

Performance, Expenses and Funds Flows: Evidence from the Greek Mutual Fund Market

Gerasimos G. Rompotis

Department of Economics of the National and Kapodistrian University of Athens, Greece
geras3238@yahoo.gr

Abstract- *This paper examines the factors that affect performance, expense ratios and flows of Greek equity mutual funds during 2002-2005 and provides possible explanations for the rare phenomenon of a stagnated mutual fund market in the midst of growing capital markets in Greece and elsewhere. Results demonstrate strong economies of scale for expenses, a negative relationship between performance and expense ratio, funds flow reduction (increase) with increases in expenses (fund age and fund family), and a significant unexplained portion of funds flows. Also discovered is the inadequate competition due to large load fees and expense ratios of two to three times greater than those in other developed markets and a tradeoff between expense ratio and performance of 1.45 instead of 1 which has been observed in the literature.*

Keywords- *Mutual Fund; Cash Flow; Greece; Expenses*

1. INTRODUCTION

Fund expenses have great importance in the determination of mutual fund investors' returns but also in shaping the future of the fund industry. The increased competition in fund management in the last two decades has added pressure for continuous cost reductions. The innovations of no-load funds and ETFs were the result of an effort towards reducing fund fees and making fund industry more competitive in attracting funds relative to holding stocks or other bank products. Over the years, competition among mutual funds has reduced expense ratios significantly. Yet, this evolution is not the same across the continent since the development of capital markets is not entirely universal nor at the same level. For example, mutual fund expenses are greater in Europe than in the U.S. because European mutual funds encompass a greater number of charges than their U.S. counterparts. The cost advantage of US funds is the result of the large size and maturity of the US market, the effective supervision by the US Securities and Exchange Commission, the strong trading activity of investors and the work of major and reliable auditing and evaluating companies, like Standard and Poor's, Lipper, and Morningstar. In contrast to the developed US and European markets, the Greek mutual fund industry has less than two decades of existence. Because the fund industry is bank-dominated, there is lack of independent fund managers which in turn affects the level of competition among them and the costs imposed on investors. Lack of sufficient competition in a market that shares the same currency with major European countries with highly developed mutual fund markets may have important consequences to its well-being and its future development. For this reason, it is of great importance to study the

relationship between performance, risk, expenses and fund flows in this market and whether these relationships differ from those documented in the literature on developed fund management markets. At a time of free capital movement and access of investors to investment products across the globe with minimum costs, it is questionable whether new mutual fund markets can flourish on domestic terms only. This paper aims to identify the linkage between expenses, flows, and returns in the Greek equity mutual fund market in the period 2002-2005. The case of the Greek mutual fund market, where an initial rapid growth was followed by a serious decline and stagnation afterwards, presents an interesting case to study and extract useful recommendations for other young and developing mutual fund markets. When it comes to expenses related to mutual funds operations, there are two basic categories. The first one refers to the sales and redemption fees paid directly by investors when they first enter a mutual fund and when they depart from the fund, respectively. These fees reflect a pecuniary reduction in the net asset value of the shares they acquire or redeem. The second type of costs (paid indirectly) refers to the operating and administrative expenses which reduce the net value of the fund's portfolio and correspondingly, the value of an investor's holdings. Besides performance, expenses are the primary element of the degree of competition among mutual fund firms. The sales and redemption fees operate as a mechanism of attracting investors and preventing them from leaving. At the extreme, mutual fund firms reduce or even abolish sale and redemption loads on their products. Vanguard, which mainly charges investors no entrance or exit loads, is the dominant example of the strong competition among firms which, to one extreme, leads to

the elimination of sale charges. Kuhle and Pope (2000) find that the no-load funds have a performance advantage in the five-year period, although this advantage is vanished in the ten-year period. The size of costs, both the direct sales loads and the managerial and operating expenses, depends on the investment objective and the overall risk of the mutual fund. Funds with more risky investments have greater expense ratios in comparison to the income or bond funds. Further, funds that choose to invest internationally are more expensive relative to those investing domestically, due to the extended needs for research and the more insecure investing environment. Operating expenses compensate those participating in the investment process. Specifically, expenses reflect the portfolio managers' remuneration, trustee's fee, payments for tax liabilities, cost of fund's accounting requirements and auditing, cost of annual reports' issuance, custodian fees and transaction costs. All these expenses are reflected on the expense ratio of funds. From the perspective of fund managers, the administrative expenses may indicate their skills of stock selection and market timing to achieve above average performance. Managers claim that in an effort to realize superior returns for their clients, they generate additional expenses. Those who indeed bring off better performance in comparison to their competitors may increase their expenses charged as a compensation for their achievements. Other managers may prefer to maintain their charges in reasonably low levels to attract new assets under management, thus, increasing their compensation. As it is not certain whether managers upon achieving certain return will increase expenses or keep them at the same level, the relationship between performance and expenses cannot be defined a priori but it is subject to empirical investigation. This paper contributes to the open dialogue in the issues surrounding mutual fund variables, such as expenses, performance, fund flows and their interrelationships. We chose to examine these relationships using Greek mutual fund data because the Greek market has a number of unique characteristics not found in other developed markets: 1) it is a relatively young mutual fund market developed after financial de-regulation in 1989, 2) most mutual fund companies are bank subsidiaries and only a few and rather small are independent companies, 3) the managerial labor market is not functioning well since, in many cases, fund managers are not hired from the fund industry but from the ranks of the controlling banking institutions with limited fund management experience, 4) the market is under strict regulation by the Hellenic Capital Market Commission which prevents managers from using all available tools to manage their funds efficiently, and 5) because of the strict regulation, product innovation has been slow and limited. The above market characteristics are likely to increase the operating costs of the Greek mutual fund market and make it less competitive, a situation that will affect expenses, performance, and fund

flows. For this reason it is important and interesting to study the relationships of these variables in the context of a small and over-regulated market and extract useful insights concerning the magnitude of additional expenses involved as well as their effect on market performance and managerial behavior. The results will be compared with those known in larger and more developed mutual fund markets to examine the strength of these relationships even in the case of a market with operating inefficiencies. Our overall results suggest that the average Greek equity mutual fund is less aggressive than the market portfolio in the bull market period that we have examined and fund managers are not able to add value, as evidenced by their lack of selection ability. Expense ratios are blamed for a negative impact on risk-adjusted returns, a relationship found in other developed markets as well. However, while the increase of expenses by one unit results in a reduction of the return by one unit in developed and well-functioning markets, a one unit increase in expenses in the Greek market results in a reduction of the return by 1.45 units. This evidence suggests serious inefficiencies in the market. Similar to the literature, we found large economies of scale for expenses, a positive relationship between expenses and sales charges, expense reduction with increased performance, decrease in funds flows with increased expenses, increase in funds flows with fund age and fund family assets and a significant portion of funds flows unexplained. The remainder of this paper is organized as follows. In Section 2 we survey the existing literature concerning the relationship between expenses and performance along with the factors that affect the magnitude of total costs and the money flows in mutual funds. In Section 3 we briefly describe the state of development of the Greek mutual fund sector since 1989. In Section 4 we describe the variables, the methodology and the regression models used in explaining returns, expenses and money flows in the Greek equity mutual funds. Section 5 describes the data used in this study. The empirical findings are presented in Section 6 and the summary and conclusions are discussed in the last Section 7.

