Do locals perform better than foreigners: evidence from mutual funds investing in Russia

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Abstract:
In this paper we investigate the question whether mutual funds with a local fund manager perform better than international funds with a fund manager abroad using data on mutual funds investing in Russia for the years 2005 to 2009. This performance comparison is informative about the value of local information, which might be particularly important in a developing financial market such as in Russia. We apply static performance indicators (Sharpe ratio, Treynor ratio, and Jensen's alpha) and dynamic performance (market timing) using both unconditional and conditional models. We find that neither local nor international funds perform better than the market index. In unconditional models international funds perform relatively better than their local Russian counterparts. However, there is no significant performance differential in conditional models (with dividend yield of the market index, short-term interest rates, slope of the yield curve, ruble-US dollar exchange rate and oil price as conditioning information). This suggests that international funds seem to be more sophisticated, especially in predicting stock returns on the basis on public information. Local information does not seem to be a decisive factor for mutual fund returns or is not only received to local fund managers.

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1. INTRODUCTION

There is ample evidence of a home bias in investments, a fact that creates a puzzle since it contradicts the principle of diversification. Several reasons have been put forward in the literature that explain this preference of domestic investments over foreign ones. Among these reasons are transaction costs, institutional constraints, currency risk and informational disadvantages (see, e.g. Lewis, 1999). Lack of information of foreign individual investors compared to local ones was documented by Brennan and Cao (1997), Coval and Moscowitz (2001), and Hau (2001), among others.

In our paper we use a sample of mutual funds investing in Russian equity for the period 2005-2009. We compare the performance of local mutual funds investing in Russia and international mutual funds investing in the Russian market from abroad. On the one hand, local information is likely to be particularly valuable in a developing financial market such as Russia. Due to lower accounting standards for firms that are listed at the Russian stock exchanges only, personal contacts to the management might be important to evaluate the prospects of firms. Foreigners also may not have developed connections with market makers, brokers, investment bankers in the local market. Also, they may face time zone differences. As a result, foreign fund managers may face disadvantages in deals execution, research and IPO's participation.

On the other hand, the Russian mutual fund industry is relatively young and international funds investing in Russia may compensate their lack of access to local information by their more sophisticated asset management techniques. Relying on the same information, their experience might give them an advantage in processing that information.

We argue that institutional constraints are not an important driver of any performance differences. While the Russian funds invest primarily in Russian stocks at Russian stock exchanges and foreign funds often invest through ADRs/GDRs on Russian companies, for the period of study any price differences between the two ways of investing are arbitraged away quickly. There is also a portfolio restriction for Russian funds in that they are not allowed to invest more than 20 per cent of their funds into a single asset, but this restriction is essentially not binding.

Fund managers can generate excess returns by correctly choosing securities (microforecasting) and by forecasting general market movement (macroforecasting). The ability of managers to create value for investors and their skills in securities selection and

market timing (macroforecasting) will be assessed in the paper. As a result we expect to answer the main question whether locals perform better than foreigners for the sample of funds investing into Russian equity.

The main contribution of our research to the previous studies is that it is the first research concerning international and local funds investing in a developing (emerging) financial market. For Russia in particular, the empirical analysis of the mutual fund industry has been hindered by its short history. However, by the moment we have a sufficiently long sample period in order to make robust estimations. There is only a few studies that compare fund returns of funds located in the same country as the investment targets (local funds) and abroad (foreign funds), see section 2. In all cases only foreign funds from one particular country are considered. In contrast, we look at all international funds investing in Russia.

A variety of methods proposed in the literature on mutual funds performance is used to compare performance of Russian and international funds. This will allow to distinguish between stock picking and market timing abilities of managers and to make robust conclusions. More specifically, we apply static performance indicators (Sharpe ratio, Treynor ratio, and Jensen's alpha) and dynamic performance (market timing) using both unconditional and conditional models. Conditional models assume changing portfolio risk level in response to predetermined public information. In the interpretation of results we focus on comparison of performance of Russian and foreign funds investing in Russia.

We find that neither local nor international funds perform better than the market index. In unconditional models international funds perform relatively better than their local Russian counterparts. However, there is no significant performance differential in conditional models (with dividend yield of the market index, short-term interest rates, slope of the yield curve, ruble-US dollar exchange rate and oil price as conditioning information). This suggests that international funds seem to be more sophisticated, especially in predicting stock returns on the basis on public information. Local information does not seem to be a decisive factor for mutual fund returns or is not only received to local fund managers.

The structure of the paper is as follows. First, we review the existing literature on funds performance evaluation. Such topics as selectivity and timing and comparison of local and foreign funds performance are covered. Section 3 provides a description of the data set collected and of the methodology applied. Section 4 presents the empirical results. Finally, the conclusion is given. Section 5 concludes.

2 THEORY AND LITERATURE REVIEW

2.1 Review of literature on timing and selectivity

The literature considers two sources of superior performance of mutual funds: stock picking abilities (microforecasting) and market timing abilities (macroforecasting). Stock picking ability involves the identification of individual securities that are over- and undervalued and thus lie off the security market line (according to the CAPM model).

