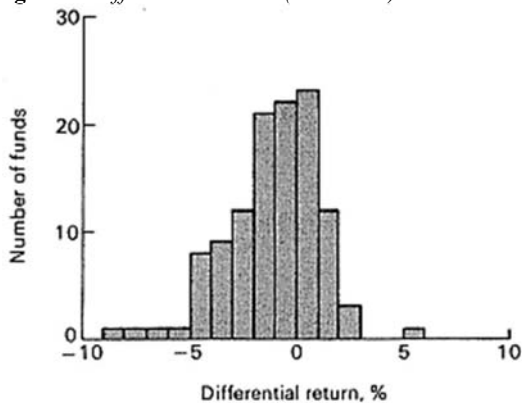


Source: The authors established conventional data that they represented graphically.

In Figure 6, which shows the net performance, more funds are represented below the securities market line than above it, but in Figure 7, which shows the gross performance, the points are more or less randomly located around the line. Differences in diversification may not have caused these results, as risk was measured by volatility, not variability. The most plausible explanation is that excessive spending on portfolio management has a direct influence.

Figure 8 shows the differential yields for the 115 funds based on net worth. The average was -1.1 percentage points per year. Of the 115 funds, 76 had negative differential returns.

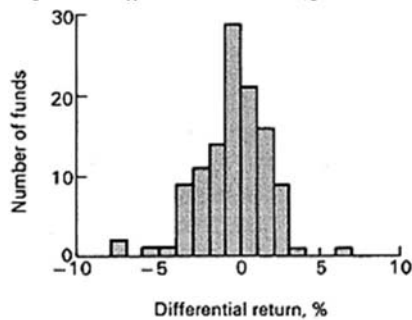
Figure 8. Differential returns (net values)



Source: The authors established conventional data that they represented graphically.

Figure 9 shows the differential yields based on gross values. The average value was -0.4 percentage points per year. Only 55 of the 115 funds had negative differential returns.

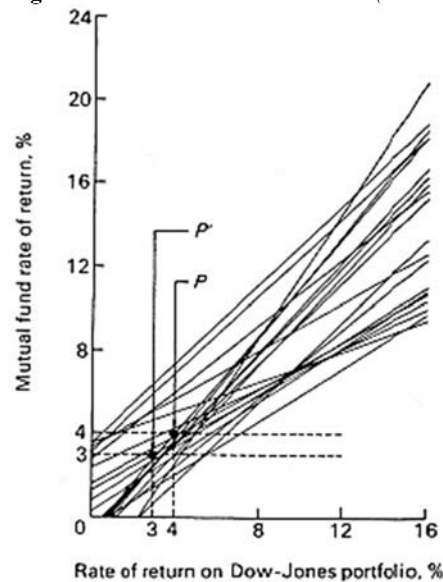
Figure 9. *Differential returns (gross values)*



Source: The authors established conventional data that they represented graphically.

Figure 10 shows the characteristic lines for the 20 funds studied using net annual returns. The securities included in the Dow-Jones Industrial Average were chosen to represent the market. In general, the funds did not perform better than comparable market-based portfolios. Taking 4 percentage points as an approximation of the pure interest rate, eight of the lines are to the left of point P while 12 are to the right. Taking 3 percentage points as an approximation, eight lines are to the left of point P , while 12 are to the right.

Figure 10. *Funds characteristic lines (net annual returns)*

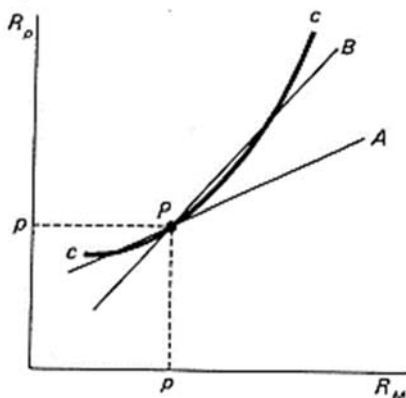


Source: The authors established conventional data that they represented graphically.

The procedure used to fit a characteristic line may not fully reveal a possible strength of a fund's management. We will consider the two characteristic lines shown in Figure 11. Each is consistent with the perfect capital market equilibrium. Suppose that the administrator of a mutual fund could anticipate the general direction of the market as a whole, that is, predict

whether RM would be above or below p . If the brokerage fees were not excessive, it would be desirable to change the fund's portfolio from time to time, holding portfolio A when RM is expected to fall below p and portfolio B when RM is expected to exceed p .