2. LITERATURE

The issue of mutual fund expenses has attracted extensive interest in the literature. A number of researchers explore the factors that affect the size of total costs which in turn reduce the net value of investors' holdings. Also, great attention has been paid in the relationship between expenses and return as well as the connection between funds' performance and the money flows to the managed portfolios. Blake, Elton and Gruber (1993), using a variety of single and multiple factor models in estimating the risk-adjusted return, demonstrate that bond funds achieve inferior performance in comparison to their underlying benchmarks. The authors attribute this underperformance to the effect of expenses. Specifically, they estimate an

inverse one-to-one relationship between expenses and return. This finding implies that an increment of expenses by one unit results in a reduction of return by one unit too. Malkiel (1995) had also confirmed the negative association between performance and expenses for US mutual funds. Carhart (1997) reconfirmed the inverse relationship between returns and expenses and the persistence of performance when expenses are maintained in constant levels. For the European market, Otten and Bams (2002) also found a negative relationship between performance and expenses. Elton, Gruber and Blake (1996) provide evidence that the magnitude of assets is a major determinant of expenses. In particular, the authors argue that a mutual fund has the ability to reduce the expenses charged to investors as long as the assets under management grow. They also show that the managers prefer to enhance their compensations by the accumulation of new money keeping constant the percentages of their fees. In another study, Malhotra and McLeod (1997) performed a comprehensive analysis of the factors that affect the size of expenses of equity and bond funds for the years 1992 and 1993. They found that the expense ratio of equity funds is influenced by the length of assets, age, turnover, cash holdings and the 12b-1 fees. The authors conclude that the large funds with long history, low turnover and without entrance charges, redemption and 12b-1 fees encumber investors with the lowest expense ratios. Using a sample of 2,610 funds with various investment objectives, Latzko (1999) estimates the expenses' elasticity relative to assets to be less than unity. The estimated size of expenses' elasticity reflects the existence of strong economies of scale, which could result in substantial reduction of total expenses. The existence of economies of scale in large funds was also studied by Malhotra and McLeod (2000). By studying the components of expenses of closed-end funds they confirmed that administrative experience and efficiency exhibited by aged funds result in lower expenses. Korkeamaki and Smythe (2004) examine the Finnish mutual funds market. Among other things, they find that foreign funds offered in the Finnish market have lower expenses than similar funds on domestic assets. This difference is attributed to the lesser development of the Finnish market. Furthermore, they find higher expenses charged by older funds and funds operated by banks. Livingston and O'Neal (1998) consider expenses as a more reliable and efficient criterion in evaluating and selecting mutual funds relative to return, since expenses are more consistent through time, while performance is not. The authors suggest that investors should prefer the funds, which present the lowest net present value of the anticipated future expenses. In the same line of reasoning, Bechmann and Rangvid (2004) develop a mechanism to evaluate Danish funds on the basis of their expenses. They perform a regression analysis applying dummy variables, which reflect the different rank categories based on cost levels. Their results reveal partial predictive power on the future performance in a time interval between 8 to 10

years. Besides the literature on expenses and mutual fund performance presented above, a number of authors are concerned with money flows towards and from mutual funds. Warther (1995) finds a strong interactive relationship among funds' inflows and aggregate security returns. Specifically, he demonstrates that securities' returns are highly correlated with the concurrent unexpected cash flows into mutual funds, but they are not related to concurrent expected flows. He also finds evidence of a positive relationship between flows and subsequent returns and evidence of a negative relation between returns and subsequent flows. Goetzmann and Massa (1999) analyze the correlation between index funds and asset prices and found a strong contemporaneous relationship between fund inflows and S&P market returns. In the same context of investor's behavior, a significant money outflow from the funds occurs in a bear market. Going further, Zheng (1999) finds evidence that funds which receive more money perform much better in comparison to the funds that receive less. This implies a strategy of betting on the winners, however, the authors do not exploit it empirically. Edelen and Warner (2001), using high frequency data investigated the positive relationship between returns and flows, providing substantial support for such claim. They found a strong positive connection between fund flows and previous day's return, implying a day-by-day interaction between fund flows and performance. On the same argument, Wermers (2003) presented evidence for the substantial correlation between cash flows and funds' performance persistence. He infers that inflows are highest for the funds with the best lagged performance. Berk and Green (2004) argue that fund flows respond to funds' past performance even though this return is not persistent and the managers do not outperform passive benchmarks, on average. According to these authors, the flow-return relationship is consistent with high average levels of skills and significant heterogeneity across managers. This result is in disagreement with Elton, Gruber and Busse (2004). Their argument is that most of the variability of funds flows remains unexplained because a significant amount of flows is directed by financial advisors or brokers not on the basis of superior performance but on the basis of commissions they extract from the fund inflows.

3. THE GREEK MUTUAL FUND MARKET

The first two Greek mutual funds were established in the period 1972-73. The largely regulated and bank-dominated Greek financial system did not offer incentives for the market to take off at that time. As shown in Table 1, only when de-regulation in capital markets was introduced in 1989, assets under management from €7.7 million at that time grew to a maximum of €34.5 billion in 1999, its peak level. Since then, assets under management remained near or below €30 billion but in the last two years declined significantly to a level of about 21 billion euros at the end of 2006. This decline in assets under management persists

despite the promotional effort by banking institutions to direct a portion of deposits to mutual funds by offering higher interest rates to remaining deposits as incentives. A similar rapid increase has been seen in the number of available mutual funds reaching 269 by 2001 but subsequently reduced to 247 by the end of 2006. Also, the number of mutual fund management companies grew to 28 in 2002 and reduced afterwards to 25 by the end of 2006. Of the 25 mutual funds companies, 18 are bank subsidiaries, 5 are subsidiaries of insurance companies, one is independent, and one is the fund management company of the largest Greek pension fund. The reduction in the number of mutual funds and the fund management companies was the result of mainly bank consolidation that led in turn to consolidation of their mutual fund management companies. The evolution in the Greek mutual fund market is not typical of other developed mutual fund markets. US and European mutual fund markets experienced a constant and dynamic growth offering new products and covering many sectors and different geographic regions. Such are the examples of the dynamic development of ETFs, the introduction of sector mutual funds investing globally, and the growth of country index funds. These developments were necessitated by the need to reduce costs, provide trading opportunities to mutual funds to compete with actively traded equities and commodities, and offer international diversification choices. All these improvements in the developed mutual fund markets were possible with the support of the regulators. In contrast to these developments in the fund management industry, the Greek mutual fund market did not make the needed changes to capitalize on its early phenomenal success. The stock market level that peaked in 1999 had helped direct significant amounts of capital to equity funds, a portion of which was lost due to the subsequent stock market decline. This may be blamed as one reason for the absence of new inflows of money despite the significant stock market upturn in the 2002-05 period. However, other reasons are also credited for the current stagnation in the market: lack of innovation in introducing new products, long delays in deciding the legal framework of ETFs, and the persistent large expenses charged on investors. Indeed, when compared with mutual funds in other countries, Greek mutual funds charge two or even three times more. The Greek mutual fund market is supervised by the Hellenic Capital Market Commission (HCMC). Law 1969/1991 (amended by Law 3283/2004) gives HCMC absolute power to grant and revoke operating licenses to mutual funds and mutual fund management companies, to fine mutual fund companies for unlawful practices or omissions, and to do everything necessary to protect the interests of investors and the well-functioning of the capital markets. Also, the HCMC is responsible to act on all contemporary issues concerning capital markets and its decisions become part of legislation concerning, among other things, the operations of the mutual fund market. Most of the legislation that affects the decisions of mutual fund managers relates to the maximum and

minimum investment limits in individual securities, individual companies, and type of securities allowed. Investment limitations are imposed on fund managers in an effort to protect investors from investment exploitation, that is, from lack of adequate diversification, over-exposure on one issuer, excessive risk taking beyond that expected of the type of mutual fund. The use of derivatives is also regulated on the type of the instrument used and the magnitude of position taken relative to assets under management. To avoid the taking of speculative positions, derivatives are allowed mostly for hedging and there is a strict prohibition for undertaking positions in commodities. Although designed to protect the interests of investors, the above strict regulations may interfere with the efficient management of mutual funds. For example, in the case of the National Bank of Greece, the larger traded company in the Athens Stock Exchange, the rule for maximum holding of 10% of its shares prevents managers from following the stock market index in which this issue is represented with much more than 10%. Also, the inability of establishing effective portfolio hedging becomes a disadvantage for Greek mutual funds relative to similar mutual funds established elsewhere and without hedging restrictions. As expected, these limitations are likely to increase the regulatory costs making the industry more expensive and less efficient.

