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Abstract

The boom of the stock market and the pension reform have stimulated rapid growth of the financial management industry in Russia. The objective of this paper is to evaluate performance of Russian mutual funds during the post-crisis period from 1999 to 2003. The main research question of the paper is whether the active portfolio management creates the value added for fund investors, in excess of the transaction costs. Our main results are based on the mean-variance spanning methodology (see,e.g. DeRoon and Nijman, 2001), testing the hypothesis whether the addition of a mutual fund to a typical investor's portfolio improves its risk-return trade-off. We find that returns of most mutual funds are well explained by a passive portfolio of Russian blue chips and corporate bond index. On average, mutual funds marginally outperform the benchmark portfolio.

Бурное развитие фондового рынка и проведение реформы пенсионной системы вызвали быстрый рост в индустрии управления финансами. Целью данной работы является анализ финансовых результатов российских паевых инвестиционных фондов в послекризисный период с 1999 до 2003 гг. Главный вопрос, который исследуется в настоящей работе – создает ли активная политика управления фондом добавленную стоимость для инвесторов сверх транзакционных издержек. Наши главные выводы основываются на применении методологии проверки сдвига эффективной границы (DeRoon and Nijman, 2001), позволяющей тестировать гипотезу о том, насколько добавление взаимного фонда в типичный инвестиционный портфель улучшает соотношение риска и доходности. Мы обнаружили, что финансовые результаты большинства фондов с учетом риска хорошо объясняются доходностью пассивного портфеля, составленного из голубых фишек и индекса корпоративных облигаций. Также мы нашли, что, финансовые результаты среднего фонда несколько выше, чем результаты пассивного портфеля.

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Introduction 1

Mutual funds have existed and effectively operated in many developed countries for more than 80 years. The last decade of 20th century was the period of mutual fund blooming. For instance, in 1990 about 3100 mutual funds functioned in the US, with the total net assets of approximately $1 trillion. In 2001 the number of mutual funds working in the US exceeded 8300, and their net capitalization became more than $7 trillion. In Europe the similar situation took place.

The first Russian mutual fund was formed in 1996, and at the end of 2003 more than 153 mutual funds were active in Russian Federation. In 2003 the capitalization of Russian mutual funds has increased six-fold and exceeds $2.6 billion. The stock market net capitalization has increased in 1.7 times only in 2003 and exceeds $180 billion.

Similarly to other financial assets, the investment in mutual funds implies financial risks. However, investing in mutual funds has several advantages compared to direct investment in the stock market: 1) funds decrease transaction costs, 2) shareholders can transfer money among funds of the same asset management company, and 3) officials of mutual funds claim that fund assets are managed professionally. Therefore, mutual funds are especially attractive for small individual investors rather than for large ones. It is very important to know whether the active mutual fund portfolio management creates the value added for these investors. If it does not, it may be more profitable for the consumers invest in the benchmark portfolio or in the low-cost index fund.

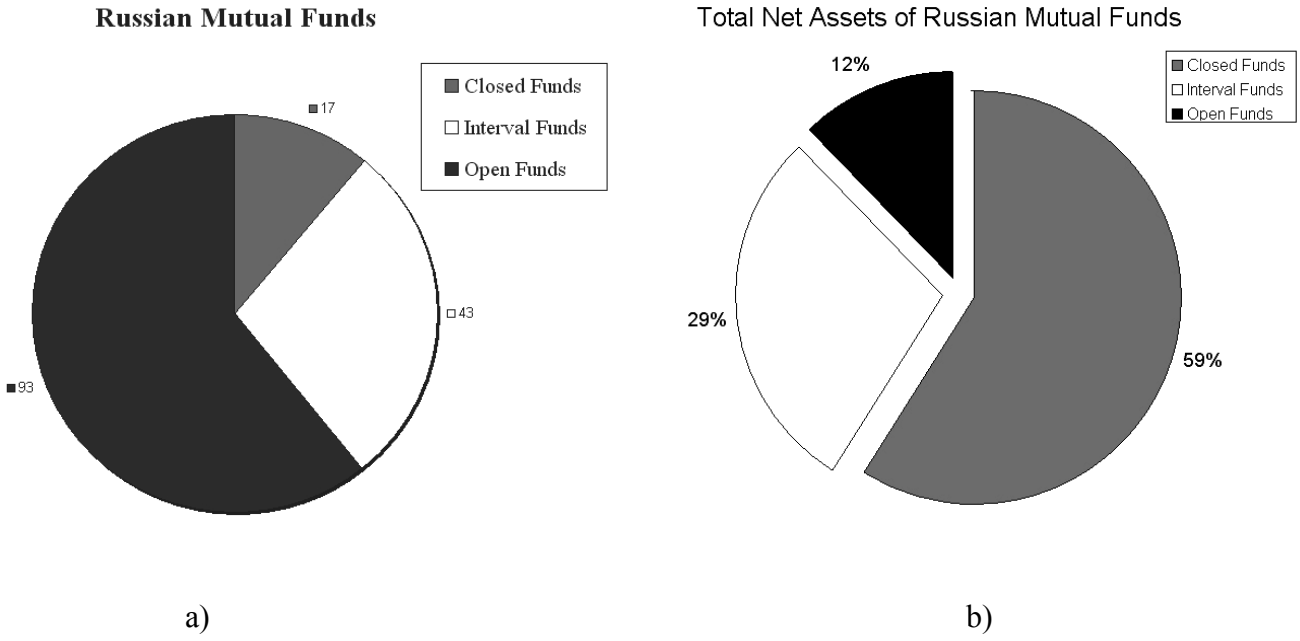
The recent literature has developed two main approaches of performance evaluation of mutual funds: return-based (e.g. Gruber, 1996) and portfolio-based (e.g. Daniel, 1997). The first approach employs the mutual fund returns, while the second one uses a passive benchmark portfolio replicating the fund portfolio risk characteristics. The positive difference between the fund and the benchmark portfolio returns indicates that whether the fund managers have superior knowledge or skills that allow them to outperform the benchmark portfolio. The existing empirical evidence shows that U.S. mutual funds have on average negative or neutral risk-adjusted performance. For example, Gruber (1996), applying a four

factor model with the market, size, growth, a bond factors to measure Jensen's alphas, finds that U.S. stock funds underperformed an appropriately weighted average of the four factor benchmark portfolio indices. Daniel et al (1997) using as a benchmark portfolio the return on a portfolio that is matched to the fund equity holdings each quarter on the basis of size, book-to-market, and one-year momentum characteristics, find that the performance earned by managers of active funds is not significantly greater than the difference between their expenses and expenses of passive index funds.

Ferson and Schadt (1996) point that the standard approaches to measure performance are based on the assumption of the independently and identically distribution of asset returns. However, asset returns are to some extent predictable. For example, stock and bond future returns can be forecasted by variables like lagged returns and short term interest rates. They propose to incorporate publicly available information to measure performance. In their conditional model, Jensen's alpha is based on a factor model with time depending betas that are linear function of lagged variables including public information. Ferson and Schadt find that the Jensen's alpha distribution obtained under conditional model is consistent with neutral mutual fund performance, while unconditional alphas states underperformance of an average mutual fund.

The Russian mutual fund data description is provided in the Section 2 of the paper. In the 3d Section of this work performance evaluation technics are descussed. Performance evaluation of Russian mutual funds is carried out in the Section 4 using both unconditional and conditional models. The Section 5 shows year-to-year performance of mutual funds based on the unconditional benchmark portfolio. In the Section 6 we check the robustness of obtained results. The Section 7 represents the results of mutual fund portoflio simulation. The final section provides some concluding remarks.

Data Description 2



a) b)

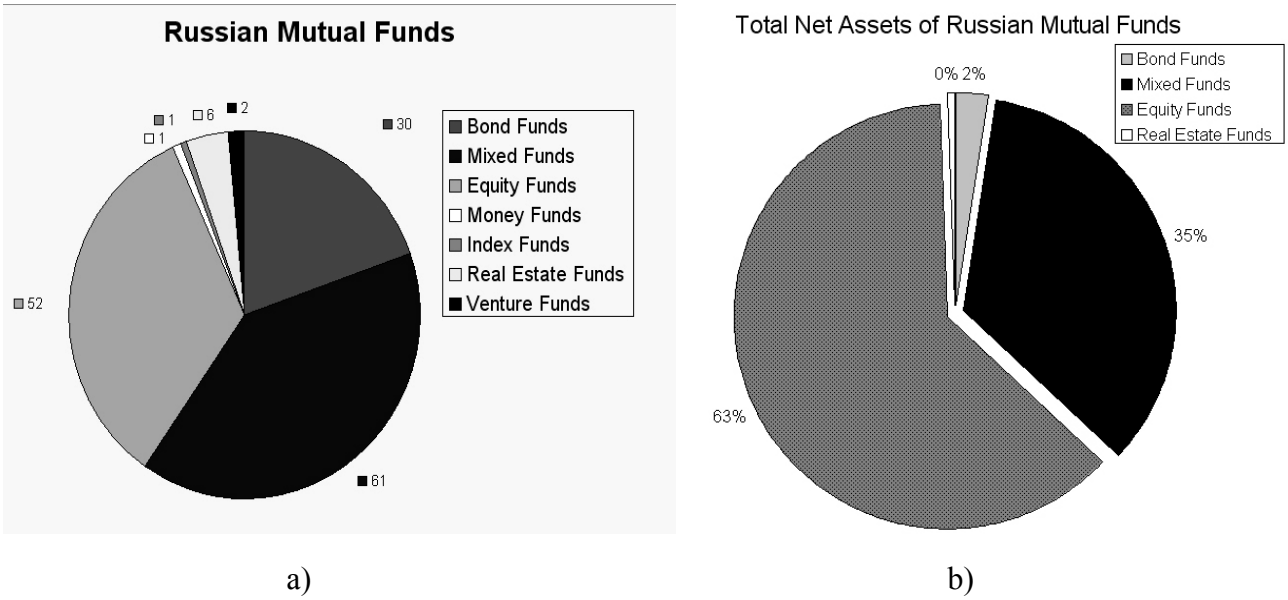
Figure 1 Mutual fund classification by the openness to their investors. Chart a) shows the number of each type of funds that were active at the end of 2003 in Russia. 1) 93 – open funds (black), 2) 43 – interval funds (white), 3) 17 – closed funds (grey). Chart b) depicts the share of the market of every mutual fund type. 1) Open fund share was only 12 per cent of total net assets of all mutual funds, 2) interval funds took about one third of the market, 3) 59 per cent was the part of closed finds.

Thus, 153 mutual funds were active in Russia at the end of 2003 year.

The most frequent funds were open funds that account for about 60 % of the mutual fund population. These funds are open every day for buying or selling of fund shares, therefore, they are inclined to invest in the liquid securities. Unfortunately, this category of mutual funds shares only 12 per cent of this financial industry market.

Approximately three funds from ten were interval funds. Interval funds are open for transactions only several times a year, so these funds usually keep their assets in the stocks of companies that have a potential for rapid growth and development, although they may be less liquid. Figure 1b shows that the market share of this type of funds is almost 30 per cent. More than 62 per cent of total net assets of interval fund belongs to four Nikoil Asset Management interval funds.