Market timing refers to general market movements forecasting. There are two possible ways to time the market. A good manager is likely to increase the amount invested in stocks when the market is expected to increase. If the market is expected to decline then the manager is likely to switch from stocks to bonds. More generally, market timing consists in changing the average beta of risky securities. A market-timer structures a fund's portfolio to have a relatively high beta when the market is expected to rise and a relatively low beta when a market drop is anticipated. If the manager is rather accurate in market dynamics forecast he will outperform a benchmark portfolio with a constant beta equal to the average beta of the timer's portfolio.

Traditional measures of performance were suggested by Jensen (1986), Treynor (1965) and Sharpe (1966). The common problem for these measures is that they assume that portfolios' risk levels are constant over time and thus focus solely on managers' security selection. However many studies showed that mutual funds change the risks level of their portfolios over time and thus are engaged in market timing (see, e.g. Miller and Gresis (1980), Sunder (1980), and Bos and Newbold (1984)). In this light traditional measures can give inaccurate measure of performance. Particularly, researchers demonstrated that the Jensen alpha will be biased downward if the manager utilizes superior market timing information (theoretical proof is provided by Dybvig and Ross (1985), Grinblatt and Titmann (1989) and an empirical "demonstration" is provided by Henriksson (1984), Lee and Rahman (1990)).

In this context, the distinction of the part of return attributable to selectivity and that attributable to market timing has received considerable interest in the literature. Fama (1972) was the first to propose a formalized theoretical methodology for the decomposition of total returns into the components of timing and selectivity. Fama (1972) developed a theoretical measure of timing which requires information regarding the target risk level of the fund, a time series of expected returns on the market portfolio and a time series of risk level decisions by the fund manager. However, since the only direct information to the evaluator is the time series of return of the market portfolio and the fund, Fama's measures are particularly difficult to implement.

Treynor and Mazuy (1966) develop a procedure for detecting timing ability that is based on a regression analysis of the managed portfolio's realized returns, which includes a quadratic term. The basic idea is that, if fund managers could forecast general market movements, they will increase the portfolio's risk on the upside and decrease it on the downside, thereby altering the linear CAPM securities line to a nonlinear function. The empirical results obtained by Treynor and Mazuy show no statistical evidence that managers have outguessed the market.

According to Lehman and Modest (1987), although the Treynor and Mazuy measure is an advance in performance estimation development it is still faces the same problem as the Jensen's measure: the inability to evaluate separately the effects of the security selection and market timing abilities on funds' performance. They show that Treynor-Mazuy measure is able to detect timing abilities but it is still impossible to distinguish two sources of abnormal returns in alpha. Lehmann and Modest (1987) combine the arbitrage pricing theory (APT) based measures of performance evaluation with the Treynor and Mazuy (1966) quadratic regression technique. More recent empirical examination of the Treynor and Mazuy (1966) procedure was also conducted by Grinblatt and Titman (1988) and Cumby and Glen (1990), who report negative coefficients on the quadratic term.

Jensen (1972) proposed a similar formulation for detecting timing and selectivity skills of fund managers. Under the assumption that the forecasted return and the actual return on the market have joint normal distributions, Jensen shows that market timing ability can be measured by the correlation between the market timer's forecast and the realized return on the market. However, Jensen concluded that, unless the manager's expectations are known, it is impossible to identify the separate contributions of timing and selectivity. Admati et al. (1983) demonstrate that it is not necessary that all the information required in Jensen (1972) is available and, accordingly, show that it is possible to obtain accurate measures of timing and selectivity abilities from a simple regression technique. This model is a refinement of the Treynor and Mazuy (1966) quadratic regression, as it focuses on the coefficient of the squared excess market return as an indication of timing skill, and requires easily available information on market realized returns and portfolio realized returns. This model was empirically implemented in the US by Lee and Rahman (1990), in the UK by Armada (1992) and in Portugal by Cortez and Armada (1997). Although these studies reveal some timing ability, it should be pointed that, within the Admati (1983) approach, timing is constrained to be non-negative. Coggin et al. (1993), when applying this methodology to US pension plans, allowed for negative timing. With this alteration, their results show negative measures of timing (it means that managers either were not able to forecast market movement correctly or did not

act on the forecasts and increased the beta of their portfolios when the market declined and vice versa) so being consistent with those of previous studies.

Kon and Jen (1978, 1979) have proposed switching regression techniques to accommodate funds' changing risk levels. In an extension of this methodology, Kon (1983) concludes that there is no evidence of timing performance within fund managers as a group. An alternative procedure to analyze market timing was employed by Fabozzi and Francis (1979) and Alexander and Stover (1980). A dummy variable regression model was used to fit for two characteristic lines: one for up markets and one for down markets. The underlying argument is that a manager with timing ability will select a high up market beta and a low down market beta. In general, these researchers found additional evidence that fund managers did not shift their funds' beta to take advantage of market movements. Chen and Stockum (1986) point out some limitations to these studies: on the one hand, Kon (1983) attributes beta instability solely to timing activities, not considering that variability in beta can be due to random fluctuations; on the other hand, a major problem with the studies of Fabozzi and Francis (1979) and Alexander and Stover (1980) is related to the concept of up and down markets used, as well as the assumption that the risk levels are constant within the subperiods considered. In their regression model, Chen and Stockum (1986) allow beta nonstationarity to result not only from market timing activities but also from random fluctuations.