4. VARIABLES, MODELS AND METHODOLOGY

4.1 Variables

In this section, we describe the variables and the methodology used in our analysis of the Greek equity mutual funds. The first variable concerns the gross annual performance of funds computed as the return between two subsequent years of net asset prices multiplied to expense ratios. The calculation of net asset price is net of expenses and of purchase and redemption fees. Furthermore, we assume that fund dividends (if any) are re-invested on the ex-dividend day. The second variable used in our analysis is the annual percentage expense ratio of funds. We calculate expense ratio by dividing total indirect expenses by the fund's net assets. Expense ratio reflects all management and trustee fees, expenditures for tax payments, accounting monitoring, auditing, attendance and securities transactions, but it does not include entrance and exit fees paid directly by investors. We note that in some cases, Greek mutual fund families use to incorporate costs related to exchange rate differences and previous year's losses in their expense account. In our estimation of expense ratio we do not take into account these amounts following, first, the related Decision by the HCMC (No 25, 11 November 2004) and, secondly, the literature, which does not consider exchange differences and capital losses as costs which should be embodied in the expense ratio. Another variable in our analysis is the Athens Stock Exchange General Index used as the market portfolio in our analysis. Daily prices of the index were collected to

compute index returns. In addition to the above variables, we calculate the proportions of purchase and redemption costs. Specifically, we compute the purchase fee as the difference between the share's purchase price and the net asset price divided by the net asset price of the fund's share at the end of the year. We estimate the redemption fee in a similar manner. We also record the assets under management for each fund at the end of the year as another variable. We note that when a merger between two or more funds occurs, we consider the total assets of the resulted fund. In addition, we report the net money flows of mutual funds. When a merger occurs between two funds, the asset increase is not accounted as a money flow, this way avoiding the upward bias in our estimations. As the last variable we calculate the age of the Greek equity funds. Age is the number of years from the initiation of a fund.

4.2 Risk-Adjusted Performance

To investigate the skill of managers to achieve superior returns we use the risk-adjusted return in Jensen's model:

$$R_i - R_f = \alpha_i + \beta_i(R_m - R_f) + \varepsilon_i \quad (1)$$

R_i denotes the weekly return of mutual fund i including all expenses. R_m represents the return of the market portfolio and R_f is the corresponding risk-free rate as reflected in the Euribor rate. The coefficient α_i (Jensen's alpha) reflects the risk-adjusted performance of fund i and measures the selection skill of fund managers to provide investors with returns irrespective of the average market return. The coefficient β_i stands for the systematic risk of fund i and evaluates the degree of fund's sensitivity to the movements of the benchmark. ε_i represents the residuals of regression equation (1). This regression, first, is estimated with weekly returns for each year separately and then it is run using monthly returns for the entire four-year period.

4.3 Explaining Performance

To investigate the factors which influence the determination of funds' performance, we run the following cross-sectional model in each year in the period 2002-05:

$$R = a_0 + a_1(\text{ExpRatio}) + a_2(\text{PurFee}) + a_3(\text{RedFee}) + a_4(\text{LnAge}) + a_5(\text{Dummy}) + u \quad (2)$$

where, R is the dependent variable computed as the yearly mean of the weekly percentage returns of equity funds. The control variables are the asset-weighted annual expense ratio (ExpRatio), the purchase (PurFee) and redemption (RedFee) fees, the natural logarithm of funds' age (LnAge) and a dummy variable (Dummy), which takes the value 1 if the fund is owned and managed by a bank and the value of zero, otherwise. The natural logarithm of age is used due to the non-linear relation between performance and age. All along, the fund management industry argues that expenses are incurred to enhance the ability of managers to achieve superior returns. If this argument was true, the coefficient a_1 should be positive and statistically significant. However, the bulk of the literature finds negative relationship between returns and expenses suggesting that fund managers incur costs at the expense of performance. This is compatible with a

negative a_1 coefficient. In a similar reasoning, we expect the estimations for a_2 and a_3 to be negative as well. The age of a fund is found to be positively correlated with the fund's performance. Korkeamaki and Smythe (2004) find that the oldest funds are better performers in comparison to their younger peers implying a positive a_4 estimate. Age reflects the accumulated experience in funds, which may result in better stock picking and suitable time selections. Otten and Bams (2002) find an opposite relationship for Germany and the UK mutual fund markets suggesting that the younger funds perform better suggesting a negative estimate for a_4 . While the authors do not offer an explanation for such finding, in a more competitive environment for younger funds to penetrate the market, they may institute smaller expenses, and thus a better performance. In a less competitive environment this may not be necessary. Finally, the bank origin of a fund has been assumed to result in better returns in comparison to the non-bank mutual funds. This may be due to better information held by banks about the true quality of listed firms. Yet, this may not be universal. Bank originated funds may be subject to more supervision by the bank or may lack independence in selecting securities if fund managers are required to support the bank's policies regarding bank's clients IPO's, seasoned equity issues, etc. On the contrary, non-affiliated funds do not face such restrictions in their investment decisions, are more flexible and active selectors thus likely to achieve better returns. The findings of Korkeamaki and Smythe (2004) support this assumption of better performance by non-bank funds implying a negative sign for a_5 . One thing ought to be mentioned here is that the literature suggests various other factors for the determination of funds' returns like the investing objective, the nature of funds as if they are ought to be purchased only by institutional or both by institutional and retail investors. We omit to include such variables in our regression since we checked for the statistical efficiency of these variables to the explanatory power of the model and we confirmed their limited contribution. We also checked for the significance of decomposing the funds in domestic, foreign and international classes, finding again not any statistical importance. Similar statistical insignificance of these variables is also found in models explaining fund expenses and flows presented in the sections that follow.

4.4 Explaining Expenses

Having introduced the regression approach to the determination of equity funds' performance, we now turn to define the expense ratio's explanatory components in the following cross-sectional model:

$$\text{ExpRatio} = a_0 + a_1(\text{LnAsset}) + a_2(\text{Alpha}) + a_3(\text{Beta}) + a_4(\text{PurFee}) + a_5(\text{RedFee}) + \varepsilon \quad (3)$$

where, ExpRatio is the annual asset-weighted expense ratio as the dependent variable. The first independent factor is the natural logarithm of funds' assets (LnAssets). According to Malhotra and McLeod (1997, 2000), Latzko (1999), and Korkeamaki and Smythe (2004), the size of

assets has a negative impact on fund expenses. Due to the attained economies of scale, funds with high level of managed assets are associated with lower expense ratios. As a result, we expect a negative and statistically significant coefficient for assets. With respect to the risk-adjusted performance captured in alpha, there is evidence of a negative influence on the expense ratio. Gruber (1996) and Latzko (1999) claim that managers who achieve superior returns, choose to increase the fees they charge their investors. For the remainder of the independent variables we expect positive coefficients. Regarding systematic risk (beta), it has been observed that funds that invest in more risky securities are associated with higher management fees than less risky counterparts. Similarly, entry (PurFee) and exit (RedFee) fees tend to have a positive influence on the expenses. Bechmann and Rangvid (2004) showed that the relationship between expenses and sales charges is positive.