Although, closed funds were the less frequent funds - only 17 from 153, they took almost 70 per cent of the total net assets. The main goal of closed funds is the efficient asset management for a very limited number of investors. Closed funds are aimed to deal with an allocation of cash flows in the most desired way for special purposes (e.g. office block building). Unfortunately, taking into account the closed fund features, it is inappropriate to apply performance evaluation methods for open and interval mutual funds to closed ones. Thus, the present work leaves out of its framework closed fund performance evaluation problem.



a) b)

Figure 2 Mutual fund classification by the type of investments. Chart a) shows the number of each type of funds that were active at the end of 2003 in Russia. Chart b) depicts the share of the market of every mutual fund type. 1) Stock fund share was 63 per cent of the total net assets of all mutual funds, 2) mixed funds took about one third of the market, and 3) 2 per cent only was the share of bond finds. Unfortunately, data about venture, index and money funds is not available.

Figure 2 provides the information concerning the classification of Russian mutual funds by the type of investments. The most frequent type was a mixed mutual fund – almost 40 per cent (61 from 153) of all active mutual funds at the end of 2003. The mixed fund share of this market was 35 per cent. Mixed mutual funds can invest in the stocks and in the bonds.

Although, equity (stock) mutual funds were only on the second place by frequency (52 from 153), they had 63 per cent of total net assets. These funds invest primarily in the stocks, but can hold a small part of their assets in bonds.

Bond mutual funds occupied about 2 per cent of this financial management industry market. Figure 2a shows that at the end of 2003 the number of bond funds was 30. Conversely to stock funds, bond mutual funds invest primarily in bonds and also can hold some part in stocks.

There were six real estate funds (all of them were closed funds), two closed venture funds, one open money fund, and one interval index fund in the mutual fund market.

The data on Russian mutual funds is provided by investfunds.ru project (www.investfunds.ru). The analysis conducted in this paper concerns the time period from 01.01.1999 (to exclude the effect of 1998 year default) to 31.12.2003. So, at the beginning, we have data on 153 Russian mutual funds, but finally, a large number of mutual funds are excluded from the analysis, because they have data insufficiency problem. Some of these funds have too short history (less than a year at the end of 2003). The others are interval funds; these funds recount share price once a month at best, and as a result these funds do not have enough observations to carry out the analysis. The only interval funds recounting daily share price are funds controlled by Nikoil Asset Management, namely – "Лукойл Консервативный", "Лукойл Фонд Профессиональный", "Лукойл Фонд Первый" и "Лукойл Фонд Перспективных Вложений". These mutual funds are included in our analysis. Finally, the sample includes 33 Russian mutual funds.

In this work the stocks of the most liquid Russian companies - Yukos, RAO UES, Gazprom, Lukoil, Rostelekom, Sibneft, Surgutneftegas, Sberbank as well as S&P RUX, S&P RUX industrial and Corporate Bond indices are used for setting up the benchmark portfolios. During the sample period these stocks were traded on Russian Trading System (RTS) and Moscow Interbank Currency Exchange (MICEx), Moscow Stock Exchange (MSE), and "Saint-Petersburg" Stock Exchange (SPSE). Almost all selected stocks were primarily traded on RTS and MISEx. The stock trading activity was different between these two stock exchanges, so in summer 2001 MISEx has became the most popular transaction place. Gazprom stocks were traded on MSE till summer 2001, but later all Gazprom stock transactions were transmitted to SPSE.

This paper also uses the U.S. dollar exchange rate, Urals oil price and 30 day risk free return rate as macroeconomic parameters.

Table 1. Some Summary Data Statistics during the Sample Period of Time

	1999-2003		1999	2000	2001	2002	2003
	mean	std	mean	mean	mean	mean	mean
Lukoil	91.0%	1025.2%	0.0%	-5.9%	258.1%	128.8%	220.2%
RAO UES	38.6%	948.2%	75.3%	-9.1%	90.8%	-16.6%	107.9%
Rostelekom	18.1%	962.5%	109.8%	-51.3%	4.5%	30.2%	67.3%
Sberbank	90.1%	941.0%	256.0%	-29.3%	192.2%	153.2%	34.2%
Sibneft	107.5%	1061.2%	176.9%	-18.6%	279.8%	190.8%	52.8%
Surgutneftegas	49.2%	905.3%	265.8%	-21.1%	47.9%	2.5%	79.2%
Yukos	108.5%	911.0%	6.8%	428.7%	211.1%	81.9%	22.6%
Gazprom	52.9%	637.5%	75.1%	8.6%	78.6%	46.0%	66.3%
Oil-Gaz	55.0%	660.7%	131.0%	7.4%	72.7%	49.2%	43.5%
Energy	38.8%	793.7%	91.5%	-11.7%	73.3%	-14.5%	107.3%
Commutication	24.0%	544.5%	55.8%	-16.8%	2.5%	19.3%	80.1%
Industry	28.5%	744.7%	-31.8%	23.3%	189.6%	10.7%	28.5%
TOTAL	53.0%	625.4%	114.9%	4.1%	75.2%	39.2%	56.5%
S&P RUX	53.0%	624.0%	145.0%	-8.5%	75.3%	38.9%	56.8%
	2002-2003					2002	2003
CBONDS	21.1%	39.2%				20.7%	21.6%

This table provides summary statistics during the sample period of time concerning data that is used in this paper. The summary statistics is available almost for all assets during the sample span, with the exception of corporate bond index that is available for the last two years only. To calculate summary statistics all assets were recounted in the rubles terms if it was required.

Methodology 3

The first and still one of the most popular measures of fund performance was suggested in 1960 by Sharpe. It measures the fund excess return earned per unit of risk exposure.

$$Sharpe's\_ratio = \frac{\overline{R}_i - R_F}{\sigma_i}, \tag{1}$$

where $\overline{R}_i$ is mean of mutual fund return, σ_i is the standard deviation of returns, R^F is the risk free return. If the fund's Sharpe ratio (the slope of the line connecting the position of the fund with the point of the risk-free rate of return) is less than the slope of the capital market line, this serves as the evidence that the fund underperformed the market.

In 1969 Jensen proposed another fund performance measure. Jensen's alpha is given by the next regression:

$$R_{it} - R_t^F = \alpha + \sum_{k=1}^{K} \beta_t^k \cdot (R_t^k - R_t^F) + \varepsilon_t, \tag{2}$$

where R_{it} is the mutual fund return, R^F is the risk free return, , R^k is the return of the k-th factor. Jensen's alpha is interpreted as the difference between excess mutual fund return and excess return of the passive portfolio of K-factors. A positive and statistically significant Jensen's Alpha witnesses that active fund management creates the value added (taking into account asset management company revenues, but without loads).

Although, Jensen's alpha and the Sharpe ratio are used to measure fund performance, there is an important difference between them. The Sharpe ratio is defined in fund portfolio terms, while Jensen's

alpha is defined in terms of one portfolio relative to another. The Sharpe ratio answers the question whether one fund should to be preferred to another. Jensen's alpha indicates whether the investor can benefit from investing in the new assets. Nonetheless, there is a close relation between these performance indices. Jensen's alpha along with the covariance matrix of the errors ε_t determines the potential improvements in the maximum reachable Sharpe ratio from new asset additions.

The objective of this paper is to answer the question "Does the active portfolio management create the value added on top of the transaction costs?". Thus, the performance evaluation of Russian mutual funds is the cornerstone of the paper. To answer the question we use both unconditional and conditional (scaled returns) approaches (e.g. DeRoon, Nijman, 2001).

Under the unconditional approach excess fund's returns run on factor excess returns as in (2), assuming that betas are constants over time.

Conditional approach differs from the previos one by the assumption that time depending betas that are linear function of lagged variables including public information.

$$R_{it} - R_t^F = \alpha + \sum_{k=1}^{K}\left[\beta^k + \sum_{l=1}^{L}\gamma_l^k \cdot Z_{t-1}^l\right]\cdot\left(R_t^k - R_t^F\right) + \varepsilon_t, \qquad (3)$$

where Z^l_{t-1} is an instrumental variable, containing information from the previous period of time, for example, macroeconomic data on oil price or exchange rate. In this case we have K factors and 2K instrumental variables in the benchmark portfolio (l refers to the number of instruments).

To study whether the active portfolio management creates the value added, this paper uses the mean-variance spanning approach. If the mean-variance frontier of the benchmark portfolio assets plus the new assets (in our case – an mutual fund) coincides with the frontier of the benchmark portfolio assets only, there is *spanning*. In this case, no mean-variance investor can benefit from adding the new assets to his/her optimal portfolio of the benchmark portfolio. DeRoon and Nijman (2001) provide a method of mean-variance spanning testing.

Mean-variance investors face the problem $\max_w E[U(W_{t+1})]$, where $E[U(\cdot)]$ is of the form $f(w'\mu_R, w'\Sigma_{RR}w)$ with f increasing in the first argument and decreasing in the second argument. μ_R is the K-dimension vector containing expected factor returns. Thus, a mean-variance efficient portfolio w* is the solution to the problem:

$$\max_w \; L = w'\mu_R - \gamma w'\Sigma_{RR} w - \eta (w' i_k - 1), \tag{4}$$

where k refers to the number of regressors in the initial set, R – to the asset returns, μ_R and Σ_{RR} are the asset returns expectation and covariance matrix respectively, i_k is a K-dimension vector containing ones, γ is the coefficient of risk aversion, η is the Lagrange multiplier.

From the first order condition of this problem, it follows that a portfolio weights are mean-variance efficient if there exist scalars γ and η such that

$$w^* = \gamma^{-1}\Sigma_{RR}(\mu_R - \eta i_k) \tag{5}$$

If there is mean-variance spanning then all mean-variance efficient portfolios w^* must have the following form:

$$w^* = \begin{pmatrix} w_R^* \\ 0_N \end{pmatrix} \tag{6}$$

where w_R^* - is the solution to the Markowitz problem with initial set of factors, N – is the number of additional assets (in our case N equals one), 0_N is the N – dimensional vector containing zeros.

I.e. for all values of scalars γ and η it must be true:

$$\mu - \eta \cdot i_{N+K} = \gamma \cdot \Sigma \begin{pmatrix} w_R^* \\ 0_N \end{pmatrix} \tag{7}$$

If such a portfolio w^* exists, there is mean-variance spanning. In the other words, the mean-variance frontier of the benchmark portfolio lies on the mean- variance frontier of the benchmark portfolio plus additional assets.

The next step is to derive the restriction on the distribution of benchmark portfolio factor set and on benchmark portfolio factors and additional assets set that are equivalent to mean-variance spanning. To do so, substitute equation (5) in the last N rows of equation (7) to obtain:

$$\mu_r - \eta \cdot i_N = \Sigma_{rR} \cdot \Sigma_{RR}^{-1}(\mu_R - \eta \cdot i_K), \tag{8}$$

where r refers to the set of dimension N.

This equation should be hold for any γ and η, and this can only be the case if

$$\mu_r - \beta \cdot \mu_R = 0 \text{ and } \beta \cdot i_K - i_N = 0, \tag{9}$$

where $\beta = \Sigma_{rR} \cdot \Sigma_{RR}^{-1}$.

If these restrictions hold, every point on the mean-variance friontier of the benchmark portfolio is also on the mean-variance frontier of the benchmark portfolio plus additional N assets.

Thus, to test whether mutual fund managers create the value added we should to test joint hypothesis: Jensen's alpha is equal to zero and sum of all factor weights (betas in the regression (2)) is the unity. The Wald test statistic for spannig can be written as

$$\xi_{wald}^{span} = h'_{span}\left(H_{span} \cdot \hat{Q} \cdot H'_{span}\right)^{-1} h_{span} \sim \chi^2_{2 \cdot N}, \tag{10}$$

where $h_{span} = H_{span} \cdot \hat{b} - i_N \otimes \begin{pmatrix} 0 \\ 1 \end{pmatrix}$ (11a)

and $H_{span} = I_N \otimes \begin{pmatrix} 1 & 0'_k \\ 0 & i'_k \end{pmatrix}$, (11b)

$\hat{b}$ is the OLS estimate of $b = vec((\alpha\beta)')$, a (K+1)N – dimensional vector,

$\hat{Q}$ is a consistent estimate of the asymptotic covariance matrix of $\hat{b}$.

