

An Assessment of the Performance of Greek Mutual Equity Funds Selectivity and Market Timing

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Abstract

This paper empirically examines the performance of fifteen Greek mutual equity funds. The data on which this study was based is monthly and refer to the period January, 2000 to December, 2008. Based on the Treynor-Mazuy model and Sharpe and Treynor measures, the paper evaluates which equity fund entails selectivity and market timing. Our results demonstrate that the examined domestic mutual equity funds have not exhibited selectivity and showed minimum market timing ability during the study period.

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1 Introduction

The Capital Asset Pricing Model (CAPM) is an extension of the portfolio theory as it was initially set forth by Markowitz [19]. It was developed by Sharpe [25], Lintner [17], Mossin [21] and Treynor [29] and it describes the relationship between the expected return of a capital asset and a degree of risk of the capital asset. Putting CAPM into practice, a huge quantity of

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research papers investigated fund performance in terms of risk, return, timing etc. Since 1965 Treynor [30], Sharpe [26] and Jensen [13] were the first to evaluate fund performance in relation to risk and developed standards to measure risk-adjusted returns. Sharpe studied the annual rates of return of 34 mutual funds in relation to the risk involved for the years 1954-1963, which showed that 19 out of 34 mutual funds had higher rates of return than the market portfolio. Sharpe's study supports the view that the market is efficient and that able managers can vary their portfolios accordingly, by assessing correctly the risk of the stock, thus producing better rates of return. Similar to Sharpe's analysis, Jensen studied 115 mutual funds for the period from 1945 to 1964. Taking into consideration the transaction cost, he found that only 43 out of 115 portfolios had better annual returns than those of the market. Also, Friend et al. studied 136 mutual funds for the period from 1960 to 1968, and they found that the rates of return of the mutual funds were not better than random equally shared portfolios [8]. Similar conclusions are drawn through Firth's study, who studied 360 mutual funds of England for the time period 1965 - 1975 (see [7]). Various researchers, such as, Lockwood [18], Edelen and Warner [5], Engen and Lehnert [6], Dahlquist et al. [4], Tsionas and Philip-pas [32], Kaimakamis and Kiriakopoulos [14] conducted studies on the rates of return of mutual funds.

Among models that detect selectivity and market timing abilities include Treynor and Mazuy [31], Henriksson and Merton [12] and Grinblatt and Titman [10]. According to Treynor and Mazuy [31], market timers, being able to forecast market returns, will increase (decrease) their holdings of the market portfolio when the return on it is high (low). As a result, they proposed a procedure for detecting timing ability that is based on a regression analysis of the managed portfolio's realised returns, which includes a quadratic term. The empirical results obtained by [31] and using annual returns for 57 mutual funds, showed no statistical evidence that managers have outguessed the market. Empirical works with this methodology have been conducted by Grinblatt and Titman [9], Lehman and Modest [16], Cumby and Glen [3], Lee and Rahman [15], Coggin et al. [2], etc.

Within the Greek environment findings are limited mainly due to the fact that mutual funds appeared relatively recently in the Greek market. There were only two during the 1970s (DELOS and HERMES), while most of them appeared in the 1990s. Therefore, relevant research cannot be conducted for the distant past.

The first study that appeared was that of Handjnicolaou [11], who applied the Treynor, Sharpe and Jensen indexes on two funds in existence at that time, and who came to the conclusion that they had a better yield in relation to the Athens Stock Exchange Index. Milonas studied mutual funds' risk-return relationship for the period 1990-1996 using the Treynor, Sharpe and

Jensen indexes, [20]. He also assessed the abilities of fund managers based on the Treynor-Mazuy model. His study refers to 10 mutual funds for the period 1993 - 1994 and 12 mutual funds of balanced and equity type 1995 - 1996 using for the market portfolio the official ASE index. According to these findings it cannot be argued that mutual fund managers exhibit significant timing ability. Philipas, by using the main assessment indexes (Treynor, Sharpe, Jensen, Treynor-Mazuy and Henrikson-Merton), studied a sample of mutual funds for the period 1990-1997, (see [22]-[23]). He came to the conclusion that their managers do not have the ability for correct market timing. Philippas and Psoma, using Treynor-Mazuy model, evaluated the performance of 17 Greek equity mutual fund managers, [24]. The empirical findings do not reveal any ability of the Greek managers to time the market correctly or select undervalued securities. Only four mutual funds achieved a positive statistical coefficient of market timing. Artikis found that the performance of the Greek mutual funds outperforms the market index [1]. Sorros evaluated the performance of sixteen equity mutual funds operating in the Greek financial market over the period 1/1/1995-31/12/1999, [27]. Four mutual funds achieved lower return than the General Index of the Athens Stock Exchange (ASE) and eight mutual funds were ranked in the same order on either Treynor's or Sharpe's technique. Also, Thanou [28], by using the CAPM performance methodology, evaluated the performance of 17 equity mutual funds between the years 1997 and 2005. Her results indicated that the majority of funds followed closely the market, achieved overall satisfactory diversification while the results in market timing are mixed, with most funds displaying negative market timing capabilities.