4.5 Explaining Fund Flows

The last issue being investigated in this paper deals with the determination of money flows. That is, we seek to explore the nature and the magnitude of the factors that explain the variability of money inflows and outflows from equity funds. We estimate the following cross-sectional regression in equation (4):

$$\text{LnFlows} = a_0 + a_1(\text{ExpRatio}) + a_2(\text{LnAge}) + a_3(\text{Alpha}) + a_4(\text{LnFamily}) + \varepsilon \quad (4)$$

In this regression, the dependent variable LnFlows is the natural logarithm of funds' flows defined as the absolute difference between the total inflows and outflows during the entire year. This difference is estimated at the end of each year. We note that we use the absolute value of the estimated difference in order to calculate the natural logarithm of flows efficiently for each fund in the sample. We chose four individual variables as the control factors of funds' flows. Expense ratio is the first independent variable and we expect a negative relationship between flows and expenses. This follows a natural process by rational investors who, ceteris paribus, withdraw their assets from a costly fund and transfer them into a less costly fund. As a result, we expect a negative coefficient for a_1 . We expect the age of funds to have a positive influence on the movement of fund flows, that is, we expect a positive value for a_2 . Age signals the experts' accumulated experience in fund management which probably results in greater inflows, since rational investors may assume that the oldest funds are more experienced and could achieve better performance. Next, we consider the relationship between fund flows and fund performance (Alpha). As mentioned earlier, the winning funds (funds with superior performance), usually attract more money in comparison to the funds with poor return records. Accordingly, we expect a positive estimation for the coefficient of risk-adjusted return, a_3 . The last factor we consider is the fund's family assets and its influence on the money flow into the equity mutual funds of the family. Families with large assets could impact positively on

investors' sentiment about their potentiality to deliver above average returns, motivating the placement of new assets into large families' mutual funds. Also in a bank-dominated mutual fund market, bank customers are being advised to invest in the bank's family mutual funds thus establishing a direct and positive influence of the funds family to the funds flows. Therefore, we expect a positive estimation for the coefficient of family's size, a_4 .

5. RESEARCH DATA

Our sample includes all the various types of Greek equity funds for the time period between 2002 and 2005. At first, we consider the weekly returns of funds calculated on gross asset value terms. The website of Greek Institutional Investors Association provides us with the weekly net asset prices of funds. These data include also the initial trading date, which is used in the computation of funds' age. We estimate model (1) using weekly data to eliminate the autocorrelation bias usually observed in daily data. We estimate expense ratios in any individual year from information on expenses from funds' annual reports. Annual reports were collected manually in hard copies from the fund management firms. The size of assets of each fund as well as its family along with the funds flows were collected from the electronic database of the Greek Institutional Investors Association. Percentage front-end and back-end fees were calculated using the purchase and redemption share's values of funds at the end of the year found in the Greek economic newspaper "Naftemporiki." In forming our sample we also looked into the survivorship bias problem, common in this kind of studies. Survivorship bias issue reflects the overestimation of average returns caused by the absence of non-existing funds. This paper tries to deduct this overestimation problem by including data for funds that do not currently exist. The basic requirement for the participation of a ceased fund in the sample is to present trading records for at least one full year. The Greek mutual funds that disappeared were not because of their failures but only because of merging with other funds. Mutual fund failure is a non-event because mutual fund regulation is very strict and no fund was left to fail. Also, most of the funds belong to thriving Greek banks which themselves could not allow them to fail. As a result, we do not expect to have included the survivorship bias in our data.

6. EMPIRICAL RESULTS

This section presents the empirical results of the study. First, we record the statistic characteristics of equity funds in our sample and, then, we present the main findings according to our proposed regression models concerning funds' performance, expenses and flows.

6.1 Descriptive Statistics

Table 2 presents the descriptive statistics of Greek equity funds by year during 2002-05. Presented variables are the gross annual percentage return, the expense ratio, the purchase and redemption fees, the size of assets, the net

funds flows and the age of funds. For these variables estimations are given for the mean, standard deviation, minimum and maximum values and the median. The median values are reported in parallel to the mean values because they are less sensitive to extreme scores than the mean for highly skewed distributions. Within the four-year period, the mean (median) annual return fluctuates from -26.73% (-27.29%) to 25.96% (27.33%). The minimum return occurs in 2002 and the maximum in 2005. This fluctuation reflects the general stock market climate in Greece during the period. The Greek stock exchange experienced great losses in 2002 followed by a bull market period. The mean and median values are essentially equivalent, indicating a symmetric return distribution. The standard deviation of annual returns ranges from 8.76% in 2002 to 11.35% in 2003. Interestingly, the highest ex-post standard deviation is not associated with the highest ex-post return. Regarding expense ratios, we find that the sample's mean expense ratio fluctuates from 3.41% to 4.95%. The median values are basically close to the mean for all years, except for 2004. For that year the difference between mean and median expense ratios amounts to approximately 63 basis points. Interestingly enough, the lowest average expense ratios are associated with higher returns. Specifically, 2003 and 2005 present both the highest performance and the lowest expense records. This finding is in line to evidence from Gruber (1996), among others, who concludes that funds with the best performance appear to have the lowest expense ratios. Furthermore, in comparison to expense ratios in other developed capital markets, Greek mutual fund expense ratios are more than twice as large. According to evidence by Khorama, Servaes and Tufano (2006), the mean value of expense ratios for a sample of 21.543 equity funds in developed countries in 2002 is 1.87%. The authors argue that differences in fund fees are due to national differences in regulation, competition, national economies of scale, industry experience and buyer characteristics. Regarding sales charges, we find that investors suffer serious reductions from their investment value due to the large purchase and redemption fees they face. The highest average (median) purchase fee reaches 2.93% (3.02%) for 2003, while the highest average (median) redemption fee is 1.47% for 2005. We judge that these fees are extremely high thus discouraging investors from entering funds. In the four-year period, these fees remained large despite the fact that interest rates have decreased at very low levels as much as 2%. Indeed, with the price of money at these low levels investors would not be willing to pay a high price to enter the mutual funds. By keeping sales charges at these high levels seen in Table 2 which were imposed during the period of the stock market bull in late 1990's, it made investments in mutual funds inferior compared to existing risk free rates. Therefore, the evidence suggests that the Greek mutual fund industry remained rigid, kept the high charges imposed on investors, and ignored the drastic changes taking place in its investment environment. Considering the average size of assets, we observe that

assets grew continuously from 2002 to 2005. In contrast, the average fund flow exhibit a descending drift, implying that the growth of total assets does not reflect necessarily the accession of new money in equity funds, but, it is rather a side-effect of the increase in stock prices. Interestingly, we note that there is a huge gap between the mean and median values of assets. Also, the standard deviation of assets is extremely high. This fact implies that assets' distribution is not symmetrically plotted and it is obviously positively skewed. Since we do not observe closures of mutual funds in Greece, fund age should increase over the years of our study. As expected, the maximum average age of 7.46 years occurs in year 2005. The basic inference from this figure is that the Greek market of equity funds is practically young in comparison to the developed US and European markets. As a result, the different level of maturity and competition among mutual funds that such maturity implies may influence some of our regression results to differ from what has been recorded in the literature in the US, UK and other European markets. The number of available funds in our sample does not change materially in the four years of the studying period and ranges from 116 in 2002 to 102 in 2005. In these numbers included are three classes of equity funds: domestic, foreign and international equity funds. The reduction in the number of equity funds in 2005 is mainly due to the decision of the HCMC to abolish the class of international funds. This decision led to the merger of international funds with other domestic or foreign funds.