DeRoon and Nijman (2001) also discuss the relation between test for spanning and performance evaluation. They argued that restrictions on the regression coefficients that are imposed by the hypothesis of spanning have a natural interpretation in terms of Jensen's alphas. Testing for spanning is equivalent to testing whether the Jensen's alphas are zero for all values of η. This paper shows that the test statistics

for spanning can be interpreted in terms of Jensen's alphas and Sharpe ratios. It is shown that the Wald statistics for spanning can be written as

$$\xi_W^{span} = T \cdot \left(\frac{1+\hat{\theta}(\hat{\eta^o}_R)^2}{1+\hat{\theta}_R(\hat{\eta^o}_R)^2} + \frac{(\sigma_R^O)^2}{(\sigma^O)^2} - 2 \right) \sim \chi^2_{(2)} \tag{12}$$

where $\eta_R^0 = B_R / A_R$ - return of a benchmark portfolio, with $\hat{\sigma}_R^0$ - possible minimum of variance. Similarly, $\hat{\sigma}^0$ is the variance minimum of a portfolio containing a benchmark portfolio and additional assets (mutual fund in out case). $\hat{\theta}_R(\eta)$ is the Sharpe ratio of a mean-variance efficient portfolio for any given η

In the same way, $\hat{\theta}(\eta)$ is the maximum possible Sharpe ratio.

$$\hat{\theta}(\eta)^2 = \hat{\theta}_R(\eta)^2 + \alpha_J(\eta)' V^{-1} \alpha_J(\eta), \tag{13}$$

where α_J - Jensen's alphas, V – the covariance matrix of ε_{t+1}.

In the appendix 1 the discussed methodology is illustraded by the example of "ПИО Глобал Фонд Сбалансированный".

Measuring the performance of Russian mutual funds we apply two main models – market and blue chips ones.

1. *Market Model*. We consider two specifications of the market model. In the first specification of the model the excess returns of Russian mutual funds are regressed on the excess returns of the market portfolio -S&P RUX. In the second specification we add another factor to the benchmark portfolio – corporate bond index.

2. *Blue Chip Model*. Under this model the stocks of Yukos, RAO EES, Gazprom, Lukoil, Rostelekom, Sibneft, Surgutneftegas, Sberbank are used as factors of the benchmark portfolio. We consider two approaches of performance evaluation based on the blue chips model – unconditinal and conditaional . Every approach is executed in two specification specification – without and with corporate

bond index in the benchmark portfolio. Under scaled returns approach the U.S. dollar exchange rate and Urals oil price are used to create instrumental variables containing macroeconomic information.

Under the unconditional model we use weekly data, but under the conditional model we always use daily data to avoid insufficient data problem. Unfortunately, we have the corporate bond index data only for two last years of the sample period – from the beginning of 2002 to the end of 2003. Therefore, we always consider two specifications of the benchmark portfolio – without and with corporate bond index. Every time when we apply the benchmark portfolio with corporate bond index, the sample period is reduced to two years (2002-2003).

Discussion of the Results

4

4.1. Market Model Results

Table 2 listed below represents the regression results of the excess returns of Russian mutual funds on the excess returns of the market portfolio - S&P RUX (the first part of the table), and on the

Table 2. Market Model Results

		S&P_RUX 1999-2003					S&P_RUX and Cbonds 2002-2003							
Name of Mutual Fund	Type	Alpha	Sign.	S&P_RUX	Wald	R_2	Alpha	Sign.	S&P_RUX	Cbonds	Wald	R_2	Sharpe	Return (%)
Базовый	Stock	11.645		0.901	12.155	0.819	7.716		0.869	0.364	2.397	0.827	1.541	36.3
Второй Сибирский Открытый	Stock	-2.417		0.425	207.569	0.376	0.769		0.374	1.026	0.624	0.241	1.307	10.4
Добрыня Никитич	Stock	7.902		0.967	10.879	0.786	3.539		0.773	0.221	0.151	0.785	1.158	31.1
Долгосрочные взаимные инвестиции	Stock	2.715		0.940	4.234	0.600	0.319		0.612	0.854	1.529	0.576	1.111	29.1
Ермак ФКИ	Stock	-12.592		0.484	224.511	0.544	-12.972		0.516	0.106	5.282	0.573	0.842	12.1
ЛУКОЙЛ Фонд I	Stock	2.487		0.796	48.177	0.780	9.338		0.753	0.436	1.67	0.723	1.709	23.3
ЛУКОЙЛ Фонд Отраслевых инвестиций	Stock	2.630		0.832	37.993	0.815	7.536		0.754	0.598	2.747	0.747	1.609	23.8
ЛУКОЙЛ Фонд Перспективных вложений	Stock	2.738		0.812	40.797	0.783	8.783		0.759	0.539	2.485	0.741	1.568	23.6
Паллада Корпоративный	Stock	2.461		0.831	20.437	0.635	-2.318		0.648	0.506	0.123	0.626	1.489	24.0
Перспектива	Stock	-13.822		0.614	142.547	0.624	-14.054		0.880	0.703	1.405	0.712	1.011	14.1
Петр Столыпин	Stock	6.582		0.791	53.564	0.741	-8.508		0.729	0.816	2.439	0.776	1.404	28.9
ПиоГлобал Фонд Акций	Stock	-0.489		1.010	6.078	0.794	-1.092		0.870	0.207	0.039	0.783	1.178	28.6
Солид-Инвест Фонд Акций	Stock	-12.308		0.761	41.089	0.679	6.616		0.542	-0.057	1.008	0.439	1.077	10.6
mean		-0.190		0.782			0.436		0.698	0.486			1.308	22.8
АВК - Фонд долгосрочный	Mixed	8.880		0.095	285.967	0.075	10.947		0.106	-0.163	10.16	0.079	0.968	17.6
АВК-Фонд ликвидных активов	Mixed	1.205		0.497	243.559	0.603	5.680		0.525	0.554	0.975	0.713	1.357	22.7
ДИТ - Фонд Сбалансированный	Mixed	2.976		0.140	2483.236	0.350	-5.679		0.120	1.061	1.955	0.589	2.022	16.1
Дружина	Mixed	5.569		0.239	1984.984	0.586	-1.719		0.262	0.871	0.825	0.759	1.416	20.6
Капитал	Mixed	4.966		0.450	329.156	0.605	2.512		0.504	0.394	0.13	0.712	1.201	24.6
Капитальный	Mixed	-2.978		0.213	1236.817	0.386	-4.743		0.254	0.558	3.198	0.566	0.861	13.8
ЛУКОЙЛ Фонд Профессиональный	Mixed	26.554	**	0.068	1307.028	0.241	20.950	**	0.048	0.463	9.092	0.252	4.153	33.5
Партнерство	Mixed	7.615		0.342	832.909	0.525	-5.295		0.537	0.688	0.556	0.717	1.193	20.2
ПиоГлобал Фонд сбалансированный	Mixed	-0.520		0.814	40.909	0.757	-1.037		0.671	0.205	0.386	0.795	1.143	26.6
Проспект Фонд первый	Mixed	10.861		0.498	147.044	0.634	8.062		0.487	0.250	0.731	0.636	1.416	19.7
Резерв	Mixed	4.347		0.193	2078.465	0.496	-0.270		0.200	0.676	1.052	0.627	2.633	18.3
Тактика	Mixed	4.144		0.446	479.081	0.709	-1.874		0.481	0.490	0.177	0.762	1.862	22.5
mean		6.135	**	0.333			2.294	*	0.350	0.504			1.685	21.4
АВК - Фонд ГЦБ	Bond	7.928	**	0.015	12283.24	0.112	4.007	**	-0.011	0.845	6.213	0.672	3.921	16.5
Илья Муромец	Bond	67.345	**	0.018	158.242	0.033	2.187		0.012	0.960	0.6	0.595	2.536	41.1
ЛУКойл Консервативный	Bond	8.421	**	0.015	37.993	0.146	5.590	**	0.001	0.568	2.747	0.486	4.397	17.9
Паллада ГЦБ	Bond	12.595	**	0.030	4078.727	0.053	-0.015		0.001	0.942	0.778	0.603	2.893	19.7
ПиоГлобал Фонд облигаций	Bond	19.775	**	0.050	1706.866	0.078	2.388		0.006	0.787	7.911	0.586	3.513	23.6
Русские облигации	Bond	19.793		0.779	4.429	0.151	2.995		0.436	0.065	1.126	0.336	3.213	30.2
Сибирский фонд облигаций	Bond	-4.934		0.072	4154.476	0.171	-7.640		0.065	0.479	35.613	0.284	-0.443	7.4
ФДИ Солид	Bond	2.644		0.220	309.695	0.236	0.624		0.212	0.181	4.523	0.238	1.582	12.1
mean		16.696	**	0.150			1.267	*	0.090	0.603			2.702	21.1
All Funds														
mean		6.204	**				1.313							
*** means that p_val <0.01, ** - 0.01<p_val<0.05, and * -0.05<p_val<0.1														
S&P RUX Sharpe ratio equals 1.051														

The table shows the market model results. The table is across subdivided into three parts, corresponding to the number of mutual fund types. This table has vertical division into two main parts in compliance with the model specifications. The alpha column refers to the Jensen's alphas values for each mutual fund. Jensen's alphas are transformed in the annual return terms. The "Sign." columns refer to the Jensen's alpha significance. The Wald column shows the Wald spanning statistics values. Under the model without corporate bond index, the Wald spanning statistics below the critical value are highlighted by blue color. Under the model with corporate bond index, the Wald spanning statistics more than the critical value are highlighted by red color. The Wald spanning statistics critical value is 5.991.The fund Sharpe ratios are calculated for 2003. The last column shows the average mutual fund returns during the fund time existence.

excess returns of S&P RUX and corporate bond index (the second part of the table), during mutual funds time existence. The table shows that in the model with market factor only 6 mutual funds have positive

and statistically significant Jensen's alphas. Although, this model explains very well the stock and open mixed funds (corresponding Jensen's alpha are positive, but statistically insignificant), it seems inappropriate for measuring performance of bond funds.

Under the second model that uses market and corporate bond indices in the factor set of the benchmark portfolio, only 3 mutual funds have statistically significant and positive Jensen's alphas (two bond and one mixed interval funds). In spite of the relatively short time span, the second model evaluates the fund performance more properly than the model with the market factor only. In this specification the sum of factor weights in the several cases exceed the unity, but in this section we do not test whether these values statistically differ from the unity. The table also shows that under the second model an average fund of each type does not outperform the benchmark portfolio at 5 per cent significance level. Nonetheless, an average mutual fund outperforms the benchmark portfolio at 10 per cent significance level.

In table 1 we can see mutual fund Sharpe ratios that are calculated for 2003. At the bottom of the table the Sharpe ratio of hypothetical S&P RUX index mutual fund for 2003 is given. It can be easy concluded that almost all funds outperformed S&P RUX index, and only 5 funds performed badly. It can be seen from the table that funds controlled by Nikoil Asset Management have the largest Sharpe ratios. Such funds hold a significant part of their assets in the second tier stocks, so a sudden collapse of Russian stock market does not strike interval funds.

