

New Economic School  
**MUTUAL FUNDS**  
Research project proposal, 2007/08

**Project leader:** Alexei Goriaev ([agoriaev@nes.ru](mailto:agoriaev@nes.ru))

Mutual funds have become one of the largest financial intermediaries in the world, currently controlling the assets over \$8 trillion in the US and twice that amount in the world. One of the most astonishing empirical observations is that there are more funds than the underlying assets. In the US alone, there are over 8,000 funds; the number of funds offered worldwide is over 55,000. The success of the mutual fund industry is usually explained by *low transaction costs* (even though online trading has recently provided an even cheaper access to the stock market), *liquidity insurance* (open-ended funds have to buy and sell their shares every day at the fair value of their portfolio), and *professional management* (the ability to earn extra return compared to the benchmark assets, due to ‘selecting right stocks at the right time’). A huge literature on mutual funds has tried to investigate these explanations, concentrating on the evaluation of their performance and trying to find whether and how fund managers *add value* for their investors.

The most basic measure of mutual fund performance is a fund's raw return over a certain period. While being the simplest and most appealing to investors, this measure can hardly discriminate among managers who have *superior skill*, those who are *lucky*, and those who merely earn *expected risk premiums* on their high-risk investments. Various *risk-adjusted* performance measures have been constructed to single out the first factor, which plays an important role for investors choosing among funds and fund management companies devising managerial compensation. In general, *performance evaluation* includes not only the measurement of the risk-adjusted component of the fund's return, but also *performance attribution* (the decomposition of the fund's total return into components related to the risk factors, managerial skills, transaction costs, etc.) and *style analysis* (the identification of the fund's investment strategy).

The most popular performance evaluation approach in the literature is based on the time series regression of the excess fund's return on K risk factors:

$$R_{i,t} - R_t^F = \alpha_i + \sum_k \beta_i^k F_t^k + \varepsilon_{i,t}, \quad (1)$$

where  $R_i$  is fund  $i$ 's return,  $R^F$  is a risk-free rate, and  $F^k$  represents the excess return on the  $k$ -th factor-mimicking portfolio; the errors are assumed to have zero expectation and be orthogonal to the factors. In this regression, factor betas  $\beta^k$  measure the contribution of the respective factors to the fund's return, and the intercept called *Jensen's alpha* measures manager's ability to select assets that yield higher return for the same level of risk. The benchmark model, which is still very popular, is a *market model* inspired by CAPM, which uses the excess market return as a single factor. Another popular model is a three-factor *Fama-French model* with the market, size, and book-to-market factors, in which the last two factors measure return premiums for stocks of small-cap and value stocks over large-cap and growth stocks, respectively. There are many other approaches to measure mutual fund performance, e.g., allowing funds' betas to depend on the lagged instrumental variables (Ferson and Schadt, 1996) and using information about the fund's portfolio weights (Wermers, 2000).

The existing empirical evidence for developed countries suggests that active mutual funds have on average negative or neutral risk-adjusted performance net of expenses (e.g., Gruber, 1996). However, one may identify the groups of funds consistently earning negative risk-adjusted returns and, to a less extent, a number of well-performing funds (Brown and Goetzmann, 1995). Carhart (1997) finds that fund risk-adjusted returns are negatively related to their asset turnover

and fees. A more detailed description of the literature on US mutual funds, including fund strategic behavior and relationship between fund flows (i.e., net growth in fund assets) and their past performance, is given in Gorjaev (2002).

During the last years, the mutual fund industry has been rapidly developing in Russia. The assets under management have grown from \$330 million in 2001 to over \$16 billion in 2006. Currently, there are over 600 funds run by almost 300 management companies, in contrast to 51 funds and 35 management companies in 2001. The customer base has grown from 17,500 retail investors in 2003 to over 300,000 in 2006. Even despite such an impressive growth, the industry is still at the very early stage of its development. In the US, about 50% of families invested in mutual funds in 2006 vs. 6% in 1980; in Russia this number is below 1%. The assets under management are still only 0.5% of Russia's GDP vs. 90% in Australia and 70% in the US. Moreover, open-ended funds (pricing and offering their shares on the daily basis) represent only 23% of the industry; the rest being interval funds (opening for a few weeks a year; unique for Russia) and closed funds (with shares traded only at the secondary market).