6.2 Regression Results in Explaining Risk-Adjusted Performance

The estimations of regression model (1) for risk-adjusted performance are presented in Table 3. Included in the table are the average value of Jensen's alpha, the mean beta coefficient for systematic risk and the average R-square for each year. Also presented is the number and the portion of statistically significant and non-significant positive as well as negative alphas. Lastly, the number of available funds in each year is also shown. The data calculations reveal that the average alpha is negative in all four years of our study and very close to zero in 2003 and 2005. These results suggest that the average fund performance is inferior to the performance of the market portfolio and the managerial ability to select the right assets to beat the market portfolio is absent. Examining the number of significant positive and negative alphas at all acceptable levels (1%, 5% and 10%), we see that the percentage of positive alphas ranges from 0% in 2004 to 8.9% in 2003. In contrast, the significant negative alphas lie between 0% in 2005 to 53.5% in 2004. Overall, negative alphas (significant and non-significant) outnumber positive alphas in all four years. The last column in Table 3 shows estimation results of regression (1) for the entire period using monthly returns. As expected, the results are mostly a close average of the individual estimates for each year. Jensen's alpha has a negative but close to zero value of -0.06. Still negative alphas outnumber positive alphas but only by a

small magnitude (47 versus 41). Although the results on monthly returns are less critical of the managerial selection ability, yet, the conclusion for lack of such ability is substantiated. Interestingly, this conclusion is drawn during a bull market period that begun in 2003. According to results in Table 3, the average beta estimate on monthly data is 0.69 suggesting that funds have pursued defensive investment policies which led to inferior performance relative to the market. Finally, according to Table 3 the average R-square values range from 0.55 in 2004 to 0.66 in 2003. The values of R-square are judged to be adequately high reflecting the explanatory power of the estimated regressions.

6.3 Regression Results in Explaining Performance

In this section we present the results of regression model (2) to explain the determinants of funds' performance. Table 4 presents the model's estimations for expense ratio, purchase and redemption fees, age, and the dummy variable which accounts for the bank ownership of the fund. The table also reports the values of the R-square and F-statistic. According to the regression results, the constant coefficients are statistically significant in each of the four years. This suggests that there is a set of undetectable factors which affect the performance of the sample's funds during the studying period. These factors could be connected with the general micro- and macro-economic environment. Furthermore, the sign of the constant is negative for 2002 and positive for the remaining years. The negative constant for 2002 is reasonable since the performance of the Greek stock market was negative within that year. The negative sign of constant could also reflect the failure of managers to perform successful defensive strategies by picking defensive stocks. The positive sign of the constant for the remaining years is probably due to the rise of the Greek stock prices during this period. As expected, the estimations on the expense ratio are negative and highly significant for all years except 2002, reflecting the negative impact of expenses on the fund's return. This finding is in line with evidence in the literature in other developed fund markets. Specifically, the coefficients of funds' expense ratios range from -0.05 for 2002 to -2.47 for 2003. The average value of these coefficients is -1.45 implying that the expense ratio counts sizably for the reduction in returns in Greece relatively to other developed markets where the reduction in return is about one-for-one. The estimations of purchase and redemption fees are statistically significant in the first two years and insignificant in the remaining two. Further, the signs of estimations are not one-directional. Specifically, the purchase fee is significantly positive in 2002 but negative in 2003 while the redemption fee is negative in 2002 and positive in 2003. These mixed results prevent us from providing a definite conclusion about the impact of purchase and redemption fees on performance. The estimations of the age coefficient for the first two years are negative but statistically insignificant. For 2004 the age coefficient is positive and statistically significant

and in 2005 the sign of the coefficient is negative with statistical significance at the 10% level. The mostly negative age coefficients is not in line to the findings by Korkeamaki and Smythe (2004), who claim that the oldest funds have performance advantages in comparison to their young counterparts. The inconclusive sign of the age coefficient suggests that fund age in a young mutual fund market may not be used as a reliable estimate for equity fund returns. Finally, the dummy variable about the bank's ownership of the fund is found to be positive in 2002 and negative for the subsequent years of study, yet, none were statistically significant. This result implies that the fund management by bank- controlled mutual funds does not provide any substantial additional returns in comparison to the non-bank affiliated funds. Overall, the values of R-square and F-statistic are sufficiently high, providing evidence for the strong explanatory power of the model. Specifically, the R-square values range from 0.16 in 2004 to 0.59 in 2002 and, similarly, the F-statistic values range from 4.02 to 26.42 for the corresponding years. F-statistics are all statistically significant at the 1% level.

6.4 Regression Results in Explaining Expenses

Regression equation (3) estimates the factors that affect the determinants of expense ratio and the results are shown in Table 5. Estimation results are shown for the constant, the funds' assets, Jensen's alpha and beta coefficients, and purchase and redemption fees. Also presented are the values of R-square and F-statistics. The regression intercept is positive and statistically significant in every year. This means that investors in equity mutual funds face fixed costs when they maintain a mutual fund equity investment. This fixed cost does not relate to the independent variables of the model and potentially reflects the costs paid by mutual funds for capital market supervision, tax services, and trustee's compensations. According to the findings of Table 5, fund assets are negatively related to the expense ratio. The estimations of assets' variable are all negative and statistically significant at the 1% level. This negative correlation demonstrates the existence of strong economies of scale, an expected result as the literature has demonstrated the inverse impact of assets on expenses in developed capital markets. Focusing on the risk-adjusted performance, we observe that the alpha's coefficients are positive in 2002 but negative for the subsequent years. However, alphas are statistically significant only for 2004 and 2005 at the 10% level. The finding in the last two years offers weak evidence that as performance increases managers may reduce the fees they charge investors to attract new flows. This result is in line to early findings of such effect in the literature. Regarding the relationship between expense ratio and beta, we note that the coefficients on systematic risk are either positive or negative and statistically insignificant. This result suggests does there is no significant relationship between expense ratio and systematic risk, in contrast to the accepted belief that funds with higher risk charge higher expenses. It is likely that another variable in the regression, such as the

purchase or the redemption fees, plays the proxy for the systematic risk. The coefficients for the purchase fee are either positive or negative but statistically insignificant except in 2005. However, for the redemption fee, with the exception of 2002, the coefficients are all positive and statistically significant at the 5% level or better. This evidence supports the conclusion that expense ratio is positively related to sales fees. The interpretation is that usually funds with the highest front-end and/or back-end fees encumber investors with the highest administrative and operating expenses too. The state of competition that permits fund managers to incur large expense ratios, also allows them to charge large entry and exit fees. We also note that the size of exit fee is large enough to discourage investors from departing funds. Finally, the value of F-statistics are all statistically significant at the 1% level and the R-squares are sufficiently high (ranging from 0.22 to 0.40) suggesting that model (3) explains sufficiently enough the determinants of Greek equity funds expense ratios.