In the last column of the table the average annual returns calculated during the fund existence are shown. It follows from our analysis that an average bond fund has the Sharpe ratio considerably greater than the values of an average stock fund and has almost the same average annual return. This phenomenon can be easily explained by the fact that the bond market volatility is very small with respect to the stock market one.

Notice, that whereas we obtain Jensen's alphas by running the regression of the mutual fund excess returns on the excess returns of the benchmark portfolio factors, the Sharpe ratios are obtained from the different regression – we run raw returns of mutual funds on the factor returns (look DeRoon and Nijman (2001)). The table 1 reports that under the market model with corporate bond index, 5 mutual

funds have the Wald spanning statistics exceeding the critical value. It states that managers of these funds are able to create the value added comparing with the benchmark portfolio.

4.2. Blue Chip Model Results

Unconditional Approach

Under the unconditional approach mutual fund data with weekly time resolution is used.

Table 3. Blue Chip Model Results (Unconditional approach)

		Unconditional case, without Cbonds. 1999-2003					Unconditional case, with Cbonds.2002-2003					
Name of Mutual Fund	Type	Alpha	Sign.	Sum	R_2	Wald	Alpha	Sign.	Bonds	Sum	R_2	Wald
Базовый	Stock	9.210		0.777	0.787	29.247	8.774		0.173	0.964	0.787	0.634
Второй Сибирский Открытый	Stock	-0.623		0.374	0.404	268.098	1.419		0.662	1.050	0.282	0.023
Добрыня Никитич	Stock	13.605		0.810	0.767	28.824	5.081		-0.135	0.627	0.792	0.883
Долгосрочные взаимные инвестиции	Stock	5.176		0.835	0.663	12.102	-0.570		0.490	1.140	0.617	0.096
Ермак ФКИ	Stock	-7.221		0.433	0.585	302.015	-8.991		-0.020	0.504	0.620	4.721
ЛУКОЙЛ Фонд I	Stock	6.320		0.649	0.750	130.265	12.525		-0.008	0.738	0.740	0.813
ЛУКОЙЛ Фонд Отраслевых инвестиций	Stock	6.755		0.683	0.789	120.576	10.677		0.141	0.883	0.766	0.760
ЛУКОЙЛ Фонд Перспективных вложений	Stock	6.007		0.670	0.762	116.814	11.594		0.058	0.799	0.761	0.772
Паллада Корпоративный	Stock	3.622		0.696	0.617	49.590	-1.512		-0.233	0.437	0.685	2.582
Перспектива	Stock	-10.987		0.534	0.578	188.745	-13.463		0.536	1.347	0.622	0.492
Петр Столыпин	Stock	11.519		0.675	0.695	90.017	-7.657		0.583	1.291	0.763	0.536
ПиоГлобал Фонд Акций	Stock	5.902		0.858	0.773	15.263	1.570		-0.164	0.665	0.804	0.783
Солид-Инвест Фонд Акций	Stock	-0.077		0.647	0.739	113.562	10.104		-0.130	0.427	0.586	1.173
mean		3.785	*				2.273					
АВК - Фонд долгосрочный	Mixed	7.413		0.044	0.231	212.091	11.183		-0.343	-0.263	0.239	9.377
АВК-Фонд ликвидных активов	Mixed	2.381		0.446	0.600	303.596	5.014		0.703	1.198	0.734	1.575
ДИТ - Фонд Сбалансированный	Mixed	3.559		0.131	0.377	2508.367	-4.267		1.068	1.191	0.639	1.533
Дружина	Mixed	5.548		0.217	0.609	2183.464	-1.386		0.928	1.177	0.813	1.549
Капитал	Mixed	2.213		0.386	0.550	372.398	2.019		0.250	0.698	0.688	0.946
Капитальный	Mixed	-1.972		0.191	0.447	1446.403	-2.126		0.248	0.530	0.650	8.662
ЛУКОЙЛ Фонд Профессиональный	Mixed	21.856	**	0.084	0.407	1403.377	18.146	**	0.317	0.398	0.417	8.900
Партнерство	Mixed	6.210		0.294	0.536	1044.109	-3.757		0.163	0.753	0.833	2.558
ПиоГлобал Фонд сбалансированный	Mixed	1.204		0.723	0.758	82.452	0.912		0.050	0.692	0.818	1.292
Проспект Фонд первый	Mixed	7.326		0.475	0.637	92.725	4.450		0.292	0.747	0.639	0.395
Резерв	Mixed	3.857		0.169	0.533	2311.242	2.176		0.417	0.620	0.697	6.651
Тактика	Mixed	3.483		0.362	0.625	494.470	-0.912		0.377	0.807	0.705	0.764
mean		5.256	**				2.621					
АВК - Фонд ГЦБ	Bond	8.443	**	0.014	0.164	12927.660	4.242	**	0.878	0.867	0.694	4.211
Илья Муромец	Bond	60.579	**	0.072	0.062	128.391	2.568		0.918	0.937	0.613	0.722
ЛУКойл Консервативный	Bond	8.499	**	0.016	0.186	11019.129	5.619	**	0.599	0.601	0.510	22.023
Паллада ГЦБ	Bond	12.320	**	0.027	0.085	4096.789	0.431		0.963	0.968	0.645	0.127
ПиоГлобал Фонд облигаций	Bond	21.645	**	0.028	0.166	2165.386	2.525		0.824	0.828	0.610	4.006
Русские облигации	Bond	27.821		0.667	0.200	7.575	4.813		-0.380	0.055	0.315	2.992
Сибирский фонд облигаций	Bond	-5.094		0.069	0.226	4276.355	-7.589		0.509	0.575	0.343	28.224
ФДИ Солид	Bond	-1.518		0.257	0.298	182.533	0.483		-0.216	0.056	0.300	8.140
mean		16.587	**				1.636					
All Funds												
mean		7.424	**				2.245	*				
*** means that p_val <0.01, ** - 0.01<p_val<0.05, and * -0.05<p_val<0.1												

Table 3 shows blue chip unconditional model results. The table is across subdivided into three parts, corresponding to the number of mutual fund types. This table has vertical division into two main parts in compliance with the unconditional model specifications. The alpha column refers to the Jensen's alphas values for each mutual fund. The Jensen's alphas are transformed in the annual return terms. The "Sign." columns refer to the Jensen's alpha significance. The Sum column represents the sum of the benchmark portfolio factor weights, excluding the weight of corporate bond index. The Wald spanning statistics critical value is 5.991.

The table 3 represents the results of the unconditional approach to the blue chip model. The table shows that under unconditional methodology without corporate bond index 6 mutual funds have positive and statistically significant Jensen's alpha. Notice that fund "Илья Муромец" has Jensen's alpha about 60 per cent (as under the corresponding market model). This result can be explained by the fact that this mutual fund is a bond fund, while the benchmark portfolio is lack for bonds. As a result, the stock returns explain only a part of the regressand, while an unexplained part of dependent variable gets into the constant of the model –Jensen's alpha. The R^2 values also indicate that returns of bond mutual funds are

poorly fitted by chosen independent variables. Another evidence of the benchmark portfolio imperfection is the fact that the Wald spanning statistic values of all funds greatly exceed over the critical value.

After adding corporate bond index to the independent variables, Jensen's alphas decrease for all mutual funds, especially for bond funds. It is important to mention that the weight of corporate bond index is very high almost for all bond funds, with the exception of two bond mutual funds – "ФДИ Солид" and "Русские облигации" which have negative weights of corporate bond index. Perhaps, these funds do not follow declared strategies. Under this model 3 mutual funds have positive and statistically significant Jensen's alpha. "Лукойл Фонд Профессиональный" mutual fund still has relative high Jensen's alpha and statistically significant – about 18 per cent. This phenomenon can be explained by the fact that all Nikoil mutual funds are interval funds. Such funds are not inclined to invest assets in high liquid securities only; most likely these mutual funds invest in the less liquid assets (stocks of "the second tier"). Again, we face the situation when a great part of dependant variable is not explained by factors of the benchmark portfolio, and this unexplained part gets into the constant of the model. Notice, that under the unconditional approach to the blue chip model with corporate bond index, the fit quality is much better than under the previous one. Again, an average fund of each category is not able to outperform the benchmark portfolio.

The Wald spanning test statistics values reveal that under this model the hypothesis that active control does not create value added is rejected for 7 mutual funds. Finally, the benchmark portfolio with corporate bond index looks very appropriate for performance evaluation of all funds.

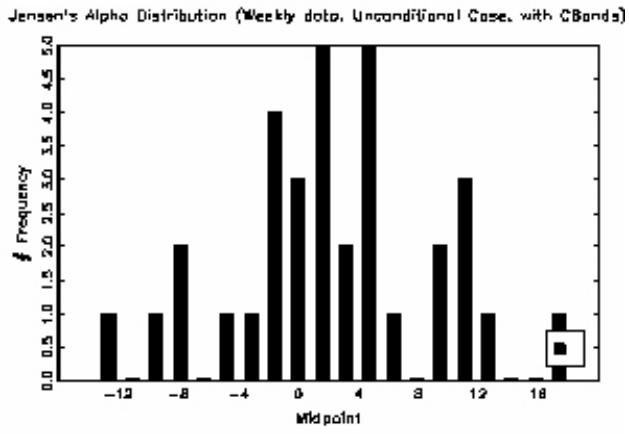


Figure 3 shows the distribution of Jensen's alphas under the unconditional approach to the blue chip model, with corporate bond index in the benchmark portfolio factor set.

Figure 3 shows the Jensen's alpha distribution for the unconditional model that uses corporate bond index among factors. The average Jensen's alpha is 2.2 per cent, and this value is statistically significant at 10 per cent confidence level.

Conditional Approach

Table 4. Blue Chip Model Results

Conditional case, with Cbonds.2002-2003							
Name of Mutual Fund	Type	Alpha	Sign.	CBonds	Sum	R_2	Wald
Базовый	Stock	8.802		0.583	1.170	0.562	4.111
Второй Сибирский Открытый	Stock	1.750		0.475	0.849	0.535	2.182
Добрыня Никитич	Stock	13.658		0.307	0.798	0.434	1.785
Долгосрочные взаимные инвестиции	Stock	-1.109		0.828	1.331	0.477	1.061
Ермак ФКИ	Stock	7.387		0.242	0.697	0.463	5.036
ЛУКОЙЛ Фонд I	Stock	15.184		0.518	1.033	0.415	5.284
ЛУКОЙЛ Фонд Отраслевых инвестиций	Stock	12.289		0.463	1.007	0.416	4.966
ЛУКОЙЛ Фонд Перспективных вложений	Stock	13.549		0.511	1.051	0.421	4.435
Паллада Корпоративный	Stock	15.222		0.663	1.052	0.440	4.988
Перспектива	Stock	1.230		0.448	1.081	0.583	6.387
Петр Столыпин	Stock	22.159		0.429	0.970	0.454	1.504
ПиоГлобал Фонд Акций	Stock	24.637		0.379	0.913	0.463	1.278
Солид-Инвест Фонд Акций	Stock	7.710		0.172	0.752	0.324	1.461
mean		10.959	**				
АВК - Фонд долгосрочный	Mixed	24.195	*	0.042	0.009	0.205	4.383
АВК-Фонд ликвидных активов	Mixed	2.359		0.369	0.868	0.659	6.284
ДИТ - Фонд Сбалансированный	Mixed	7.304		0.798	0.945	0.500	1.687
Дружина	Mixed	9.287		0.542	0.826	0.508	1.004
Капитал	Mixed	-7.583		0.737	1.078	0.564	5.263
Капитальный	Mixed	-3.192		0.542	0.750	0.487	4.620
ЛУКОЙЛ Фонд Профессиональный	Mixed	26.869	**	0.302	0.358	0.262	12.593
Партнерство	Mixed	5.908		0.415	0.891	0.512	3.087
ПиоГлобал Фонд сбалансированный	Mixed	15.401		0.584	0.976	0.493	0.772
Проспект Фонд первый	Mixed	4.589		0.533	0.941	0.411	3.394
Резерв	Mixed	9.427	*	0.641	0.729	0.511	3.332
Тактика	Mixed	9.181		0.628	0.917	0.560	3.633
mean		8.645	*				
АВК - Фонд ГЦБ	Bond	10.869	**	0.630	0.636	0.549	17.425
Илья Муромец	Bond	9.056	**	0.754	0.784	0.483	17.934
ЛУКойл Консервативный	Bond	12.076	**	0.416	0.425	0.339	11.606
Паллада ГЦБ	Bond	7.308	**	0.623	0.645	0.447	5.482
ПиоГлобал Фонд облигаций	Bond	9.418	**	0.653	0.670	0.537	12.773
Русские облигации	Bond	18.604	**	0.299	0.370	0.361	11.349
Сибирский фонд облигаций	Bond	-10.445		0.346	0.459	0.376	4.554
ФДИ Солид	Bond	5.257		0.758	0.760	0.381	1.338
mean		7.768	**				
All Funds							
mean		9.324	**				
*** means that p_val <0.01, ** - 0.01<p_val<0.05, and * -0.05<p_val<0.1							