Their results do not show evidence of timing strategies, although suggest some evidence of selectivity. Although the previous studies attempt to evaluate timing and selectivity skills of fund managers, with the exception of Fama (1972), none has resulted in a theoretical model that could provide separate measures of these two components of performance. Such a model has been developed by Merton (1981) and Henriksson and Merton (1981), who propose a theoretical structure that allows for the formal distinction of managers' forecasting skills into timing and selectivity. By assuming that the market timer's forecasts take two possible predictions: either stocks will outperform bonds or bonds will outperform stocks, Merton (1981) derives an equilibrium theory that shows that the patterns of returns resulting from a market timing strategy is similar to the returns pattern of an option strategy (of the putprotective type). Based on this model, Henriksson and Merton (1981) develop statistical procedures (both parametric and nonparametric tests) to investigate market timing abilities of investment managers. Empirical work with these procedures has been conducted by Henriksson (1984), Chang and Lewellen (1984), Armada (1992), Fletcher (1995), Kao et al. (1998) and Rao (2000), which report no evidence of market timing. Furthermore, these studies found more evidence of negative market timing than positive

market timing as well as a strong negative correlation between measures of timing and selectivity. Several researchers have attempted to explain this type of evidence.

Jagannathan and Korajczyk (1986) empirically demonstrate the existence of artificial timing when applying this model, and sustain that the existence of option type securities[2] in the market index will generate positive (negative) timing and negative (positive) selectivity in portfolios with high (low) concentration of these securities. Henriksson (1984) suggests that the negative correlation can be due to the possible misspecification of the market portfolio and/or to the omission of relevant factors in the model. Armada (1992) attributes the inverse relationship between the two components of performance to estimation errors in the variables of the model. Edelen (1999) argues that the negative market timing performance is associated with the costs of liquidity-motivated trading.

More recently Jiang (2003) proposed a nonparametric metric to test for market timing ability, which is considered complementary to those of Treynor and Mazuy (1966) and Henriksson and Merton (1981). By applying this measure to a sample of US domestic funds, the results show no evidence of market timing abilities.

Concluding, the majority of the empirical studies on timing seem to suggest that significant timing ability is rare. Furthermore, there even seems to be more evidence of negative market timing than positive market timing. Given this type of unfavourable evidence in relation to fund managers, other studies have emphasized some limitations of timing and selectivity models and point out some cautions that should be taken into consideration, in particular, issues related to biases that may arise as a result of the frequency of data used (Goetzmann et al., 2000; Bollen and Busse, 2001) and the appropriateness of the benchmark (Dellva et al., 2001).

2.2 Review of literature on comparison of local and foreign funds performance

The question of comparison of local and foreign fund managers' performance is rather young and not fully covered in the literature. The literature on evaluations of actively managed mutual funds is rich and most of it considers US mutual funds (due to the fact that it has rather long history). Even though many researchers examined different countries' mutual funds, not many of them raised the question of comparing performance of funds in different countries and tried to find out whether local managers perform better than foreigners.

[2] Under option-like securities authors mean common stocks due to the fact that they have varying levels of risky debt. Any fixed costs that induce differential skewness in the return distributions across firms will lead to the same results.

The argument for local investors to perform better than their foreign counterparties seem to be rather straightforward: as local investors have superior access to information on local firms they outperform foreign investors. This is documented by Brennan and Cao (1997), Coval and Moscowitz (2001) and Hau (2001). Brennan and Cao (1997) considered US portfolio investment in emerging markets and find strong evidence that US purchases are positively associated with local market returns in many countries. Also this effect persists when the lagged local market return is substituted for the contemporaneous return. This is, according to Brennan and Cao, consistent with US residents being at an informational disadvantage relative to locals in these markets, and trading on new information with a lag. Coval and Moscowitz (2001) find out that U.S. investment managers exhibit a strong preference for locally headquartered firms. Their results suggest that asymmetric information between local and nonlocal investors may drive the preference for geographically proximate investments. Hau (2001) explored informational asymmetries across the German trader population. In the light of his results traders located outside Germany in non-German-speaking cities show lower proprietary trading profit. Summarizing, results of these studies are more or less expected: for foreign individual investors it is rather costly to find information on far away located companies and understand the market movement on the foreign for them market. As for mutual funds studies the current literature is rather scant.

International funds' performance is first studied by Cumby and Glen (1990). They examined the performance of a sample of 15 internationally diversified US mutual funds for the period 1982–1988. Cumby and Glen found no evidence that the funds, individually or as a whole, gave investors any advantage in performance over that of a broad, international equity index for the sample period. Moreover, using Treynor and Mazuy (1966) model they argue that fund managers show negative market timing ability.