6.5 Regression Results in Explaining Fund Flows

In this section we present the estimations of model (4) to explain fund flows. The estimations of regression (4) along with the R-square and F-statistics are shown in Table 6. The estimates for the constant are all positive and statistically significant. This suggests that there is a significant portion of funds flows unrelated to the variables used in the regression. This is in line with the argument made by Elton, Gruber and Busse (2004) who provided evidence of large unexplained variability in fund flows. In the case of the Greek funds, the large magnitude of the intercept may stand for the promotional programs pursued by banks to direct some of the deposits into mutual funds while the remaining deposits earn interest rates higher than the market interest rate. Also the personal influence of insurance and mutual fund salesmen and advisors who have own incentives to direct money to those mutual funds they represent irrespective of other objective fund characteristics. With respect to outflows, possible unrelated factors to our regression model include the investors' need for diversification, the investors' exodus from mutual funds after the market advance (2003-2005) who felt entrapped after the stock market fallout (1999-2002), and the European directive that allows the easy distribution of mutual funds originated in one European country to be sold in another. As expected, we observe that the expense ratio has a negative influence on fund flows. All coefficients of expense ratio in Table 6 are negative and statistically significant at the 10% level or better. The negative relationship between fund flows and expenses implies that investors redeem funds shares when expenses rise. Such behavior by the investors assumes that they are well-informed about the costs they incur and that they pick funds based, among other things, on their expenses. With respect to age, the results show a positive and statistically significant influence on fund flows. In particular, the coefficient for age's natural logarithm is positive and

significant in all four years. This positive estimation implies investors' trend to allocate money in the oldest funds. This preference is not because of an expectation that they could achieve better performance as our evidence in Table 4 suggests that fund age does not significantly affect fund performance. Based on the combined evidence it seems that investors are injecting money in older mutual funds without taking into account their performance which is not at all superior to the market. Again, this is probably due to the monopolistic mutual fund environment with banks dominating the market with the older mutual funds to which they direct their customer funds. Also, banks' promotional strategies direct money into mutual funds irrespective of their performance through offering incentives in combination with other bank products. Further, we examine the relationship between fund flows and Jensen's alpha. Alpha coefficients are all positive and statistically significant in the case of 2003. This positive relationship between fund flows and performance of Greek equity funds is in line with the findings in the literature. Zheng (1999), Edelen and Warner (2001), and Wermers (2003), among other researchers, find evidence of money inflows into funds upon successful current or previous performance. Considering the impact of fund family on fund flows we observe a positive relationship between the two. The coefficients of family's assets are positive and statistically significant during the entire period. This result suggests that investors attach value to large fund families perhaps due to their experience and access to private information about stocks. Large fund families could take advantage of these components and achieve better returns. The fact that out of the thirty five mutual fund management companies, the five largest are bank-controlled, it suggests that such a preference to fund families must exist.

7. SUMMARY AND CONCLUSIONS

The literature has shown great interest in investigating the performance, expenses and the flows into and from mutual funds in the US, European and Asian markets. In Greece, there is a lack of evidence on the relationship between expenses, fund flows and performance. This paper fills the respective literature's gap and allows comparisons of the young Greek mutual fund market with developed ones. It also attempts to provide an explanation for the rare phenomenon of a stagnated mutual fund market in the midst of growing capital markets in Greece and elsewhere. At first, considering risk-adjusted performance we find evidence that the overall alpha is negative and close to zero in all four years. This inferior performance is below the line of evidence for other markets on fund managers' selection ability. Regarding the explanatory factors of performance, we demonstrate that risk-adjusted return is influenced negatively by expense ratio. The negative impact of expenses on returns is substantial and it is equal to 1.45 in average terms. Further, we find inconclusive evidence of the relationship between age and performance

and we suggested that fund age in a young mutual fund market may not be used as a reliable estimate for equity fund returns. In explaining the variability in the expense ratio, we find that the size of funds' assets contribute to the reduction of percentage levels of expenses. In accordance to literature's findings, we find large economies of scale. We also find that the expense ratio is negatively related to alpha. This finding reflects the preference of managers to keep constant or to reduce the percentage levels of fees they charge, targeting new money in their funds. Furthermore, we record that expense ratio does not relate significantly with systematic risk as other variables in the regression, such as sales fees, may behave as a proxy for the systematic risk. This is likely the case as the redemption fee positively affects the expense ratio. Finally, we explore the factors that influence fund flows. We show that flows and expenses are negatively related. This finding is expected since investors are cost-averse. This aversion becomes greater when the excess expenses are not accompanied with accommodative returns. Additionally, we find that funds' performance has a positive impact on fund flows. When a fund is a winner, investors move to invest in it. Finally, we find that the age of funds and the size of families' assets boost flows to the funds.

Overall, our empirical results suggest that performance, expenses and fund flows in the Greek mutual fund market can be explained with the same variables used in studies for the developed counterparts in the US, Europe and elsewhere. This further supports the existing literature on market performance and managerial behavior with a different set of data in a market with different operating characteristics. For example, we do find strong economies of scale for expenses, a negative relationship between performance and expense ratio, greater expenses in mutual funds with greater sales expenses, expense reduction with increased performance, funds flow reduction with increases in expenses, funds flow increase with the fund age and fund family assets size and that a significant portion of funds flows remains unexplained. Our analysis has also shown that the Greek mutual fund market suffers from inadequate competition evidenced from the large entry and exit fees, the large expense ratio of two to three times that in the developed markets, and the fact that funds with already large entry and exit fees charge large expense ratios. The lack of adequate competition is also seen in the negative relationship between performance and expense ratio that is much more than one-for-one seen in developed markets. Another finding akin to the Greek market is that, fund managers lack sufficient selection ability so that they end up with inferior returns relative to the market. The above differences found in the Greek mutual fund market relative to the developed mutual fund market arise as a possible explanation for the decline and current stagnation observed in the growth of the former. At a time when the investment environment has been changed significantly for Greek investors (use of euro as a common currency in the Eurozone, need for diversification beyond local assets, free

movement of capital, low interest rates, easy access to outside investment products with lower costs), their rational response was to reduce their money flows into mutual funds and reduce their holdings in expensive Greek mutual funds as evidenced in our study. Without making the needed changes in costs reductions, product innovation, and the introduction of ETFs, the Greek mutual fund market, being unable to protect investors' holdings from the stock market fallout in the period 1999-2002 and without the regular money infusion from pension funds, it lost contact with investment developments. Despite operating as an oligopoly, this was not a sufficient condition for the Greek mutual fund market to thrive in an open system whereby investors are allowed to freely transact in other markets without currency risk (Eurozone), with diversification choices, innovative products and, most importantly, at lower costs. The current state of the Greek market presents a paradigm for other young and developing capital markets that should avoid. The mutual fund industry needs an appropriate level of regulation that, on the one hand, protects the interests of shareholders and, on the other hand, allows for sufficient flexibility and innovation to keep up with changes in the investment environment and preserve a healthy level of competition.

8. REFERENCES

- [1] Bechmann, K. and Rangvid, J., 2004, "Expenses and the Performance of Danish Mutual Funds", *Working Paper, Copenhagen Business School*.
- [2] Blake, C. R., Elton, E. J. and Gruber, M. J., "The Performance of Bond Mutual Funds", *Journal of Business*, 1993, Vol. 66 (3), pp. 371-403.
- [3] Carhart, M. M., "On Persistence in Mutual Fund Performance", *Journal of Finance*, 1997, Vol. 52 (1), pp. 56-82.
- [4] Edelen, M. R. and Warner, B.J., "Aggregate Price Effects of Institutional Trading: A Study of Mutual Fund Flow and Market Returns", *Journal of Financial Economics*, 2001, Vol. 59, pp. 195-220.
- [5] Elton, E. J., Gruber M. J. and Blake, C. R., "The Persistence of Risk-adjusted Mutual Fund Performance", *Journal of Business*, 1996, Vol. 69 (2), pp. 133-157.
- [6] Elton, E. J., Gruber M. J. and Busse, J., "Are Investors Rational? Choices Among Index Funds", *Journal of Finance*, 2004, Vol. 59 (1), pp. 261-288.
- [7] Goetzmann W. N. and Massa, M., "Index Funds and Stock Market Growth", 1999, *Working Paper, Yale School of Management*.
- [8] Gruber, M. J., "Another Puzzle: The Growth in Actively Managed Mutual Funds", *Journal of Finance*, 1996, Vol. 51, pp. 783-810.
- [9] Khorama, A., Servaes, H. and Tufano, R., "Mutual Funds Fees Around the World," *Working Paper*, 2006.
- [10] Korkeamaki, T. P. and Smythe, T. I. Jr., "Effects of Market Segmentation and Bank Concentration on Mutual Fund Expenses and Return: Evidence from

Finland”, *European Financial Management*, 2004, Vol. 10 (3), pp. 413-438.