This table shows blue chip conditional model results with corporate bond index. Table 3 is across subdivided into three parts, corresponding to the number of mutual fund types. The alpha column refers to the Jensen's alphas values for each mutual fund. Jensen's alphas are transformed in the annual return terms. The "Sign." column refers to the Jensen's alpha significance. The Sum column represents the sum of the benchmark portfolio factor weights, excluding the weight of corporate bond index. The critical value of the Wald test spanning statistics is 5.991.

The scaled returns methodology uses daily data to avoid insufficient data problem that appears due to the increased parameter number.

From table 4 it can be inferred that 7 mutual funds have positive and statistically significant Jensen's alphas (6 funds are bond funds, and one fund is an interval fund). The null hypothesis is rejected for 8 mutual funds. Notice that no fund has negative and statistically significant alpha. It is worth to

comment that the fit quality is somewhat worse than the fit quality of the unconditional model with corporate bond index. Perhaps, this fact indicates that the main part of mutual fund portfolio is reformed weekly rather than daily.

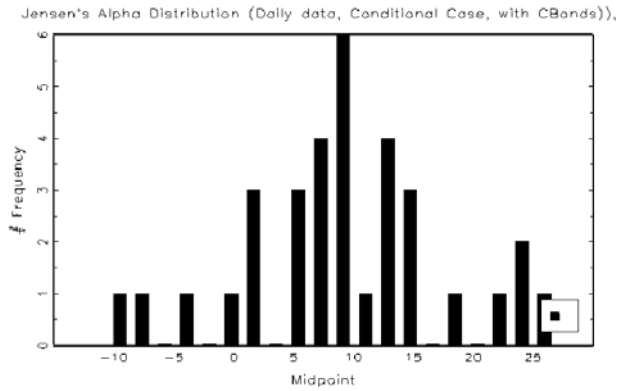


Figure 4 depicts the distribution of Jensen's alphas under the scaled returns approach to the blue chip model, with corporate bond index in the benchmark portfolio.

From the form of the Jensen's alpha distribution it can be concluded that under the conditional approach alphas are grouped much more on the right from zero than in the previous model. Jensen's alpha mean value is about 9.3 per cent, and this value is statistically valid.

Year-to-Year Performance of Russian Mutual Funds 5

In this section we study changes in year-to-year behavioral pattern of Russian mutual funds.

5.1. Raw Returns in 1999-2003

Table 5. Year-to-Year Performance of an Average Mutual Fund

Mutual Fund Type	Year	Number	Sharpe	Return (%)
Stock	1999	5	0.891	126.5
	2000	11	-0.756	-10.5
	2001	13	1.079	45.6
	2002	13	0.540	29.4
	2003	13	1.365	39.9
total return				230.8
Mixed	1999	1	2.066	130.5
	2000	2	-0.136	-0.4
	2001	7	1.035	25.2
	2002	11	0.823	22.7
	2003	12	1.763	27.4
total return				205.5
Bond	1999	3	0.844	189.0
	2000	4	1.607	46.2
	2001	5	2.162	32.4
	2002	8	2.101	19.0
	2003	8	3.154	18.1
total return				304.7
Average Fund	1999	9	0.8859	147.8
	2000	17	-0.127	4.0
	2001	25	1.2833	37.2
	2002	32	1.0276	24.5
	2003	33	1.9436	30.1
total return				243.6
S&P RUX	1999		0.129	120.0
	2000		-0.700	-7.2
	2001		1.501	65.4
	2002		0.675	34.9
	2003		1.051	39.2
total return				252.3
*** means that p_val <0.01, ** - 0.01<p_val<0.05, and * -0.05<p_val<0.1				

This table represents the year-to-year performance not only of an average mutual fund of every type but also of an aggregate average mutual fund.

Table 5 provides the Sharpe ratios and average returns for each type of mutual funds for every year during the sample period of time. During the last 5 years bond funds outperformed other mutual funds. Perhaps, it happens because in 1998 bond fund portfolios had significant part of their assets invested in the government securities, and some time after the collapse the government has met its engagements with mutual funds and private pension funds. As the result, in 1999 bond funds achieved the

outstanding result - almost 190 per cent return on average. We can also see in the table that stock funds have on average the annual return more than the market (S&P RUX index) in 1999 and 2003 only. However, the average stock Sharpe ratio almost always exceeds the market one (the exception is 2001). Thus, on average stock funds have smaller volatility than the market.

Table 6. Return Rank Correlations among Russian Mutual Funds

Type of Mutual Fund	1999-2000	Sign.	2000-2001	Sign.	2001-2002	Sign.	2002-2003	Sign.
Stock	0.300		0.473	*	0.110		0.522	*
Mixed	N/A		N/A		0.273		0.250	
Bond	0.500		-0.200		0.538		0.690	**
*** means that p_val <0.01, ** - 0.01<p_val<0.05, and * - 0.05<p_val<0.1								

This table shows the return Spearman rank correlation coefficients for every mutual fund type during the sample period of time. When the number of active funds is less than three, the return Spearman rank correlation coefficients are not calculated; for such cases there are N/As in the table. The "Sign." column refers to the Spearman coefficient significance levels.

Table 6 represents the results of mutual fund return ranking analysis. It is clear that there are not any sufficient positive or negative correlations on the return ranking among mutual funds of the same type, neglecting the last year. In other words, this analysis reports that mutual funds every year changed their places in the return rank during the sample period.

5.2. Jensen's alphas in 2002-2003

Table 7. Average Jensen's Alphas among Mutual Fund Types

Type of Mutual Fund	Year	Alpha	P_val	Wald number
Stock	2002	-15.582	**	0
	2003	11.333	**	0
Mixed	2002	-2.970		0
	2003	8.346	**	3
Bond	2002	2.395		5
	2003	6.290	**	8
Average Fund	2002	-6.753	**	
	2003	9.024	**	
*** means that p_val <0.01, ** - 0.01<p_val<0.05, and * -0.05<p_val<0.1				

Table 7 reports average Jensen's alphas among mutual funds of the same type. The "P_val" column refers to the Jensen's alpha significances. "Wald number" column shows the number of mutual funds that has the Wald spanning statistics over its critical value.

Table 7 shows the average result of the regression of mutual fund excess returns on the excess returns of the benchmark portfolio factors (eight stocks and corporate bond index) under the unconditional model. In the scaled returns model we have 28 regressors, but in one year approximately 250 working days are available, so in this case we face insufficient data problem – less than 10

observations a regressor. Therefore, the unconditional model was chosen for the persistence analysis. We examined only last two years, because we have corporate bond index for this time only. The factor set without corporate bond index poorly fits the fund returns, so we decide to study year–to–year performance based on the Jensen's alphas and the Wald spanning statistics for the last two years only.

The analysis reveals that on average mutual funds underperformed the benchmark portfolio in 2002 and outperformed in 2003. The table 6 shows that no stock fund managers were able to create the value added with respect to the benchmark portfolio during the last two years. Only for three mixed funds in 2003 the null hypothesis is rejected. The Wald test spanning statistics values also shows that active portfolio management of five bond funds in 2002 and eight funds in 2003 do add value.

Table 8. Jensen's Alpha Rank Correlations among Russian Mutual Funds

Mutual Fund Type	2002-2003	Sign.
Stock	0.31868132	
Mixed	-0.02727273	
Bond	0.07142857	
*** means that p_val <0.01, ** - 0.01<p_val<0.05 and * -0.05<p_val<0.1		

The table shows Jensen's alpha Spearman rank correlation coefficient for every type of mutual fund during the last two years of the sample period of time. The "Sign." column refers to the Spearman coefficient significance levels.

Table 8 reports that there are not any significant correlations of Jensen's alphas ranking among mutual funds of the same type.

Information concerning annual performance of each mutual fund may be found in the appendix 2.

Robustness Analysis 6

In this section we check the obtained result robustness with respect to the composition of the benchmark portfolio. To capture the primary goal, we compose the benchmark portfolio of corporate bond index and S&P RUX industrial indices, namely oil-gas, energy, communication and industry. The S&P RUX indices data is available for all sample period, with daily time resolution.

Under the unconditional model with weekly data, the benchmark portfolio using corporate bond index is again admitted as more pertinent for performance evaluation of Russian mutual funds than benchmark portfolio consisted of S&P RUX indices only. In general, the results of both unconditional models with benchmark portfolio with S&P RUX indices are the same as the results of the unconditional models with the initial factor set. The same mutual funds have positive and statistically significant Jensen's alphas and for the same funds the Wald spanning statistics values prevail over its critical value as in the section 4. No fund has negative and statistically significant alpha.

Mutual Fund Portfolio Simulation 7

The main goal of this section is the mutual fund portfolio simulation, applying relatively simple time series models to form the expectations about the future of the stock market. The weights of portfolio stocks are calculated numerically from Markowitz problem with two constraints: on the one hand the weight of an asset can not exceed 20 per cent, and on the other hand it can not receive negative value (these limitations are obligatory for Russian mutual funds).

The results of this simulation may shed the light on the Russian mutual fund performance. Thus, if a mutual fund has the return and the Sharpe ratio lower than our replica fund, the fund managers, perhaps, use bad strategies. Accordingly, if a mutual fund has the return and Sharpe ratio higher than ours, it means that the fund managers use the models that perfectly form the expectations.

To simulate stock mutual fund we use 15 Russian most liquid stocks, namely Yukos, RAO UES, Gazprom, Lukoil, Mosenergo, Rostelekom, Sibneft, Surgutneftegas, Tatneft, Sberbank, Nornickel, Aeroflot, Avtovaz, Dalenergo and Irkutskenergo. The period of the portfolio simulation lasts one year from 01.01.2003 to 31.12.2003. We use vector auto regression model with 5 lags to form the future return expectations. To estimate the parameters of the model, the stock data from the beginning of the sample period to the current time in the model is used. The stock covariance matrix that is calculated from the beginning of the sample period to the current time is used as the expected covariance matrix.