Mutual funds invest at a percentage higher than 65% in stocks, and they are addressed to investors with a long-term investment horizon, who wish to maximize the return on their money and at the same time are willing to undertake the equivalent high investment risk. In Greece, the total asset of mutual funds on 25/08/2009 amounted to 11 billions euros. Figure 1 shows the composition of mutual funds per category.

The remainder of the paper is organized as follows. Section II outlines the methodology. Treynor-Mazuy (TM) model is used to assess the market timing ability and market timing performance of mutual fund managers for the aforementioned period. We also calculate the risk-adjusted performance measures of domestic mutual funds: the Sharpe ratio and the Treynor ratio and we rank them according to the results. In Section III the results of the study are presented and analysed and finally Section III provides a conclusion to this paper. The period of the study (03/01/2000 - 31/12/2008) is the most recent one examined by Greek mutual funds study.

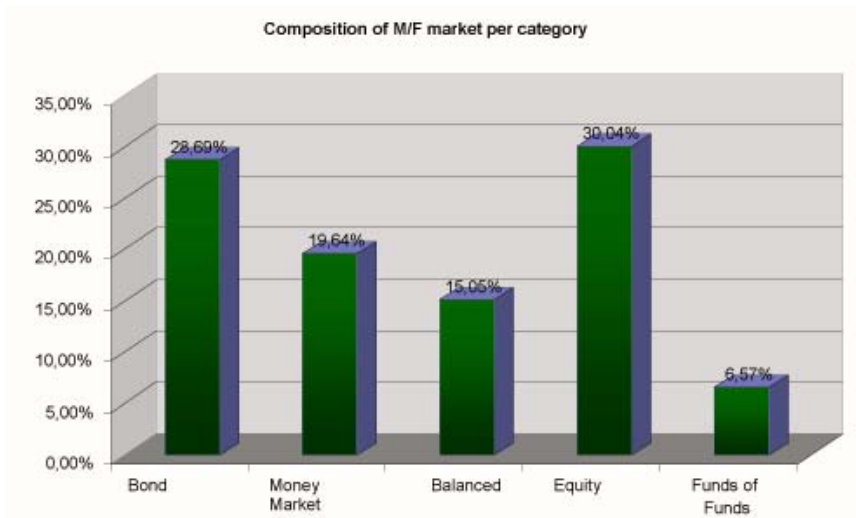


Figure 1: Composition of mutual funds (M/F) market per category

2 Methodology

In 01/01/2000 there were 58 mutual equity funds while in 31/12/2008 there existed 70. The Greek mutual equity fund industry with 1.8 billion euros in assets at year-end 2008 experienced a significant reduction of 88 percent from 01/01/2000, reflecting the sharp drop in equity prices experienced worldwide in 2008. It should be mentioned that shares also decreased by 60 percent from 2000 to the end of 2008.

The data comprises of fifteen Greek domestic mutual equity funds in the period 3 January 2000 to 31 December 2008. We make use of a sample which includes only existed mutual equity funds whose data were available for the whole period under review. Among the funds that exit the sample, some merged into others, some changed category and some ceased to exist.

What was used as a basis was the monthly share price for every mutual fund, as well as the monthly values of the General Index of the Athens Stock Exchange (ASE). The risk-free market rate that was taken into account was Euribor 1 month. Mutual fund data of this study were derived from Bloomberg.com.

The monthly rates of return of the mutual funds and the General Index of the ASE have been denoted $R_{p,t}$ and calculated through the formula

$$R_{p,t} = \log \frac{P_{i,t}}{P_{i,t-1}}$$

where $P_{i,t}$ is the value of the equity fund i at the end of the time period (month) t and $P_{i,t-1}$ is the value at the end of the time period $t - 1$.