[11] Kuhle, J. L. and Pope, R. A., “A Comprehensive Long-Term Performance Analysis of Load vs. No-Load Mutual Funds”, *Journal of Financial and Strategic Decisions*, 2000, Vol. 13 (2), pp. 1-11.

[12] Latzko, D.A., “Economies of Scale in Mutual Fund Administration”, *Journal of Financial Research*, 1999, Vol. 22 (3), pp. 205-218.

[13] Malhotra, D. K. and McLeod, R. W., “An Empirical Analysis of Mutual Fund Expenses”, *Journal of Financial Research*, 1997, Vol. 20 (2), pp. 175-190.

[14] Malhotra, D. K. and McLeod, R. W., “Closed-End Funds Expenses and Investment Selection”, *The Financial Review*, 2000, Vol. 41, pp. 85-104.

[15] Malkiel, B. G., “Returns from Investing in Equity Mutual Funds 1971 to 1991”, *Journal of Finance*, 1995, Vol. 50 (2), pp. 549-572.

[16] Livingston, M. and O’Neal, E., “The Cost of Mutual Fund Distribution Fees”, *Journal of Financial Research*, 1998, Vol. 21 (2), pp. 331-339.

[17] Otten, R. and Bams, D., “European Mutual Fund Performance,” *European Financial Management*, 2002, Vol. 8 (1), pp. 75-101.

[18] Wermers, R. “Is Money Really “Smart”? New Evidence on the Relation between Mutual Fund Flows, Manager Behavior, and Performance Persistence”, Working Paper, Robert H. Smith School of Business, University of Maryland, 2003.

[19] Warther, V. A., “Aggregate mutual fund flows and security returns”, *Journal of Financial Economics*, 1995, Vol. 39 (2), pp. 209-235.

[20] Zheng, Lu, “Is Money Smart? A Study of Mutual Fund Investors’ Fund Selection Ability”, *Journal of Finance*, 1999, Vol. 54, pp. 901-933.

ANNEXURE

Table 1: The Evolution of Greek Mutual Funds

This table describes the evolution of the Greek mutual funds market during the period 1988-2006. The table presents data on Greek equity, balanced, bond and money market mutual funds excluding funds of funds and mutual funds domiciled abroad. Data concern the number of total funds available each year, the number of mutual fund families, the total assets at the end of each year and the annual percentage growth of assets. Growth is estimated by subtracting assets on year end t-1 from the assets on yearend t and dividing to assets on yearend t-1. For comparison purposes, asset values denominated in drachmas prior to the introduction of euro in 2002 were translated into euros using the official exchange rate of 340.75 drachmas per one euro.

End of Year	Number of Funds	Number of Families	Assets (€)	Annual Growth
31/12/1989	3	3	7,691,732.22	-
31/12/1990	7	6	390,633,754.15	4978.62%
31/12/1991	18	9	489,823,952.68	25.39%
31/12/1992	42	16	646,440,970.49	31.97%
31/12/1993	68	18	2,464,624,242.06	281.26%
31/12/1994	94	18	3,463,592,863.39	40.53%
31/12/1995	118	20	6,403,688,905.15	84.89%
31/12/1996	150	22	9,760,622,407.27	52.42%
31/12/1997	160	23	20,910,216,131.58	114.23%
31/12/1998	178	24	26,242,807,262.56	25.50%
31/12/1999	205	24	34,531,300,802.99	31.58%
31/12/2000	265	26	30,888,661,998.88	-10.55%

31/12/2001	269	26	26,794,904,579.82	-13.25%
31/12/2002	260	28	25,385,150,553.61	-5.26%
31/12/2003	265	28	30,398,910,895.26	19.75%
31/12/2004	261	27	31,645,885,619.98	4.10%
31/12/2005	247	25	27,134,574,431.95	-14.26%
31/12/2006	247	25	20,955,010,202.95	-22.77%
Average	150.47	19.47	15,712,340,526.61	309.04%
Median	160.00	23.00	20,910,216,131.58	25.45%
St. Deviat.	103.20	8.47	13,333,858,139.37	1,167.70%
Min	2.00	2.00	7,691,732.22	-61.40%
Max	269.00	28.00	34,531,300,802.99	4,978.62%
Source: Association of Greek Institutional Investors				

Table 2: The descriptive statistics of Greek equity mutual funds

This table presents the descriptive statistics of the principal characteristics of Greek equity mutual funds during the period 2002-2005. Specifically, the table records the percentage annual gross return of the sample, the expense ratio, (estimated as the asset-weighted percentage of the annual operating and administrative expenses), the share purchase and redemption percentage fees, the size of the average assets under management at yearend, the money flows within the year and the age of mutual funds in number of years. Finally, observations reflect the number of the available funds in each year of the studying period.

	Gross Return (%)	Expense Ratio (%)	Purch. Fee (%)	Redem. Fee (%)	Assets (000 €)	Fund Flows (000 €)	Age
Panel A: 2002, number of observations= 116							
Mean	-26.73	4.95	2.91	1.24	31,338.65	9,319.99	4.76
Median	-27.29	4.51	3.00	1.00	6,367.48	14.33	3.15
St. Deviation	8.76	2.09	1.82	0.64	69,167.36	65,148.73	3.89
Min	-55.66	1.86	0.00	0.00	463.10	-22,751.02	1.08
Max	5.57	14.66	5.09	3.06	378,945.29	581,960.78	29.84
Observations	116	116	116	116	116	116	116
Panel B: 2003, number of observations= 112							
Mean	19.38	3.55	2.93	1.42	40,747.38	1,436.80	5.59

Median	20.28	3.13	3.02	1.00	9,869.23	145.49	4.05
St. Deviation	11.35	1.35	1.78	1.05	87,454.80	9,080.03	4.03
Min	-5.33	1.49	0.00	0.00	637.34	-16,657.24	1.00
Max	49.60	9.14	5.34	5.01	474,273.86	84,325.68	30.84
Observations	112	112	112	112	112	112	112
Panel C: 2004, number of observations= 114							
Mean	7.42	4.35	2.76	1.45	44,844.71	-2,786.80	6.33
Median	5.75	3.72	3.00	1.00	9,790.54	-736.51	4.93
St. Deviation	10.26	2.13	1.89	1.04	93,410.88	18,682.86	4.18
Min	-18.03	1.18	0.00	0.00	578.81	-66,596.26	1.04
Max	37.30	12.59	5.12	5.08	531,643.87	117,616.64	31.84
Observations	114	114	114	114	114	114	114
Panel D: 2005, number of observations= 102							
Mean	25.96	3.41	2.37	1.47	58,207.75	-2,436.86	7.46
Median	27.33	3.03	2.37	1.00	15,719.87	-773.96	5.98
St. Deviation	9.79	1.29	1.91	0.97	115,302.95	21,811.10	4.41
Min	0.93	1.01	0.00	0.00	1,000.66	-96,994.82	1.15
Max	59.95	9.48	5.00	5.00	575,165.28	130,654.07	32.84
Observations	102	102	102	102	102	102	102

Table 3. The risk-adjusted performance of Greek equity mutual funds

This table presents the estimations of Jensen's risk-adjusted return for Greek equity mutual funds expressed by the alpha coefficient (α_i) from the following regression: $R_i - R_f = \alpha_i + \beta_i(R_m - R_f) + \varepsilon_i$. (1)

R_i denotes the return of fund i , R_m represents the return of the average market's portfolio and R_f is the risk-free rate. We use the weekly return of the Athens Stock Exchange General Index in each year for the period 2002-2005 as the market portfolio and the rate of one-week's Euribor interest rate as the risk-free rate. We estimate the above model using weekly data. We also estimate the above model using monthly return data covering the same period. The beta coefficient (β_i) measures the systematic risk of the investment in Greek equity mutual funds and the magnitude of the average R-square indicates the adequacy of the performed regression. This table also exhibits the number of significant and non-significant positive as well as negative estimations for the Jensen's alpha at the 1%, 5% and 10% levels of acceptance. Finally, the last entry in this table reports the number of the available funds in each year of the studying period.