In Russia, the empirical analysis of the stock market has been hindered by its short history, high concentration, and low liquidity of most stocks. As a result, no multi-factor model similar to those used in the US has been offered so far; the market model or the two-factor model with the stock and bond indices are usually used as a benchmark. Moreover, performance evaluation of Russian mutual funds (PIFs) should account for the relative lack of transparency in PIF operations, active intra-day trading of small funds, notorious end-of-year effects<sup>1</sup>, portfolio restrictions (e.g., 20% upper limit on the weight of a single asset), and the difference between the open-ended, interval, and closed funds.

As a result, there are no high-quality rating systems of individual Russian funds similar to those in the US. The existing performance evaluation systems are either *rankings* based on funds' raw return, Sharpe ratio, or Jensen's alpha or *ratings* based on the arbitrary and confused criteria. The research on Russian funds is scarce. NES students participating in the 2005/06 research seminar under the supervision of A. Gorjaev have got a number of interesting results. In particular, (i) good performance of top funds seems to be mostly due to luck rather than managerial ability; (ii) risk-adjusted performance seems to be persistent only over a short horizon; (iii) several funds seem to be misclassified (e.g., pretending to be more/less risky than they actually are); and (iv) well-performing funds attract more money from investors.

The objective of the current research project is to conduct empirical analysis of US and Russian mutual funds using the most recent data including daily returns and total net assets (TNA) of US and Russian funds in 2000s. The data on the benchmark assets (market and industry indices, individual stocks, risk-free rates, and macro variables) are also available. The students participating in this project are expected to have strong econometric and programming (Matlab or Gauss) skills and choose finance field. The specific directions of this empirical analysis are described below. Note that the topics need not be directly related to the mutual fund industry; such topics as asset pricing, asset predictability, and risk management may be also pursued within the project.

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<sup>1</sup> At the end of the year, PIFs add financial reserves accumulated during the year to their net assets, which can lead to a significant increase or decrease in the fund's return.

## **Suggested topics**

*The determinants of money flows to mutual funds.* The existing evidence for US funds demonstrates a strong positive relationship between fund flows and their past raw or risk-adjusted performance (see, e.g., Sirri and Tufano, 1998). The flow-performance relationship appears to be asymmetric, as flows to top performers are more sensitive to their performance than flows to poorly performing funds. The flow-performance sensitivity is much higher for the leading funds, declines with time (i.e., fund last-year performance is more important for investors than fund performance two or three years ago) and depends on fund's characteristics such as size, age, and fees (see Gorjaev, 2002). This project may study the topics previously unexplored in the literature: flows to young funds (with very short performance record), impact of the advertising and publications in the media, etc.

*Constructing a rating system for the Russian mutual fund industry.* A fund rating may be based on the quantitative measures (such as past performance, risk, and fees) or on the qualitative factors (e.g., quality of the fund's management based on the internal evaluation). This project will survey the existing rating systems in the world and propose a new rating system for Russian mutual funds (PIFs) including individual fund ratings based on their past risk-adjusted performance and other fund characteristics such as fees, and management company ratings. The analysis will involve backtesting of these ratings using the historical fund data.

*Tournaments and risk-taking in the mutual fund industry.* According to the tournament hypothesis, mutual funds are interested in achieving top performance ranking over a certain period (e.g., a calendar year) to attract investors. Several studies (e.g., Chevalier and Ellison, 1997) find that funds lagging behind after the first half of the year increase risk towards the end of the year, compared to interim losers. However, this evidence is challenged by studies claiming that the testing methodology must account for the cross- and auto-correlation in fund returns (e.g., Busse, 2001). This project should offer a new methodology robust to these effects to investigate whether funds indeed participate in this kind of tournaments.

## **References**

- Brown and Goetzmann, 1995, Performance persistence, *Journal of Finance* 50, 679-698.
- Busse, 2001, Another Look at Mutual Fund Tournaments, *Journal of Financial and Quantitative Analysis* 36(1), 53-73.
- Carhart, 1997, On persistence in mutual fund performance, *Journal of Finance* 52, 57-82.
- Chevalier and Ellison, 1997, Risk taking by mutual funds as a response to incentives, *Journal of Political Economy* 105, 1167-1200.
- Ferson and Schadt, 1996, Measuring fund strategy and performance in changing economic conditions, *Journal of Finance* 51, 425-461.
- Gorjaev, 2002, On the behavior of mutual fund investors and managers, PhD Dissertation.
- Gruber, 1996, Another puzzle: The growth in actively managed mutual funds, *Journal of Finance* 51, 783-810.
- Wermers, 2000, Mutual fund performance: An empirical decomposition into stock-picking talent, style, transactions costs, and expenses, *Journal of Finance* 55, 1655-1695