In [31], Treynor and Mazuy use the following regression to test for selectivity and market timing.

$$R_{p,t} - R_{f,t} = \alpha + \beta(R_{m,t} - R_{f,t}) + \gamma(R_{m,t} - R_{f,t})^2 + e_t$$

where $R_{p,t} - R_{f,t}$ is the excess return of the portfolio p on time t , $R_{m,t} - R_{f,t}$ is the excess return of the market, α is the estimated selectivity performance, β is the portfolio's estimate of systematic risk, γ is the estimated indicator of market-timing performance and e_t is the residual excess return on portfolio p during period t .

Market timing skills relate to the ability of fund managers to correctly assess the direction of the market, either bull or bear, and position their portfolio accordingly. Selectivity skills refer to the capabilities of fund managers in generating superior performance by means of stock selection techniques. The TM model implies that the value of γ will be positive and significant if the fund managers have high selectivity skills. Also, a positive and significant market timing coefficient value γ implies superior market timing abilities of fund managers. An insignificant value for γ can be interpreted either as a lack of timing ability or as no attempt by a fund manager to time the market as is the case in a buy or hold strategy (see [31]).

For evaluations of risk of mutual funds some of the most commonly used are Sharpe and Treynor measures. The Treynor ratio is the first risk-adjusted performance measure of mutual funds and it was popularized by Treynor in 1965. It is calculated as the ratio of excess return of the mutual fund divided by the beta (systematic risk) of the fund and it is defined :

$$\text{Treynor index} = \frac{R_{p,t} - R_{f,t}}{\beta}$$

Sharpe ratio was developed by its namesake, Nobel laureate Sharpe [26]. In Sharpe ratio, β in the denominator is replaced by the standard deviation of the fund, which is a measure of its risk. Treynor ratio is similar to the Sharpe ratio with the difference being that the Treynor ratio uses β as the measurement of volatility, and it is defined

$$\text{Sharpe index} = \frac{R_{p,t} - R_{f,t}}{\sigma}$$

where σ denotes the standard deviation. The principal advantage of using the Sharpe ratio for evaluating portfolios is that it is directly computable, not relative to a market index.

3 Results

3.1 Evolution of values through time

The following figures report the evolution of the monthly values of the Athens Stock Exchange Index (Figure 2) and of the mutual funds (Figure 3). From a first view of our data it seems that the movements in the values of the mutual funds reflect the General Index.



Figure 2: Evolution of monthly values of the Athens Stock Exchange Index (January 3, 2000 to December 31, 2008)