Figure 5 represents one of the results of the simulation – the portfolio return dynamics. It is clear that the return volatility increases drastically in October of 2003. Perhaps, this event reflects the Khodorkovsky arrest effect.

This simulated mutual fund receives the annual return more than 38 per cent in logarithmic terms (more than 46 per cent in usual terms). The return variance happens to be about 8.6 per cent.

Figure 6 describes the share price dynamics. The initial share price is selected as 100 rubles. At the end of the 2003 the share price exceeds 145 rubles. The highest value of the share during the simulation period is about 173 rubles. Immediately after this peak, the share has heavily fallen in price for

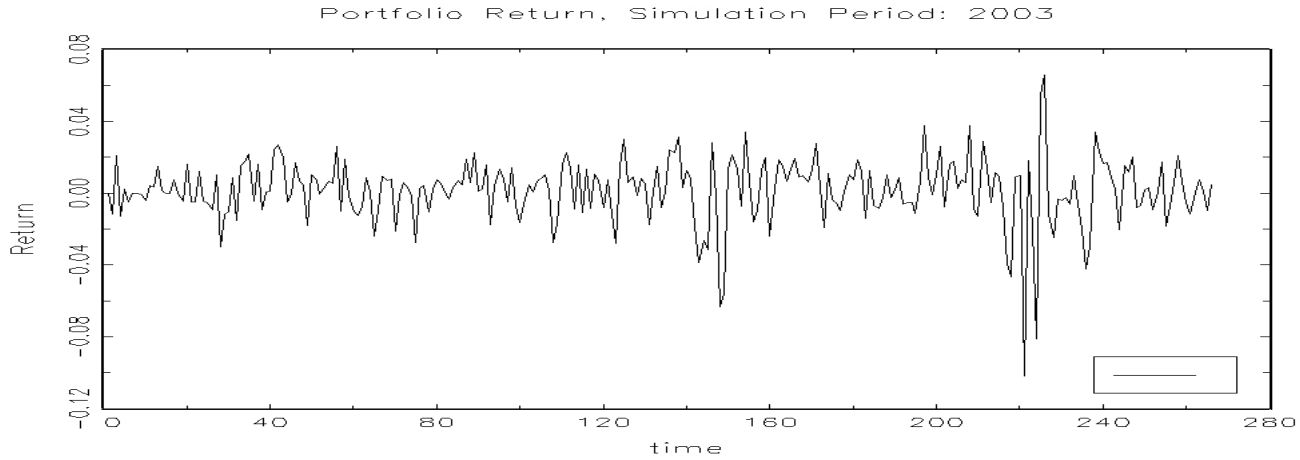


Figure 5 shows the behavior pattern of the simulated portfolio returns. On the horizontal axis the working day numbers are marked.

more than 32 per cent. It looks certain that this downfall happens in the same time with the return variance increase.

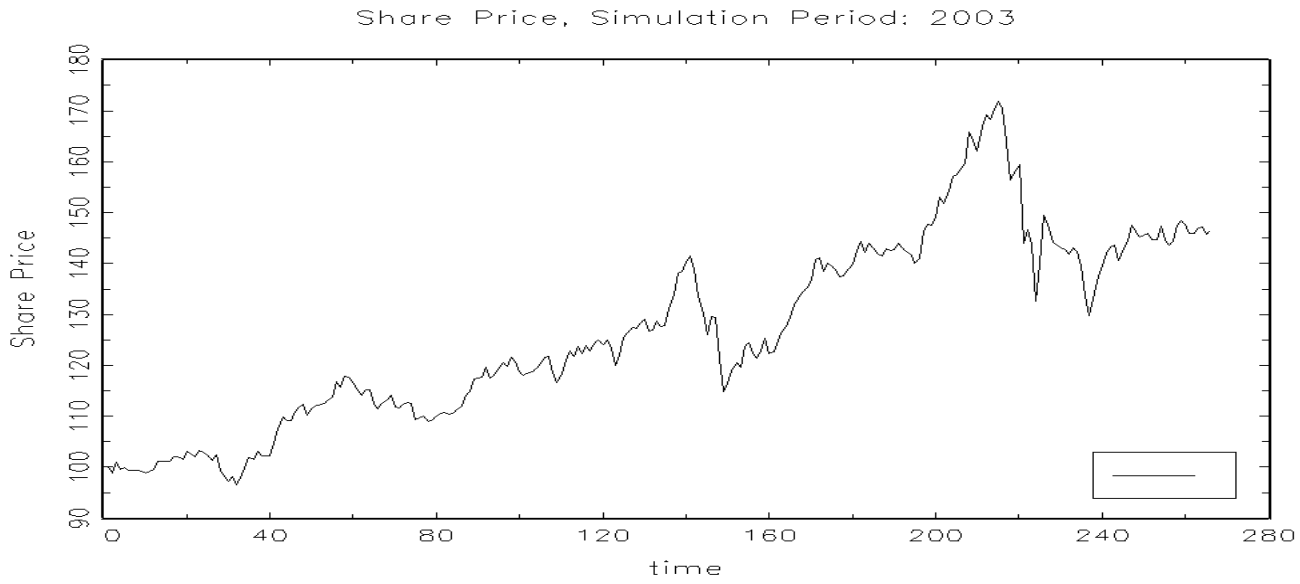


Figure 6 depicts the dynamics of the portfolio share price. On the horizontal axis the working day numbers are marked.

Table 9. Performance Evaluation of Simulated Mutual Fund Portfolio

Benchmark portfolio	Alpha	Sign.	Sum of weights	R^2	Wald	Sharpe	Return
Eight Stocks	10.425		0.827	0.884	53.798	1.274	38.2
Four S&P RUX Inustry Indices	5.331		0.938	0.807	1.978	1.274	38.2
S&P RUX Sharpe ratio equals 1.051							
*** means that p_val <0.01, ** - 0.01<p_val<0.05, and * - 0.05<p_val<0.1							

Table 9 represents the results of measuring the performance of the simulated portfolio.

Table 9 shows the results of the regression of the excess return of the simulated portfolio on the excess returns of the benchmark portfolios. Notice that in both cases Jensen's alphas are not statistically

valid. The Wald spanning statistics values notify that the implemented simulation portfolio strategy creates the value added regarding the eight stock benchmark portfolio. Under the model with the benchmark portfolio composed of S&P RUX industrial indices our strategy does not create the value added. The Sharpe ratio of the simulated portfolio is greater than S&P RUX one. This fact means that our fund outperforms the hypothetical S&P RUX index mutual fund. It can be inferred from the appendix 2 that the simulated portfolio also outperforms 6 from 13 examined mutual funds. The implemented strategy is relatively cheap, because it is very simple and easy to put into practice. Therefore, we do not take into consideration the simulated fund revenue comparing the modeled fund performance with real mutual funds ones.

Conclusion

Both the market and blue chip unconditional models have shown that an average mutual fund outperforms the benchmark portfolios with corporate bond index at 10 % significance level during the last two years of the sample period. The models without corporate bond index among the factors have reported that on average, mutual funds outperform the benchmark portfolio at 5 per cent level of significance during the sample period. The models have also revealed that an average stock fund has statistically insignificant Jensen's alpha. Under the unconditional approach to the market and blue chip models without corporate bond index, both mixed and bond average funds have outperformed the benchmark portfolios, while under the models with corporate bond index these funds have statistically insignificant Jensen's alphas. The application of the conditional approach to the blue chip model has shown that on average obtained Jensen's alphas are consistent with positive performance rather than neutral one. The obtained results are robust with respect to the benchmark portfolio composition.

The mean-variance spanning methodology of performance evaluation has shown that under the market model with corporate bond index the spanning hypothesis is rejected for 5 mutual funds. Under the unconditional approach to the blue chip model with corporate bond index, managers of 7 mutual funds were able to create the value added. The Wald test spanning statistics values show that for eight mutual funds active portfolio management creates the value added under the conditional approach to the blue chip model. We have also found that stock and open mixed funds from the sample are well explained by both unconditional benchmark portfolios.

Year-to-year performance analysis has revealed that on average mutual funds have greater annual Sharpe ratios than the market (S&P RUX index). It also happens that an average bond fund has larger annual Sharpe ratio than an average stock fund. We have found that under the unconditional blue chip model, on average mutual funds underperformed the benchmark portfolio composed of blue chips and corporate bond index in 2002 and outperformed in 2003. The rank correlation analysis has shown that among mutual funds from the sample there are not significant correlations neither in return nor in Jensen's alpha rankings.

We have tested the performance evaluation methodology on the simulated fund returns. The mutual fund portfolio simulation has shown that it is possible to obtain good performance applying even relatively simple time series models. Our simulated stock fund has the Sharpe ratio more than the Sharpe ratios of the market and 6 stock funds of the sample. Under the unconditional approach to the blue chip model the Wald test spanning statistics exceeds the critical value. The unconditional model with the benchmark portfolio composed of four S&P RUX industrial indices has pointed that the spanning.

Acknowledgements

It is a real pleasure to express my appreciation to people who have influenced this work. Especially, I want to thank my advisor Alexey Goriaev for steady encouragement, guidance and comprehensive discussions of the results. I am very grateful to Denis Sokolov who gathered raw data. Conversations with Sergey Prikhodko have also substantially influenced the development of this paper. I also want to thank all teachers and students who took active part in the discussion.

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Appendix 1

Performance Evaluation of "ПИО Глобал Фонд Сбалансированный"

To illustrate the discussed evaluating technology, now we will brifely examine performance evaluation of "Глобал Фонд Сбалансированный" mutual fund. The stock returns of Yukos, RAO UES, Gazprom, Lukoil, Rostelekom, Sibneft, Surgutneftegas and Sberbank are chosen as the benchmark portfolio factor set.

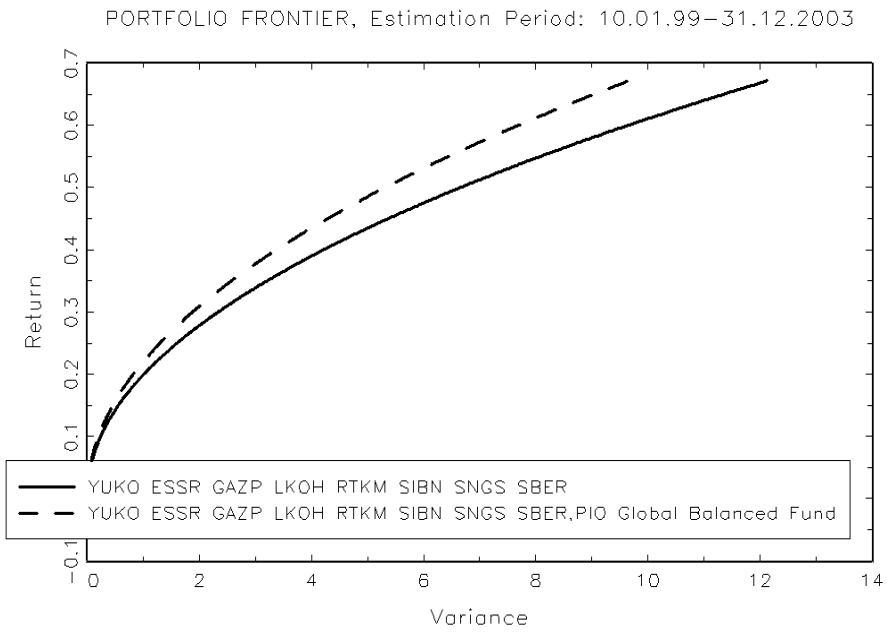

Figure 7 shows two efficiency frontiers. The solid curve is the efficiency frontier of the benchmark portfolio set (without Corporate Bond index), the dash curve corresponds to the efficiency frontier of the benchmark portfolio set (without Corporate Bond index) plus "ПИО Глобал Фонд Сбалансированный" mutual fund.