Eun, Kolodny, and Resnick (1991) examined nineteen US based international funds over a ten-year period from 1977 to 1986. They concluded that these funds help enhance the efficiency of U.S. investors' portfolios. Unlike Cumby and Glen, they employed the two-beta (up-market beta and down-market beta) model of Henriksson and Merton (1981). Although they found up-market beta to be greater than down-market beta on thirteen out of the nineteen funds studied, there was only one statistically significant case. Hence, their findings, at best, only provide weak evidence in support of good timing ability. Later, Droms and Walker (1994) applied the basic CAPM model (i.e. Jensen's alpha measure) to analyze the performance of international fund managers. Using annual data of four to thirty funds (for time periods of various length), Droms and Walker did not detect above-average risk-adjusted performance.

First who examined separately different groups of international funds and examine the possible relationship between selection and timing ability of these managers were Kao et al. (1998). Their findings based on examination of ninety seven international funds suggest that managers of international mutual funds possess good selectivity and overall performance. They also reveal weak evidence of poor market-timing ability. Consistent with prior findings from domestic mutual funds, there is a negative correlation between the international fund managers' selection ability and market-timing ability. Finally, managers for European funds show poorer performance than those managing the other three international fund groups.

The first direct comparison of local versus foreign mutual funds performance is made by Shukla and van Inwegen (1995). They study performance of one hundred eight US mutual fund managers investing in the US market versus eighteen UK fund managers also investing in the US market over the period 1981-1993 (only surviving funds are considered). Results are based on one-factor CAPM model's Jensen's alpha, and Treynor-Mazuy quadratic models, as well as simple Sharpe and Treynor ratios. UK funds have lower alphas and Sharpe and Treynor ratios. In addition UK fund managers appear to do a poor job predicting market movement. Controlling for factors like tax treatment, fund expenses, fund objectives and currency risk they conclude that UK funds significantly underperform US funds. The main explanation proposed by authors is informational disadvantages which foreign managers face in comparison with local managers.

Shukla and van Inwegen's study was continued by Otten and Bams (2007). They again consider US and UK mutual funds investing in USA, however they use more elaborate multi-factor asset-pricing model suggested by Carhart (1997)[3], the more recent time period (1990-2000), and a larger database (2531 funds). Applying unconditional and conditional Carhart's models the authors do not find evidence of significant difference in risk-adjusted returns between US and UK mutual funds. Their results also indicate that UK funds invest more in smaller companies compared to their US peers, and, finally, UK funds exhibit a home bias (for investment they preferred UK cross-listed on the US market firms to US firms). Among the cited papers, the studies by Shukla and van Inwegen (1995) and Otten and Bams (2007) are two ones that are most closely related to our study in a sense that they compare performance of local managers and international managers investing in the same market.

However there are some studies that examine the distance effect in the international mutual funds context. Thus, Engstrom (2003) evaluates performance of about three hundred

[3] Carhart extends the model of Fama-French (1993) that contains such factors as the market excess return, the difference between a small cap portfolio and a large cap portfolio, the difference in return between a portfolio of high book-to-market stocks and a portfolio of low book-to-market stocks by adding a factor of the difference in return between a portfolio of past winners and portfolio of past losers.

European based international mutual funds that were available in Sweden over the period 1993-1998. Two types of funds are considered: funds that invest in Asia and Europe. Authors find out that international funds underperform compared to local ones. On the basis of a conditional model and Jensen's alphas the authors conclude that European based funds have superior stock selection ability in Europe relative to Asia. Market timing abilities were assessed by means of Treynor-Mazuy and Henriksson-Merton models in the conditional specification of Ferson and Schadt (1996). And the study finds no evidence for fund managers to possess negative timing ability.

The question of distance effect is further examined by Romacho and Cortez (2005). These researchers apply unconditional Henriksson-Merton methodology to the sample of Portuguese based mutual funds that invest locally and Portuguese based funds that invest in European and other international markets. The sample includes 21 funds and covers the period from 1996 to 2001. In general Portuguese based funds are neither successful stock pickers nor market timers. The effect of geographical distance on performance was supported: in terms of stock picking abilities domestic fund managers investing in the Portuguese market show superior stock-picking skills than those investing in the international markets. The main argument here is again informational advantage. As for market timing the distance effect does not work: domestic managers investing locally seem to perform worse and fund managers investing internationally seem to be more specialized in market timing skills.

Recently a number of studies appear that explain differences in return between locals and foreigners by the type of securities they held. For example, it is reported that foreign investors hold relatively large stocks compared to local investors (see, e.g. Dahlquist and Robertsson (2001) and Kang and Stulz (1997)). Also, Grinblatt and Keloharju (2000) reveal that locals act like contrarians and foreigners act like momentum investors.

Since the Russian mutual fund industry is rather young there is no one study (to the best of our knowledge) that compares their performance of local and international funds. I believe that our research will contribute to the existing literature on comparison of local versus foreign fund managers' performance.

3 METHODOLOGY AND DATA

3.1 Methodology

For the purpose of Russian and international funds performance assessment I apply different models and test whether managers exhibit superior stock picking and market timing abilities. The tests are run for each fund of both groups (Russian and international funds). In other words, time-series regressions are run for each fund and the results for both groups of funds will be compared. Conclusions will be based on the mean results exhibited by funds from each group as well as on the performance showed by majority funds form the group.