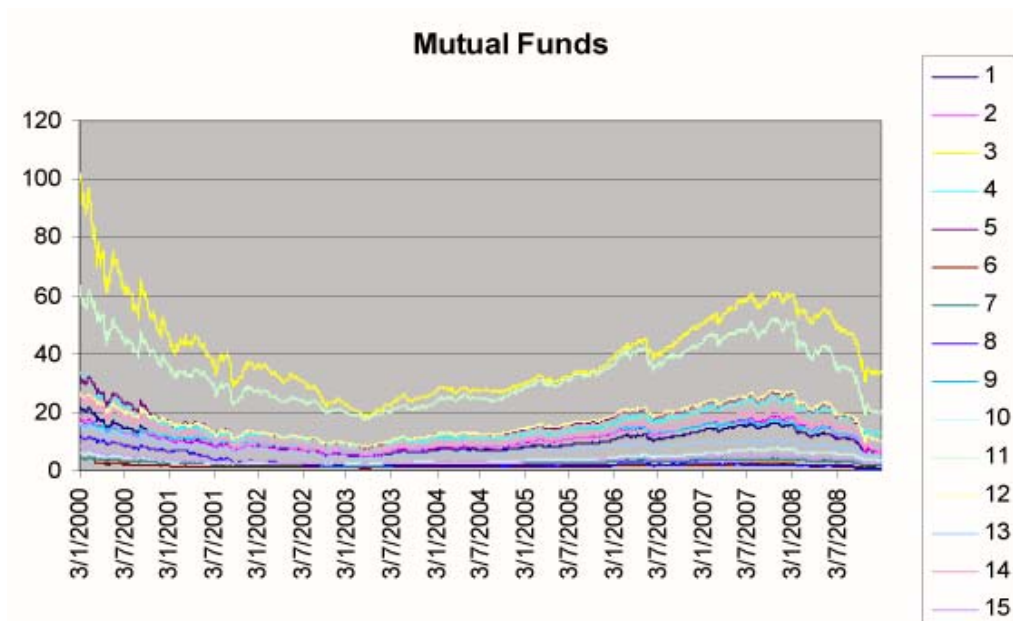


Figure 3: Evolution of monthly values of share prices of mutual funds

3.2 Selectivity - market timing test

Table 1 reports the alpha and gamma coefficients, the t -value (t -statistic) in parenthesis, the values of the coefficient of determination R^2 and the values of the Durbin-Watson coefficient, for every mutual fund in the sample. Five out of the fifteen domestic mutual funds have a positive α , but for these funds the hypothesis that α is zero cannot be rejected at 5% level of significance. We notice that only for the CV Greek mutual fund we find a statistically significant α , but it is negative. Therefore, no equity mutual fund shows selectivity. In addition, market timing ability was detected in only 3 mutual funds (CITI FUND, HSBC TOP 20, CYPRUS GREEK). We also notice that the coefficient of determination R^2 is quite high, which means that the model interprets to a great extent the data. Furthermore, the Durbin-Watson coefficient is near the value of 2, which means that we don't have any evidence of autocorrelation in the residuals.

Table 1: Selectivity - market timing test

Mutual equity domestic funds	Selectivity test (α)	Market timing test (γ)	Durbin-Watson	R^2
ALLIANZ	-0,002244 (1,11)	0,2799 (1,4)	1,90	0,92
ALPHA	-0,001028 (0,58)	-0,080 (0,45)	1,82	0,94
ATE	-0,002271 (1,50)	0,28 (1,91)	2,06	0,94
ATE SMALL/MED CAP.	-0,001064 (0,34)	-0,32 (1,03)	2,05	0,77
CITI FUND	0,000211 (0,21)	0,2587 (2,76)	1,98	0,98
CV GREEK	-0,018313 (3,06)	0,3534 (0,59)	2,40	0,52
CYPRUS GREEK	-0,003522 (1,44)	0,6589 (2,80)	1,36	0,86
HSBC MED. CAP.	0,002352 (0,84)	-0,0538 (0,19)	1,78	0,78
HSBC TOP 20	0,001847 (1,22)	0,644 (4,7)	2,04	0,94
ALPHA BLUE CHIPS	0,000664 (0,54)	-0,19 (1,62)	1,98	0,97
DELOS BLUE CHIPS	-0,001424 (1,02)	-0,032 (-0,23)	1,99	0,96
ALPHA ATHENS INDEX FUND	0,000911 (1,38)	-0,0497 (0,75)	2,16	0,99
ALPHA TRUST GROWTH	-0,002551(0,93)	0,4809 (1,8)	1,70	0,83
ALPHA TRUST OF NEW COMPANIES	-0,001406 (0,49)	0,1567 (0,55)	1,69	0,81
INTERAMERICAN DYNAMICS	-0,001726 (1,24)	-0,28 (2,07)	2,06	0,96

Note that:

1. Estimation of the TM model with White heteroskedasticity correction per mutual fund.

2. In Table 1 the denoted values with bold are statistically significant at the 5% level.

3.3 Rating according to the Sharpe and Treynor indexes

Table 2 reports the rankings obtained by the Sharpe and Treynor indexes for the fifteen mutual equity funds under examination.

Table 2: Rating of mutual equity funds according to the Sharpe and Treynor indexes based on the monthly rates of return

Mutual Funds	Sharpe index	Treynor index
ALLIANZ	-0,602535072	-0,04842
ALPHA	-0,599619022	-0,04769
ATE	-0,662891476	-0,05253
ATE SMALL/MED CAP.	-0,629933153	-0,05527
GENERAL INDEX	-0,559387777	-0,0431
CITI FUND	-0,584538247	-0,04555
CV GREEK	-0,680142845	-0,07194
CYPRUS GREEK	-0,66956166	-0,05561
HSBC MED. CAP.	-0,609594444	-0,05283
HSBC TOP 20	-0,620490865	-0,04951
ALPHA BLUE CHIPS	-0,604352359	-0,04734
DELOS BLUE CHIPS	-0,60878214	-0,04789
ALPHA ATHENS INDEX FUND	-0,555104308	-0,04294
ALPHA TRUST GROWTH	-0,633570709	-0,05366
ALPHA TRUST OF NEW COMPANIES	-0,63389719	-0,05455
INTERAMERICAN DYNAMICS	-0,635205074	-0,05007