	Weekly Data	Monthly Data
--	-------------	--------------

Variables	2002	2003	2004	2005	2002-2005
Average alpha (α_i)	-0.19	-0.07	-0.23	-0.01	-0.06
Average beta (β_i)	0.71	0.66	0.59	0.61	0.69
Average R-square	0.64	0.66	0.55	0.59	0.70
Positive & Significant alphas	1 (0.86%)	10 (8.93%)	0 (0%)	2 (1.96%)	11 (12.50%)
Positive & Non-Significant alphas	19 (16.38%)	28 (25.00%)	8 (7.02%)	45 (44.12%)	30 (34.09%)
Negative & Significant alphas	32 (27.59%)	14 (12.50%)	61 (53.51%)	0 (0.00%)	9 (10.23%)
Negative & Non-Significant alphas	64 (55.17%)	60 (53.57%)	45 (39.47%)	55 (53.92%)	38 (43.18%)
Observations (Number of Funds)	116	112	114	102	88

Table 4: The determination of Greek equity mutual funds' performance

This table presents the estimations of a cross-sectional regression, which seeks to exploit the factors that affect the performance of Greek equity mutual funds in each year during the period 2002-2005. The regressed model is expressed by the following equation:

$$R = a_0 + a_1(\text{ExpRatio.}) + a_2(\text{PurFee}) + a_3(\text{RedFee}) + a_4(\text{LnAge}) + a_5(\text{Dummy}) + \varepsilon \quad (2)$$

R is the dependent variable computed as the yearly total gross return of equity funds in each year. The control variables are the expense ratio (ExpRatio), which is estimated as the asset-weighted percentage of the annual operating and administrative expenses, the purchase (PurFee) and redemption (RedFee) fees, the age of the fund (LnAge), which expresses the natural logarithm of age, and a dummy variable (Dummy) which takes the value of 1 if the fund is a subsidiary of a bank and the value of 0, otherwise. We use the natural logarithm of age due to the non-linear relationship between the performance and the age of funds. t-statistics are in parentheses and R-square indicates the adequacy of the performed regression. Observations reflect the number of the available funds in each year.

Variables	2002	2003	2004	2005
Constant	-27.42 (-9.23)*	31.19 (7.99)*	6.23 (1.64)	38.77 (7.53)*
Expense Ratio	-0.05 (-0.24)	-2.47 (-4.00)*	-1.41 (-3.08)*	-1.87 (-2.55)**
Purchase Fee	0.61 (2.16)**	-1.71 (-3.03)*	0.42 (0.69)	0.01 (0.02)
Redemption Fee	-1.56 (-2.22)**	3.28 (3.32)*	0.58 (0.53)	0.53 (0.45)
LnAge	-0.90	-1.21	3.60	-3.27

	(-1.23)	(-0.83)	(2.39)**	(-1.71)***
Dummy	1.78 (1.63)	-2.22 (-1.08)	-0.88 (-0.37)	-2.29 (-1.02)
R-square	0.59	0.37	0.16	0.29
F-statistic	26.42*	10.38*	4.02*	5.48*
Observations (Funds)	116	112	114	102

*, **, *** represent statistical significance at the 1%, 5% and 10% levels of acceptance, respectively.

Table 5: The determination of Greek equity mutual funds' expense ratio

This table presents the estimations of a cross-sectional regression, which seeks to exploit the factors that affect the expense ratio of Greek equity mutual funds in each year during the period 2002-2005. The regression model is expressed by the following equation:

$$\text{ExpRatio} = a_0 + a_1(\text{LnAssets}) + a_2(\text{Alpha}) + a_3(\text{Beta}) + a_4(\text{PurFee}) + a_5(\text{RedFee}) + \varepsilon \quad (3)$$

ExpRatio is the dependent variable estimated as the asset-weighted percentage of the annual operating and administrative expenses. The explanatory variables are the natural logarithm of the assets under management (LnAssets), the risk-adjusted return (Alpha), the systematic risk (Beta), and the percentage fees of purchase (PurFee) or redeeming (RedFee) shares of mutual funds. We use the natural logarithm of assets due to the possible non-linear relationship between expense ratio and assets. t-statistics are in parentheses and R-square indicates the adequacy of the performed regression. Observations reflect the number of the available funds in each year.

Variables	2002	2003	2004	2005
Constant	13.21 (7.75)*	7.56 (5.84)*	13.81 (5.35)*	9.11 (6.11)*
LnAssets	-0.54 (-4.24)*	-0.28 (-3.64)*	-0.66 (-4.76)*	-0.37 (-4.40)*
Alpha	0.35 (0.31)	-0.98 (-1.39)	-1.57 (-1.69)***	-1.87 (-1.87)***
Beta	0.13 (0.09)	-0.14 (-0.22)	0.96 (1.14)	-0.18 (-0.41)
Purchase Fee	0.15 (1.51)	0.06 (0.82)	-0.13 (-1.44)	-0.12 (-1.89)***
Redemption Fee	-0.17 (-0.62)	0.26 (2.14)**	0.46 (2.18)**	0.51 (3.10)*
R-square	0.22	0.24	0.34	0.40
F-statistic	6.08*	6.72*	10.99*	12.83*
Observations (Funds)	116	112	114	102

*, **, *** represent statistical significance at the 1%, 5% and 10% levels of acceptance respectively.

Table 6: The determination of Greek equity mutual funds' flows

This table presents the estimations of a cross-sectional regression, which seeks to exploit the factors that affect the net money flows towards Greek equity mutual funds in each year during the period 2002-2005. The regressed model is expressed by the following equation: $\text{LnFlows} = a_0 + a_1(\text{ExpRatio}) + a_2(\text{LnAge}) + a_3(\text{Alpha}) + a_4(\text{LnFamily}) + \varepsilon$. (4)

LnFlows is the dependent variable estimated as the natural logarithm of the absolute difference between the money inflows and outflows from the fund at the end of each calendar year. The explanatory variables are the expense ratio (ExpRatio), estimated as the asset-weighted percentage of the annual operating and administrative expenses, the risk-adjusted performance (Alpha), the natural logarithm of the mutual funds' age (LnAge), and the natural logarithm of the funds' family (LnFamily) total assets under management. We use the natural logarithms due to the possible non-linear relationship between dependent and independent variables. t-statistics are in parentheses and R-square indicates the adequacy of the performed regression. Observations reflect the number of the available funds in each year of the studying period.

Variables	2002	2003	2004	2005
Constant	7.95 (3.61)*	11.14 (6.03)*	9.00 (4.40)*	5.95 (2.99)*
Expense Ratio	-0.23 (-2.49)**	-0.48 (-3.99)*	-0.13 (-1.67)***	-0.25 (-1.90)***
LnAge	1.38 (5.07)*	0.51 (2.01)**	0.56 (1.78)***	0.88 (3.16)*
Alpha	1.05 (1.33)	1.79 (2.14)**	0.80 (0.89)	2.01 (1.50)
LnFamily	0.26 (2.52)**	0.18 (2.04)**	0.26 (2.78)*	0.39 (4.54)*
R-square	0.38	0.28	0.26	0.34
F-statistic	13.23*	10.33*	5.04*	12.49*
Observations (Funds)	116	112	114	102

*, **, *** represent statistical significance at the 1%, 5% and 10% levels of acceptance, respectively.