Figure 7 depicts two scattering efficiency frontiers. It looks certain that there is no spanning under the unconditional model. The Jensen's alpha is positive and statistically significant, it is about 5.82 per cent in annual return terms. The value of the Wald spanning statistics is 82.45 that exceeds the critical value 5.991.

Table 10. Weights of Blue Chips in "ПИО Глобал Фонд Сбалансированный" Mutual Fund under the Unconditional Model

	Alpha	Yukos	RAO UES	Gazprom	Lukoil	Rostelekom	Sibneft	Surgutneftegas	Sberbank
	5.821	0.044	0.139	0.006	0.140	0.073	0.074	0.077	0.170
Sign.			**		***	*	**	**	***

*** means that p_val <0.01, ** - 0.01<p_val<0.05, and * -0.05<p_val<0.1

The table shows the weights of blue chips under the unconditional model in the portfolio that replicates "ПИО Глобал Фонд Сбалансированный" mutual fund. The "Sign." row refers to the significance level.

Table 10 shows that the stocks of RAO UES, Lukoil Sibneft, Surgutneftegas and Sberbank are statistically significant at 5 per cent confidence level. Notice that no stocks have negative weights.

Figure 8 shows two coinciding pointwisely efficiency frontiers. It is obviously that under the scaled returns model there is spanning. Jensen's alpha is positive, but statistically insignificant. The Wald spanning statistics is less than 0.87. Thus, under this approach the hypothesis that the fund managers can create the value added thanks to the active portfolio management is rejected.

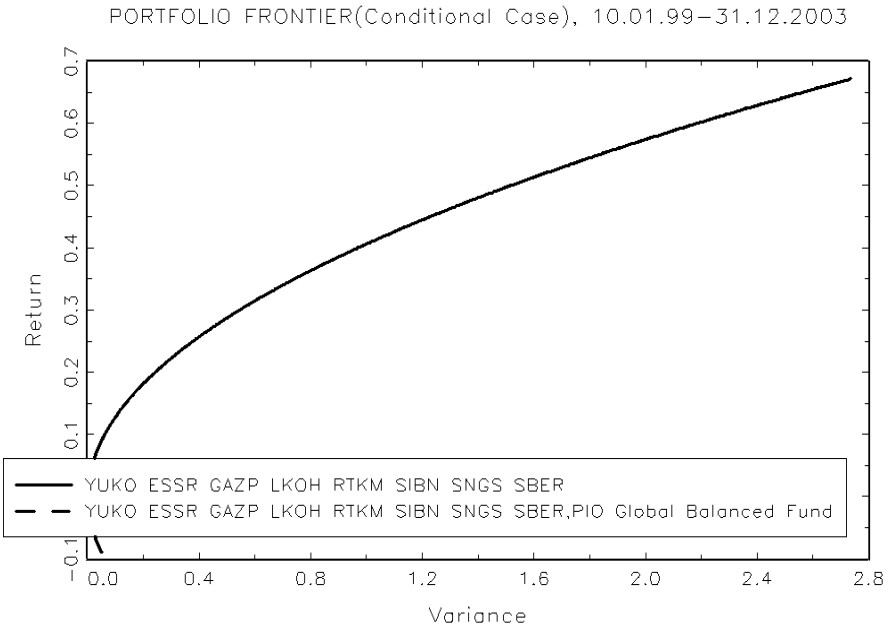

Figure 8 shows two efficiency frontiers. The solid curve is the efficiency frontier of the benchmark portfolio set, the dash curve corresponds to the efficiency frontier of the benchmark portfolio set plus "ПИО Глобал Фонд Сбалансированный" mutual fund.

Table 11. Weights of Blue Chips in "ПИО Глобал Фонд Сбалансированный" Mutual Fund under the Conditional Model

	Alpha	Yukos	RAO UES	Gazprom	Lukoil	Rostelekom	Sibneft	Surgutneftegas	Sberbank
	0.000	0.052	0.122	0.008	0.111	0.114	0.070	0.069	0.169
Sign.		**	*		**	**	**	*	***
*** means that p_val <0.01, ** - 0.01<p_val<0.05, and * -0.05<p_val<0.1									

The table shows the weights of blue chips under the conditional model in the portfolio that replicates "ПИО Глобал Фонд Сбалансированный" mutual fund. The "Sign." row refers to the significance level.

Table 11 shows that the stocks of Yukos, Lukoil, Rostelekom, Sibneft and Sberbank are statistically significant at 5 per cent confidence level. Notice that no stocks have negative weights.

Appendix 2 Year-to-Year Performance Evaluation

Name of Mutual Fund	Type	Year	Sharpe	Return
Петр Столыпин	Stock	1999	1.107	123.261
Добрыня Никитич	Stock	1999	0.975	129.993
ПиоГлобал Фонд Акций	Stock	1999	0.905	127.921
Долгосрочные взаимные инвестиции	Stock	1999	0.802	126.000
Паллада Корпоративный	Stock	1999	0.665	125.296
S&P RUX		1999	0.129	120.020
Долгосрочные взаимные инвестиции	Stock	2000	-0.024	13.473
Добрыня Никитич	Stock	2000	-0.067	11.602
Петр Столыпин	Stock	2000	-0.253	4.480
ЛУКОЙЛ Фонд Отраслевых инвестиций	Stock	2000	-0.446	-4.499
ЛУКОЙЛ Фонд Перспективных вложений	Stock	2000	-0.469	-5.115
ЛУКОЙЛ Фонд I	Stock	2000	-0.508	-6.276
ПиоГлобал Фонд Акций	Stock	2000	-0.536	-12.926
Паллада Корпоративный	Stock	2000	-0.831	-23.435
Перспектива	Stock	2000	-1.222	-12.975
Солид-Инвест Фонд Акций	Stock	2000	-1.784	-51.125
Второй Сибирский Открытый	Stock	2000	-2.177	-28.850
S&P RUX		2000	-0.700	-7.164
Паллада Корпоративный	Stock	2001	2.208	79.886
Петр Столыпин	Stock	2001	1.857	71.039
Добрыня Никитич	Stock	2001	1.725	72.631
ПиоГлобал Фонд Акций	Stock	2001	1.400	67.202
ЛУКОЙЛ Фонд Отраслевых инвестиций	Stock	2001	1.208	46.406
ЛУКОЙЛ Фонд I	Stock	2001	1.034	44.249
Второй Сибирский Открытый	Stock	2001	1.006	27.906
ЛУКОЙЛ Фонд Перспективных вложений	Stock	2001	0.963	44.175
Долгосрочные взаимные инвестиции	Stock	2001	0.909	47.380
Базовый	Stock	2001	0.708	24.310
Солид-Инвест Фонд Акций	Stock	2001	0.664	34.747
Перспектива	Stock	2001	0.242	17.982
Ермак ФКИ	Stock	2001	0.102	14.607
S&P RUX		2001	1.501	65.372
Базовый	Stock	2002	1.141	45.971
ЛУКОЙЛ Фонд Перспективных вложений	Stock	2002	1.043	41.567
Добрыня Никитич	Stock	2002	0.996	38.986
ЛУКОЙЛ Фонд Отраслевых инвестиций	Stock	2002	0.995	39.575
ЛУКОЙЛ Фонд I	Stock	2002	0.994	40.229
Долгосрочные взаимные инвестиции	Stock	2002	0.656	35.654
ПиоГлобал Фонд Акций	Stock	2002	0.466	27.360
Второй Сибирский Открытый	Stock	2002	0.327	31.859
Солид-Инвест Фонд Акций	Stock	2002	0.326	19.160
Паллада Корпоративный	Stock	2002	0.307	22.715
Перспектива	Stock	2002	0.204	20.032
Петр Столыпин	Stock	2002	0.068	14.904
Ермак ФКИ	Stock	2002	-0.499	3.563
S&P RUX		2002	0.675	34.894
ЛУКОЙЛ Фонд I	Stock	2003	1.743	51.002
ЛУКОЙЛ Фонд Отраслевых инвестиций	Stock	2003	1.707	51.149
ЛУКОЙЛ Фонд Перспективных вложений	Stock	2003	1.664	50.018
Паллада Корпоративный	Stock	2003	1.592	37.698
Базовый	Stock	2003	1.530	43.873
Петр Столыпин	Stock	2003	1.454	43.849
Второй Сибирский Открытый	Stock	2003	1.441	30.403
ПиоГлобал Фонд Акций	Stock	2003	1.256	41.561
Долгосрочные взаимные инвестиции	Stock	2003	1.156	35.314
Добрыня Никитич	Stock	2003	1.137	34.223
Солид-Инвест Фонд Акций	Stock	2003	1.117	41.904
Перспектива	Stock	2003	1.037	33.894
Ермак ФКИ	Stock	2003	0.914	24.068
S&P RUX		2003	1.051	39.177

Table 12 shows the information concerning annual returns and the Sharpe ratios of stock mutual funds.