3.1.1 Simple risk adjusted measures. These measures estimate risk adjusted return performance. The **Sharpe ratio** (Sharpe, 1966) shows excess return of a fund's portfolio per unit of risk and is calculated by dividing the mean excess return of a fund by the standard deviation of its returns:

$$\boldsymbol{SR_j = \frac{\bar{R}_j - \bar{R}_f}{\sigma_j}}, \quad (1)$$

where $\bar{R}_j$ is the average return of the fund j, $\bar{R}_f$ is the average risk free rate, and σ_i is the standard deviation of portfolio returns.

The **Treynor ratio** (Treynor, 1965) exhibits excess return per unit of systematic risk and is calculated by dividing the mean excess return of a fund by its systematic risk:

$$\boldsymbol{TR_i = \frac{\bar{R}_j - \bar{R}_f}{\beta_j}}, \quad (2)$$

where β_j is the beta of a fund's portfolio. This ratio is also known as reward-to-volatility ratio.

There are also two other measures based on the traditional indicators. Modigliani and Modigliani (1997) proposed a method that entails first adjusting risk of the portfolio under consideration to the risk of benchmark portfolio, calculating the returns on this "risk-matched" portfolio and finally comparing the returns on this new portfolio to the returns on the benchmark. Risk adjusted performance is estimated by:

$$M_j^2 = \bar{R}_f + \frac{\bar{R}_j - \bar{R}_f}{\sigma_j}\sigma_m. \quad (3)$$

As it can be easily derived: $M_j^2 = \bar{R}_f + SR_j\,\sigma_m$. Thus, M^2 and SR will rank set of funds in exactly the same way. Hence, in the research comparing Russian and international funds dedicated to Russia I will use the Sharpe and Treynor ratios.

3.1.2 Unconditional models

Jensen's alpha. The basic model used in studies on funds performance is the traditional capital asset pricing model (CAPM) based single index model, where the intercept $\propto_j$ gives the Jensen alpha (Jensen ,1968), which is interpreted as a measure of outperformance or underperformance relative to the used market proxy.

More formally,

$$\boldsymbol{R_{jt} - R_{ft}} = \propto_j + \boldsymbol{\beta_j}\left(\boldsymbol{R_{mt} - R_{ft}}\right) + \boldsymbol{\varepsilon_{jt}} \quad (4)$$

where

R_{jt} is the return on fund j in period t,

R_{mt} is the return on the market index in period t,

R_{ft} is the return on a risk-free asset,

ε_{jt} is the error term which has the following properties:

$$E(\varepsilon_{it}) = 0, Var(\varepsilon_{it}) = \sigma^2_{\varepsilon_{it}}, Cov(\varepsilon_{it}, R_{mt}) = Cov\left(\varepsilon_{it}, R_{jt}\right) = 0 \quad (5)$$

In this unconditional model alphas and betas are assumed to be constant. If an active manager has a superior ability to pick stocks we should expect to receive a positive significant α_i. So I will test the hypothesis H_0: $\alpha_i=0$ against H_1: $\alpha_i>0$ ($\alpha_i <0$) for each of the fund examined. Rejection of H_0 in favour of H_1: $\alpha_i>0$ would suggest that the investment manager successfully identifies and invests in some underpriced securities and if in favour of H_1: $\alpha_i<0$ than manager show negative stock picking ability.

Treynor and Mazuy model.

For analysis of the timing ability of funds' managers two procedures can be utilized: quadratic and dummy variable regression. We use the first one that was suggested by Treynor and Mazuy (1966). The following multiple regression is run:

$$\boldsymbol{R_{jt} - R_{ft}} = \propto_j + \boldsymbol{\beta_j}\left(\boldsymbol{R_{mt} - R_{ft}}\right) + \boldsymbol{\tau}\left(\boldsymbol{R_{mt} - R_{ft}}\right)^{\boldsymbol{2}} + \boldsymbol{\varepsilon_{jt}} \quad (6)$$

$\propto_j$ still assesses the market timing ability, τ is the measure of the market timing ability. If the relationship between the fund's returns and the market's returns is linear then the addition of a squared term doesn't improve the fit and τ will be zero. If the relationship between the funds and the market is quadratic then the addition of the squared term will improve the fit and τ will be positive.

Henriksson-Merton parametric test. Henriksson and Merton (1981) develop a parametric test that allows not only the evaluation of market timing abilities but also the separate measurement of the effects of selection and timing abilities. The test requires

assumption of a particular return generating process for the securities' returns. Henriksson and Merton work in the CAPM framework. Next, they assumed that the market timer have two targets for portfolio's better depending on whether he forecasted that $R_{mt} \leq R_{ft}$ or vice versa.