Four mutual funds were ranked in the same order on either Treynor's or Sharpe's index. We notice that the General Index rates second according to the Sharpe and Treynor measures. This means that the mutual funds (except ALPHA ATHENS INDEX FUND) have a lower rate of return in relation to the risk, compared to the market portfolio represented by the General Index.

3.4 Structural stability test

Another condition that must be met by the TM model is structural stability, meaning that α and β parameters must not change through time. The purpose of this section is to set forth the results of the assessments which are based on the addition of one by one observation at a time and on seeing how these evolve through time. As show the graphs in Figure 4 as well as the corresponding values in Table 3 there are no structural changes.

Table 3: Mutual equity fund ranking, 2000-2008 and 2007-2009

Mutual Equity Funds	Losses (2000-2008)	Losses (2007-2009)
ALLIANZ	-70,98%	-56,82%
ALPHA	-67,39%	-56,87%
ATE	-69,01%	-49,81%
ATE SMALL/MED CAP.	-61,47%	-57,95%
GENERAL INDEX	-67,90%	-62,07%
CITI FUND	-62,51%	-55,27%
CV GREEK	-94,59%	-67,01%
CYPRUS GREEK	-71,79%	-51,81%
HSBC MED. CAP.	-41,97%	-48,98%
HSBC TOP 20	-47,43%	-47,15%
ALPHA BLUE CHIPS	-59,65%	-57,77%
DELOS BLUE CHIPS	-68,49%	-57,44%
ALPHA ATHENS INDEX FUND	-63,73%	-60,93%
ALPHA TRUST GROWTH	-67,62%	-42,96%
ALPHA TRUST OF NEW COMPANIES	-61,69%	-44,81%
INTERAMERICAN DYNAMICS	-67,90%	-57,94%

While diversification is a benefit of mutual fund investing, a mutual fund is still impacted, either favorably or unfavorably, by the ups and downs of the market in general and especially by financial crises. Table 3 shows the effect of the recent global financial crisis, which was erupted in 2007 and progressed in 2008-2009, on the performance of the mutual equity fund industry. In particular, it illustrates the differences among the fund rankings according to losses in the two examined periods. While nine mutual equity funds had a better performance than the General Index in the period under review, General Index ranking during the crisis was extremely low.

4 Conclusions and Suggestions for Further Research

The assessment of the mutual funds is quite complex and depends on many parameters. This study's evidence suggests that Greek mutual equity funds for the time period 03/01/2000 to 31/12/2008 did not demonstrate selectivity and showed minimum market-timing abilities. The managers of the mutual equity funds under examination do not possess the ability to be correctly timed and do not possess the ability of an efficient selection of securities when the General Index of the ASE is used. In addition, on examining the relation between risk

and rate of return, we observed that the risk in the rates of return is lower than the risk of the rates of return of the ASE, which means that all the mutual equity funds of our sample followed a defensive policy, probably due to the market conditions followed by the 1999 bubble. The negative values in the indexes suggest a poor rate of return of the funds for the particular time period.

The broadening of investment choices of investors in the area of mutual funds makes the creation of reliable evaluation companies for mutual funds by independent bodies, which will have the relevant know-how, imperative in the Greek market. It is therefore necessary that the management of the mutual funds asset should become more substantial so that the return of their portfolio to be more attractive than the usual market return with a view to attracting new domestic and foreign investors.

Without a doubt, this particular study commits itself to further research; initially, it should focus on the examination of the effect of fund size on the performance of funds and secondly on the use of the most recent Henriksson and Merton [12] and Grinblatt and Titman [10] models, for more complete analysis. Also, an overwhelming number of studies have examined the mutual funds performance and their return persistence over the last four decades, using different data sets and time periods and providing similar or different results. Hence, another idea is to investigate the performance persistency of the mutual funds by separating them into four categories based on the previous years' returns (Winner-Winner, Loser-Loser, Winner-Loser, Loser-Winner).

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