Name of Mutual Fund	Type	Year	Sharpe	Return
ПиоГлобал Фонд сбалансированный	Mixed	1999	0.986	130.502
S&P RUX		1999	0.129	120.020
Партнерство	Mixed	2000	0.496	20.222
ПиоГлобал Фонд сбалансированный	Mixed	2000	-0.767	-20.938
S&P RUX		2000	-0.700	-7.164
Дружина	Mixed	2001	2.297	19.215
Партнерство	Mixed	2001	1.710	35.800
ПиоГлобал Фонд сбалансированный	Mixed	2001	1.437	57.248
Тактика	Mixed	2001	1.138	13.882
Капитал	Mixed	2001	0.984	27.404
АВК-Фонд ликвидных активов	Mixed	2001	0.180	16.428
Капитальный	Mixed	2001	-0.500	6.437
S&P RUX		2001	1.501	65.372
ЛУКОЙЛ Фонд Профессиональный	Mixed	2002	3.011	37.505
Дружина	Mixed	2002	1.535	22.291
АВК-Фонд ликвидных активов	Mixed	2002	1.177	35.501
Капитал	Mixed	2002	1.098	36.268
Резерв	Mixed	2002	0.803	20.955
ПиоГлобал Фонд сбалансированный	Mixed	2002	0.592	26.307
Тактика	Mixed	2002	0.564	22.696
Капитальный	Mixed	2002	0.457	18.275
Партнерство	Mixed	2002	0.336	19.038
ДИТ - Фонд Сбалансированный	Mixed	2002	0.217	14.110
Проспект Фонд первый	Mixed	2002	-0.734	-3.160
S&P RUX		2002	0.675	34.894
ЛУКОЙЛ Фонд Профессиональный	Mixed	2003	4.326	34.560
Резерв	Mixed	2003	2.859	22.572
ДИТ - Фонд Сбалансированный	Mixed	2003	1.979	21.805
Тактика	Mixed	2003	1.803	29.193
Дружина	Mixed	2003	1.509	25.743
АВК-Фонд ликвидных активов	Mixed	2003	1.488	35.364
Проспект Фонд первый	Mixed	2003	1.404	36.663
Партнерство	Mixed	2003	1.317	33.085
ПиоГлобал Фонд сбалансированный	Mixed	2003	1.249	31.799
Капитал	Mixed	2003	1.158	23.751
Капитальный	Mixed	2003	1.054	16.646
АВК - Фонд долгосрочный	Mixed	2003	1.011	17.578
S&P RUX		2003	1.051	39.177
Илья Муромец	Bond	1999	1.985	298.446
Русские облигации	Bond	1999	0.852	224.878
Паллада ГЦБ	Bond	1999	-0.304	43.532
S&P RUX		1999	0.129	120.020
Илья Муромец	Bond	2000	3.523	81.500
ПиоГлобал Фонд облигаций	Bond	2000	1.721	63.369
Паллада ГЦБ	Bond	2000	1.597	45.444
Русские облигации	Bond	2000	-0.414	-5.334
S&P RUX		2000	-0.700	-7.164
Илья Муромец	Bond	2001	4.858	36.175
Паллада ГЦБ	Bond	2001	1.980	28.469
АВК - Фонд ГЦБ	Bond	2001	1.544	15.706
ПиоГлобал Фонд облигаций	Bond	2001	1.295	28.841
Русские облигации	Bond	2001	1.133	52.892
S&P RUX		2001	1.501	65.372
Илья Муромец	Bond	2002	4.867	24.950
АВК - Фонд ГЦБ	Bond	2002	4.049	22.661
Паллада ГЦБ	Bond	2002	3.567	21.389
ЛУКойл Консервативный	Bond	2002	3.437	22.163
ПиоГлобал Фонд облигаций	Bond	2002	1.023	20.902
Русские облигации	Bond	2002	0.289	23.089
ФДИ Солид	Bond	2002	-0.205	4.270
Сибирский фонд облигаций	Bond	2002	-0.224	12.367
S&P RUX		2002	0.675	34.894
АВК - Фонд ГЦБ	Bond	2003	4.861	21.459
ЛУКойл Консервативный	Bond	2003	4.460	20.264
ПиоГлобал Фонд облигаций	Bond	2003	4.167	19.669
Русские облигации	Bond	2003	3.567	26.751
Паллада ГЦБ	Bond	2003	3.194	17.210
Илья Муромец	Bond	2003	2.951	19.076
ФДИ Солид	Bond	2003	2.130	15.247
Сибирский фонд облигаций	Bond	2003	-0.097	4.901
S&P RUX		2003	1.051	39.177

Table 13 shows the information concerning annual returns and the Sharpe ratios of mixed and bond mutual funds.

Name of Mutual Fund	Type	Year	Alpha	P_val	***Wald***
ЛУКОЙЛ Фонд Перспективных вложений	Stock	2002	-3.223		2.127
ЛУКОЙЛ Фонд I	Stock	2002	-4.826		2.128
ЛУКОЙЛ Фонд Отраслевых инвестиций	Stock	2002	-5.160		1.740
Базовый	Stock	2002	-6.875		2.113
Добрыня Никитич	Stock	2002	-7.110		1.673
Солид-Инвест Фонд Акций	Stock	2002	-9.257		0.993
Второй Сибирский Открытый	Stock	2002	-9.556		2.822
Долгосрочные взаимные инвестиции	Stock	2002	-11.208		1.723
Ермак ФКИ	Stock	2002	-23.196		1.540
ПиоГлобал Фонд Акций	Stock	2002	-26.397		1.548
Паллада Корпоративный	Stock	2002	-28.587		4.335
Петр Столыпин	Stock	2002	-32.466		1.980
Перспектива	Stock	2002	-34.709		2.521
mean			***-15.582***	**	
ЛУКОЙЛ Фонд I	Stock	2003	18.131		3.453
Петр Столыпин	Stock	2003	17.234		1.290
Солид-Инвест Фонд Акций	Stock	2003	16.970		0.286
ПиоГлобал Фонд Акций	Stock	2003	16.526		1.124
ЛУКОЙЛ Фонд Перспективных вложений	Stock	2003	16.314		3.113
ЛУКОЙЛ Фонд Отраслевых инвестиций	Stock	2003	15.958		2.893
Паллада Корпоративный	Stock	2003	13.259		2.964
Базовый	Stock	2003	11.226		4.402
Добрыня Никитич	Stock	2003	9.111		0.502
Долгосрочные взаимные инвестиции	Stock	2003	7.040		2.361
Второй Сибирский Открытый	Stock	2003	4.841		0.274
Ермак ФКИ	Stock	2003	0.839		0.837
Перспектива	Stock	2003	-0.118		2.841
mean			***11.333***	**	
ЛУКОЙЛ Фонд Профессиональный	Mixed	2002	20.013	**	3.878
Дружина	Mixed	2002	1.613		2.077
АВК-Фонд ликвидных активов	Mixed	2002	-0.304		0.473
Капитал	Mixed	2002	-0.657		0.016
Резерв	Mixed	2002	-2.059		2.592
ДИТ - Фонд Сбалансированный	Mixed	2002	-2.437		5.657
Проспект Фонд первый	Mixed	2002	-2.732		0.742
Капитальный	Mixed	2002	-5.329		0.174
Тактика	Mixed	2002	-6.388		0.328
ПиоГлобал Фонд сбалансированный	Mixed	2002	-16.384		1.548
Партнерство	Mixed	2002	-18.011		1.425
mean			***-2.970***		
ЛУКОЙЛ Фонд Профессиональный	Mixed	2003	25.313	**	***26.106***
АВК - Фонд долгосрочный	Mixed	2003	13.084		***16.713***
ПиоГлобал Фонд сбалансированный	Mixed	2003	10.993		1.031
Тактика	Mixed	2003	9.797		1.583
Проспект Фонд первый	Mixed	2003	9.532		1.062
Резерв	Mixed	2003	7.769		***8.389***
Дружина	Mixed	2003	6.253		0.338
Партнерство	Mixed	2003	5.450		1.479
ДИТ - Фонд Сбалансированный	Mixed	2003	5.176		0.853
АВК-Фонд ликвидных активов	Mixed	2003	4.993		1.978
Капитал	Mixed	2003	1.302		1.891
Капитальный	Mixed	2003	0.487		0.254
mean			***8.346***	**	
Илья Муромец	Bond	2002	11.061	**	***11.625***
ЛУКойл Консервативный	Bond	2002	9.158	**	***14.067***
АВК - Фонд ГЦБ	Bond	2002	9.059	**	***19.742***
Паллада ГЦБ	Bond	2002	7.968	**	***19.822***
ФДИ Солид	Bond	2002	7.516		3.644
ПиоГлобал Фонд облигаций	Bond	2002	6.002		3.233
Сибирский фонд облигаций	Bond	2002	-0.038		***69.765***
Русские облигации	Bond	2002	-31.564		1.968
mean			***2.395***		
Русские облигации	Bond	2003	14.661	**	***25.523***
ЛУКойл Консервативный	Bond	2003	12.533	**	***87.440***
АВК - Фонд ГЦБ	Bond	2003	9.295	**	***67.655***
ПиоГлобал Фонд облигаций	Bond	2003	7.517	**	***48.862***
Илья Муромец	Bond	2003	6.129		***12.157***
Паллада ГЦБ	Bond	2003	5.529		***41.525***
ФДИ Солид	Bond	2003	2.491		***7.621***
Сибирский фонд облигаций	Bond	2003	-7.836		***21.346***
mean			***6.290***	**	
*** means that p_val <0.01, ** - 0.01<p_val<0.05, and * -0.05<p_val<0.1					

Table 14 shows the information concerning annual Jensen's alphas and the Wald test spanning statistics of mutual funds.

Appendix 3 Some Stock Weights in Simulated Portfolio

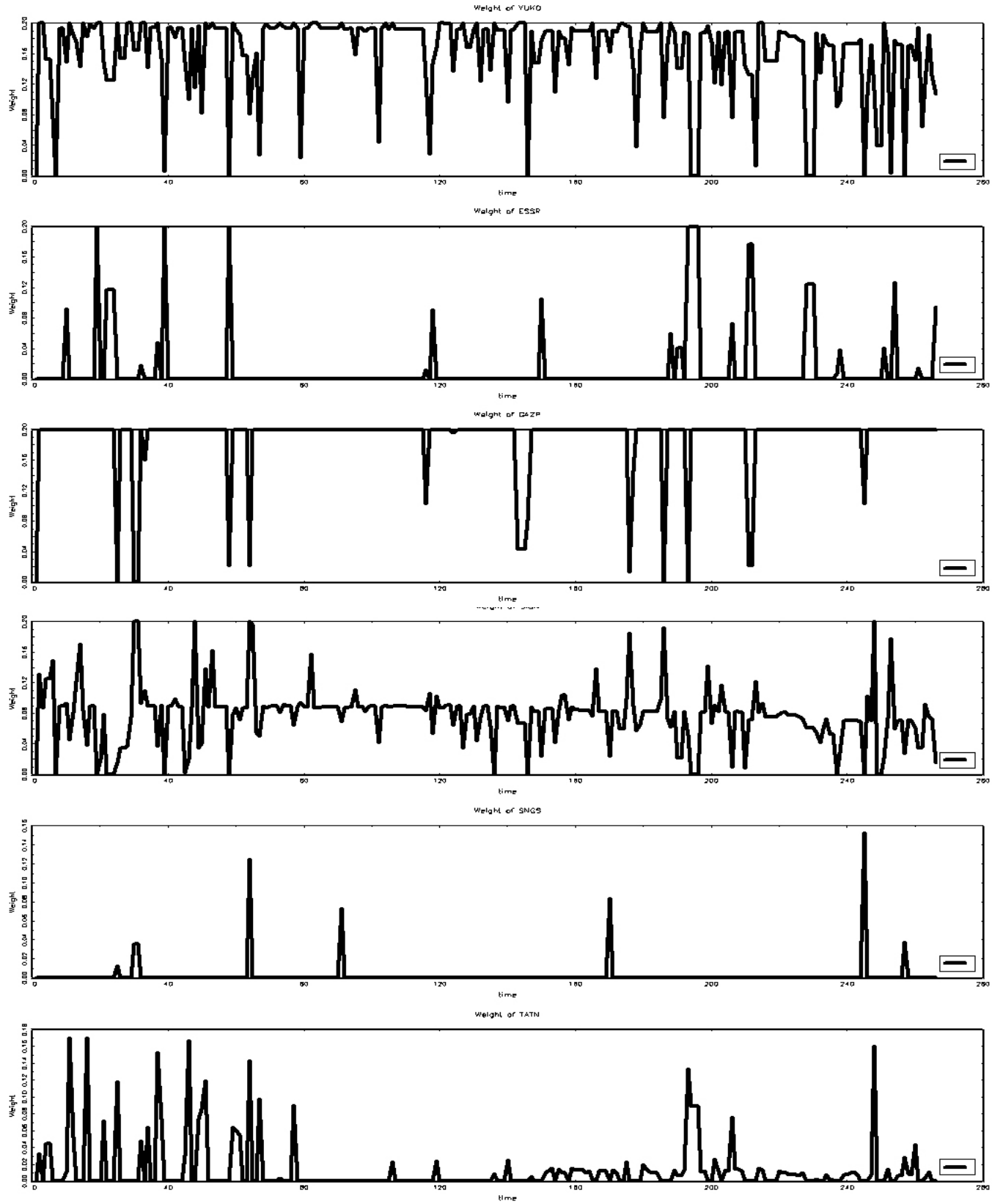

Table 15 reports the portfolio weight dynamics of Yukos, RAO UES, Gazprom, Sibneft, Surgutneftegas and Tatneft stocks.