$\beta_t = \mu_1$ when the manager forecasts that $R_{mt} \leq R_{ft}$ and $\beta_t = \mu_2$ when the manager predicts that $R_{mt} > R_{ft}$. γ_t is defined as "the market timer's forecast variable" and can take two values: 0 if at time (t-1) the market timer forecasted that in period t, $R_{mt} \leq R_{ft}$ and 1 if he forecasted that that $R_{mt} > R_{ft}$. Then the conditional probabilities of a correct forecast are:

$$p_1 = prob\big(\gamma_t = 0 \big| R_{mt} \leq R_{ft}\big) \text{ and} \tag{7}$$

$$p_2 = prob\big(\gamma_t = 0 \big| R_{mt} > R_{ft}\big) \tag{8}$$

Given that the forecasts are not observable β_t is considered to be a random variable and its unconditional expected value b is:

$$b = q[p_1\mu_1 + (1-p_1)\mu_2] + (1-q)[p_2\mu_2 + (1-p_2)\mu_1], \tag{9}$$

where q is the unconditional probability that $R_{mt} \leq R_{ft}$.

Defining the random variable $\theta_t = [\beta_t - b]$ as the unanticipated component of beta Henriksson and Merton present the return on portfolio in the following way:

$$R_t - R_{ft} = \lambda + [b + \theta_t]x_t + \varepsilon_t, \tag{10}$$

where $x_t = R_{mt} - R_{ft}$.

The unanticipated component of beta has below presented conditional expectations:

$$E(\theta|x) = \overline{\theta_1} = (1-q)(p_1 + p_2 - 1)(\mu_1 - \mu_2)\ for\ x_t \leq 0 \text{ and} \tag{11}$$

$$E(\theta|x) = \overline{\theta_2} = q(p_1 + p_2 - 1)(\mu_2 - \mu_1)\ for\ x_t > 0. \tag{12}$$

$$\text{Thus, } E(R|x > 0) = R + (b + \overline{\theta_2})E(x|x > 0) + \lambda \text{ and} \tag{13}$$

$$E(R|x \leq 0) = R + (b + \overline{\theta_1})E(x|x \leq 0) + \lambda. \tag{14}$$

Using equation (10), authors show that the least squares regression analysis can measure "the separate increments to performance" from managers' stock picking and market timing abilities. Indeed, writing the regression model for a portfolio in the form:

$$\boldsymbol{R_t - R_{ft}} = \propto + \boldsymbol{\beta_1 x_t} + \gamma \boldsymbol{y_t} + \boldsymbol{\varepsilon_{jt}}, \tag{15}$$

where $y_{jt} = \max\big(0,\ R_{ft} - R_{mt}\big) = \max(0, -x_t)$ $\widehat{\beta_{2j}}$ represents the market timing abilities and $\hat{\propto}$ represents his/her stock picking abilities.

After some calculations authors derive the following:

$$plim\ \widehat{\beta_1} = \frac{\sigma_{px}\sigma_y^2 - \sigma_{py}\sigma_{xy}}{\sigma_x^2\sigma_y^2 - \sigma_{xy}^2} = \mathrm{b} + \overline{\theta_2} = p_2\mu_2 + (1-p_2)\mu_1\ , \tag{16}$$

$$plim\ \hat{\gamma} = \frac{\sigma_{py}\sigma_x^2 - \sigma_{px}\sigma_{xy}}{\sigma_x^2\sigma_y^2 - \sigma_{xy}^2} = \overline{\theta_2} - \overline{\theta_1} = (p_1 + p_2 - 1)(\mu_2 - \mu_1), \tag{17}$$

$$plim\ \widehat{\propto} = E(R) - R_f - plim\widehat{\beta_1}x - plim\widehat{\beta_2}y = \lambda. \quad (18)$$

Thus for the model described by equation (12) hypothesis H_0: $\propto = 0$ implies that the manager does not possess microforecasting ability. And the evaluation of market timing skills is carried out by testing the null hypothesis H_0: $\beta_2 = 0$, i.e. the manager does not possess timing ability or does not act on the forecast $\mu_1 = \mu_2$.

Although regression (16) generates consistent estimators it suffers from heteroscedasticity in residuals: Henriksson and Merton show that the standard deviation of β_2 increases with the increase of $|x_t|$. Thus the efficiency of the estimates should be improved by correcting for heteroscedasticity.

For estimating performance of Russian and international Russia dedicated mutual funds I run regressions for each fund. The Newey-West procedure was applied to correct regression estimates for heteroscedasticity in residuals.

3.1.3 Conditional models

Assumption of betas to be time-varying was incorporated into traditional models of Jensen (1968), Trenor and Mazuy (1966) and Henriksson and Merton (1981) models by Ferson and Schadt (1996). Following the logics of Ferson and Schadt, assume that market is semi-strong efficient. The idea is to distinguish "market timing" based on public information from market timing that is superior relative to public lagged information variables. Traditional studies based on unconditional models view the covariance between beta and the future market return as evidence of managers' superior macroforecasting abilities. In contrast, conditional models allow covariance between beta and the future market timing to exist under the assumption of no superior timing abilities of the manager attributing this covariance to their common dependence on public information.

The conditional beta is assumed to be a linear function of a vector of predetermined information variables Z_{t-1}, that represents the public information available at time (t-1):

$$\beta(Z_{t-1}) = \beta_0 + \beta' z_{t-1}, \quad (19)$$

where $z_{t-1} = Z_{t-1} - E(Z)$ represents a vector of deviations of Z_{t-1} from the unconditional mean values, β is a vector that measures the response of the conditional beta to the information variables and β_0 is an average beta which represents the unconditional mean of the conditional beta.

