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Efficiency evaluation of Greek equity funds

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ABSTRACT

This study assesses the relative performance of Greek equity funds employing a non-parametric method, namely Data Envelopment Analysis (DEA). Specifically, we evaluate the funds' total productivity change using the DEA-based Malmquist Index. Our results reveal significant losses in funds' productivity for the period of 2003–2009, which calls for the attention of domestic policy makers and market regulators. Significant implications for the investors' fund selection process arise from our analysis since we are able to identify potential sources of operational inefficiencies. Employing a panel logit model we document a significant negative relationship between the probability of being efficient and funds' size, a finding which may be related to the microstructure of the domestic stock market. Furthermore, we provide evidence against the notion of funds' mean-variance efficiency.

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1. Introduction

Open-end mutual funds are one of the most successful institutions in modern financial markets worldwide. They are collective investment vehicles that pool money from individual investors to buy the most attractive securities in order to achieve the maximum benefit in terms of risk-adjusted return. Their great popularity is mainly due to the advantages of professional management and risk reduction through portfolio diversification they offer to their shareholders (see inter alia Huang and Lin, 2011). However, the delegated nature of the fund industry can result in conflicts of interest between

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shareholders who wish to maximize their return and fund managers who seek to maximize their compensation that depends on the fund's assets (Chevallier and Ellison, 1997).

The problem of investor's optimal portfolio selection has received a lot of attention since the pioneering work of Markowitz (1952) and Tobin (1958). In the context of modern portfolio mean-variance theory investors seek to maximize their utility choosing among all possible mean-variance efficient portfolios given their risk preferences. Mean-variance efficiency is defined as the ability of a set of assets to yield the maximum return for a given level of risk or, alternatively, to produce the minimum level of risk for a given expected return.

Another issue related to portfolio efficiency is portfolio performance evaluation. The most common criteria are the Sharpe ratio (1966), that measures the excess return of a portfolio adjusted for the variability of its returns measured by their standard deviation, Treynor ratio (1965) and Jensen's alpha (1968), the latter two being based on the CAPM theory. In the last three decades, following the equilibrium model of capital market prices of Sharpe (1964) and Lintner (1965), researchers have proposed various parametric measures for portfolio performance assessment.

However, almost all the employed measures have two important shortcomings that have been extensively analysed in the relevant literature. The first concerns the choice of a proper benchmark, which is closely related to what constitutes normal performance of a portfolio. In the context of modern portfolio theory, the benchmark return is defined by a strategy of comparable risk that combines investment in a risk-free asset and in the tangent portfolio that contains all risky assets. Various studies have attributed the sensitivity of portfolio performance evaluation to the employed measures (Roll, 1977; Lehman and Modest, 1987). The second important problem with the traditional performance measures is their inability to incorporate the various costs incurred by the mutual fund shareholders. Open-end fund investors face a series of direct and indirect charges which ultimately reduce their received net return. These costs include sales charges (front and back-end loads) and other operational, administrative and marketing costs that are usually proxied by the fund's expense ratio. A series of studies (Malkiel, 1995; Carhart, 1997; Prather et al., 2004; Babalos et al., 2009) has examined the impact of costs on fund's returns and detected a negative relationship between fund's performance and various fund's costs.

The inherent disadvantages of traditional performance measures can be effectively alleviated by employing an alternative non-parametric measure that was firstly introduced by Murthi et al. (1997). This is obtained using a method known as Data Envelopment Analysis (DEA, Charnes et al., 1978), which is applied extensively in operational management research to compute relative measures of efficiency. The DEA approach allows us to gauge an individual fund's investment performance by measuring its efficiency compared to the peer group funds. DEA accomplishes this by constructing an efficient frontier from a linear combination of the perfectly efficient funds and determining fund deviations from that frontier, which represent performance inefficiencies defined as slacks.

The present study addresses the important topic of portfolio performance evaluation combining financial as well as operational dimensions. In particular, we employ the non-parametric DEA method to measure the performance of a sample of Greek domestic equity funds. We further evaluate the funds' total productivity change using Malmquist index. The DEA method allows us to compute inefficiency measures of the individual input and output factors in order to identify the source and extent of any performance inefficiency. The oligopolistic structure of the Greek mutual fund industry, combined with the small size and illiquidity of the Athens Stock Exchange (ASE), makes the Greek case an interesting one. Specifically, we are able to explore whether the percentage of fund assets under management affects the successful implementation of a fund's investment strategy given the small capitalization and illiquidity of the domestic stock market.

The issue of funds' operational efficiency is crucial for both investors and managers. Investors, in particular, are concerned that the various charges imposed by the funds are used effectively in their best interest and that funds exploit their available resources in the most productive manner. On the other hand, managers are also concerned about funds' efficiency since long-term success of the delegated nature of active management depends crucially on adopting practices that serve effectively clients' investment purposes. Although actively managed funds have received a lot of pressure from both the dissemination of academic findings and practitioners' activism, the total expense ratio charged by the companies has actually experienced an upward trend (see Barber et al., 2005).

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