Figure 11. Model with two characteristic lines

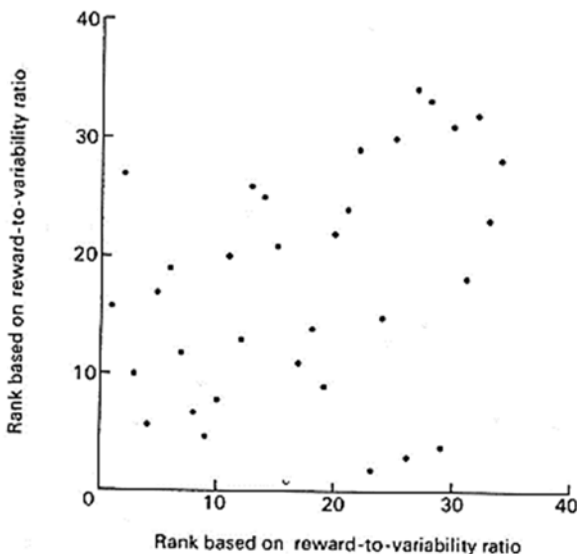


Source: The authors established conventional data that they represented graphically.

If it did, the actual results could be approximated more accurately by a curve like the one in Figure 11 than by a straight line. It seems that mutual funds do not value portfolios based on comparable volatility better on average than on the market.

Figure 12 compares the performance of 34 funds from one period with their performance from another period. The horizontal axis shows the rank of each fund based on the reward-variability ratios for the previous period. The vertical axis draws the rank based on the reward-variability ratios for the last period. There seems to be a slightly positive relationship.

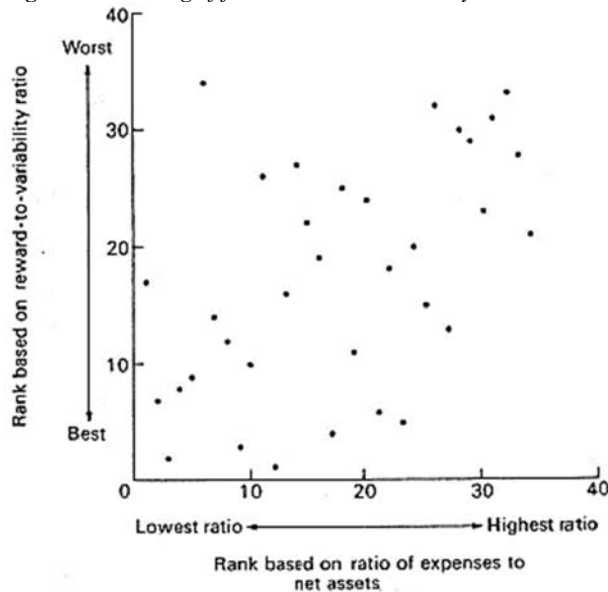
Figure 12. Ranking of funds based on ratios rewards variability in different periods



Source: The authors established conventional data that they represented graphically.

Figure 13 provides further evidence. The horizontal axis graphically represents the rank of each of the 34 funds based on the ratio of expenditure to total assets. The vertical axis represents graphically based on the reward-variability ratios for the considered period. Again, there is a slightly positive relationship.

Figure 13. Ranking of funds based on variability reward ratios and the ratio of expenditures to total assets



Source: The authors established conventional data that they represented graphically.

A comparison of Figures 12 and 13 suggests that persistent differences in performance based on net returns may be due more to differences in management cost than to differences in cost effectiveness.

Conclusions

From the careful study of this article, based on the theoretical aspects, but exemplified by several individual cases, a series of conclusions can be drawn. First of all, an open-ended mutual fund is an institution designed to provide both diversification and relatively low-cost professional management.

Before placing a mutual fund, it is desirable to study the situation of such a fund. As a rule, the directors consider issuing shares or withdrawing old shares at any time, depending on the evolution of the value on the capital market, which leads to the profitability with which this placement on the capital market is completed.

Mutual portfolios are diversified, usually including a number of different securities, which correlate in a certain way in the market after their investment, placement.

Various cases taken over and presented will lead to a precise conclusion on the return that the investor can expect by placing mutual portfolios. It should be noted that the mutual fund portfolio is more conservative than the standard securities portfolio. This is because a

certain perspective is assigned to such a mutual investment. The differences that arise from the very careful diversification of these mutual portfolios appear and offer the investor the possibility to opt for a more secure portfolio in order to have a financial solution with final return at the end of the investment period.

It should be noted that a number of methods can be used in the early analysis of a mutual fund before it is placed on the capital market, such as the method of analysis using the Dow-Jones portfolio, which is quite conducive to such an operation. It turns out that mutual funds have the prospect of a higher return than other portfolios set up without a thorough analysis.

It should be noted that the analysis of the evolution of this mutual fund on the capital market must also take into account a number of risks that may develop as a result of surprising phenomena that occur in the capital market.

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