In this framework the **CAPM model** for fund j can be rewritten in the following way:

$$\boldsymbol{R_{jt} - R_{ft} = \propto_j + \beta_0 (R_{mt} - R_{ft}) + \beta'_j [z_{t-1} (R_{mt} - R_{ft})] + \varepsilon_{jt},} \quad (20)$$

where $\propto_j$ represents a conditional performance measure. If the manager bases his forecast only on public information, $\propto_j = 0$ indicating no superior performance. Thus, the null hypothesis assuming no superior performance of the manager is H_0: $\propto = 0$.

A **conditional version of Treynor-Mazuy model** according to Ferson and Schadt is the following one:

$$\boldsymbol{R_{jt} - R_{ft} = \propto_j + \beta_0(R_{mt} - R_{ft}) + C_j'[z_{t-1}(R_{mt} - R_{ft})] + \tau_c(R_{mt} - R_{ft})^2 + \varepsilon_{jt}}, \quad (21)$$

where the coefficient vector C_j captures the response of the fund j manager's beta to the public information, Z_t. The coefficient τ_c measures the sensitivity of the manager's beta to the private market timing signal. The term $C_j'[z_{t-1}(R_{mt} - R_{ft})]$ in equation (21) takes control of the public information effect, which would bias, according to Ferson and Schadt, the coefficients in the original Treynor-Mazuy model of equation (6). The new term in the model captures the part of the quadratic term in the Treynor-Mazuy model that is attributed to the public information variables.

Let us follow Ferson and Schadt in turning the Henriksson and Merton methodology into a conditional set. Suppose that the manager attempts to forecast the conditional on the public information deviation from the expected excess return $u_{m,t} = R_{m,t} - R_{f,t} - E(R_{m,t} - R_{f,t}|Z_{t-1})$. If the forecast is positive, the manager chooses a portfolio conditional beta of $\beta_{up}(Z_t) = b_{up} + B_{up}'z_{t-1}$,. If the forecast is negative, the manager chooses $\beta_{up}(Z_{t-1}) = b_d + B_d'z_{t-1}$. In this case j's fund portfolio return can be presented as follows:

$$\boldsymbol{R_{jt} - R_{ft} = \propto_j + b_{dj}(R_{mt} - R_{ft}) + B'_{dj}[z_{t-1}(R_{mt} - R_{ft})] + \gamma_{cj}d_t(R_{mt} - R_{ft}) + \Delta_j'[z_{t-1}d_t(R_{mt} - R_{ft})] + u_{jt}}$$

$$\text{where } \boldsymbol{d_t} = \begin{cases} \boldsymbol{1, if\ R_{mt} - R_{ft} > E(R_{mt} - R_{ft}|z_{t-1}),} \\ \boldsymbol{0, if\ R_{mt} - R_{ft} \leq E(R_{mt} - R_{ft}|z_{t-1}).} \end{cases}$$

And $E(R_{mt} - R_{ft}|z_{t-1})$ is estimated regressing $(R_{mt} - R_{ft})$ on lagged information variables.

The null hypothesis of no market timing ability implies that γ_{cj} and Δ_j are zero. The alternative hypothesis of positive market timing ability is that $\gamma_{cj} + \Delta_j'z_{t-1} > 0$, which says that the conditional beta is higher when the market is above its conditional mean, given public information, than when it is below the conditional mean. This implies that the unconditional expectation $E(\gamma_{cj} + \Delta_j'z_{t-1}) = \gamma_{cj} > 0$, in case when market timing is on average positive. In the light of above said testing the null hypothesis for each fund is H_0: $\gamma_{cj} = 0$ against H_1:

$\gamma_{cj} > 0$ will answer the question whether a manager on average possesses superior market timing or not.

3.2 Data description

To make more or less robust estimations a long period and a more or less large sample of investment funds is needed. The appropriate measure of funds performance is their monthly returns (this data frequency is commonly used while assessing the funds performance). Although a longer estimation period would be desirable it would substantially reduce the number of funds as the Russian fund industry is rather young compared to the major markets. As a result, a period from January 2005 till May 2009 was chosen and data on Russian and international funds investing in Russia was collected. To be included in the sample a fund needs:

- to be actively managed open-ended mutual equity investment fund with focus on Russian equity;
- to be in existence as of January 2005;
- to have at least 12 months of data.

For funds' returns computation net asset value per share (NAV) was utilized. NAV is calculated by dividing the total value of all the securities in its portfolio, less any liabilities, by the number of fund shares outstanding and is publicly published by funds. In the context of mutual funds, NAV is computed once a day based on the closing market prices of the securities in the fund's portfolio. All mutual fund's buy and sell orders are processed at the NAV of the trade date. However, investors must wait until the following day to get the trade price. Since mutual funds pay out virtually all of their income and capital gains, changes in NAV are not the best gauge of mutual fund performance. In order to get accurate measure of performance NAV should be adjusted for capital gains and dividends repaid. More specifically, returns should be calculated as if all capital gains distributed by a fund were reinvested again and money received in the form of any distributions by the fund are spent on the fund's shares purchase.

Since returns are calculated using net asset values funds' returns are net of operating expenses, but gross of any sales charges, with reinvestment of dividends. As a result we get raw returns that do not account for loads and discounts investors have to face when entering the fund and withdrawing their money from the fund. In order to get comparable data on performance of Russian and international funds for all funds I used returns calculated on US dollar basis.

Russian mutual funds. The collective investment market is rather young in Russia. The total size of the market is $16 bln with $1.3 bln belonging to open ended equity funds' assets[4]. As of 15 June 2009 total number of funds amounts to 1164 funds, from which 268 are equity funds, 197 being open ended equity funds. According to the Russian law on investment funds[5] equity funds are allowed to invest in cash, deposits (in the national as well as foreign currency), government securities, joint stock companies' stocks and bonds[6], and mutual funds' shares. As for equity funds for at least over two thirds of working days in a month stocks should account for more than 50%. The rapid growth of funds assets and their number accounts for 2005-2007 and we can observe a sharp decline of funds' assets in the second half of 2008 after the current financial crisis began (See Figures 1, 2, Appendix 1).

Using data from the web-site of National league of asset managers (www.nlu.ru) we identified that 47 equity funds existed as of January 2005. However we were able to find and collect data only on 43 funds (see Table 1, Appendix 2). 41 of them are functioning at the moment[7], while 2 were liquidated in December 2008.

The data on funds NAV in RUB[8] were collected from the Informational server on Investment funds of CBonds.ru Agency (site www.pif.investfunds.ru). Since investment funds in Russia according to the Russian legislation on investment funds do not paid out any dividends and incomes continuously compounded return of fund j can be calculated in the following way:

$$R_{jt} = \ln\left(\frac{P_t}{P_{t-1}}\right), P_{jt} = P_{jt,rub} : E_{t,rub/usd} \qquad (23)$$

where

P_{jt} = NAV per share of fund j in USD as of end of month t,

$P_{jt,rub}$= NAV per share of fund j in RUB as of end of month t,

$E_{t,rub/usd}$ = direct exchange rate for USD on the last day of month t established by the Central Bank of Russia[9].

International funds. Since the focus of our interest is comparison performance of funds, Russian and international ones, that invest in Russian equity from abroad we should account for funds managers' location (wanted to be not Russia) and funds' investment objective. The sample is restricted to funds that invest at least 75% of their assets in Russian

[4] Russian mutual funds statistics can be found on: http://pif.investfunds.ru/analitics/statistic/market_profile/.
[5] See Statute on composition and structure of assets of joint stock funds and assets of mutual funds. 22 March 2007. The Federal Financial Markets Service.
[6] From 2007 funds are allowed to invest in foreign listed securities.
[7] As of June 15, 2009.
[8] Here and hereinafter RUB denotes Russian ruble and USD denotes United States dollar.
[9] Data were collected from the CBR's web-site www.cbr.ru.

equity: in the form of direct purchase of Russian companies' stocks or in the form of ADRs and GDRs (American and global deposit receipts on Russian stocks which are traded on major world stock exchanges).

For collecting data on international funds we used three databases namely Reuters, DataStream and Bloomberg. Reuters' Global Fund Screener tool allowed me to identify all equity funds whose investment focus is Russian equity. Unfortunately, only funds existing by the moment are presented in the database.

Working with Datastream base we searched for active or "dead" (i.e. inactive) equity unit trusts or investment trusts whose names contain "Rus". Allowed criteria in Bloomberg were fund type (mutual funds), asset class focus (equity), objective (emerging market equity), geographic focus (Russia). Bloomberg results brought no additional value to funds sample since all funds contained in this base were already presented either in Reuters or Datastream sample. Large initial samples shrinked when the requirement for funds to be launched earlier than January 2005 was applied.

Next, we checked for funds to be open-ended equity funds (specifically, closed end, index, venture and hedge funds were excluded), to invest at least 75% of assets in Russia and to be managed from abroad. Open-ended scheme have different legal structures in different countries and registered under different laws (see Tables 2 and 3, Appendix 2). For this purpose we visited the Internet web-sites of funds' management companies and found information either in funds' prospectuses or funds' reports. Proxy indicator of each fund manager's location was the manager's name and the presence of the company in Russia. we looked for information on funds' managers profiles on the asset management companies' sites and information on the companies offices over the world. For all funds included in the final sample either information on the funds' managers or the companies' office location or both was found. For instance, since JP Morgan has presence in Russia and its funds are managed from Moscow office by Russian asset managers, its mutual funds were excluded from the sample.

Interestingly, final samples of funds collected from Reuters and Datastream were different and contained not the same funds. As a result, we merged samples from two bases to form the final sample of international open-ended equity investment funds investing in Russia (see Tables 2 and 3, Appendix 2). The size of the final sample is 52 funds which were in existence as of January 2005 and have at least 12 month data.

The data on funds performance collected from two bases are different in nature and in order to get monthly continuously compounded rate of return on funds some calculations were made.

Reuters. The most appropriate indicator available in Reuters is named fund performance value (PV). It reflects the total return (as if all income is reinvested) and has the following calculation:

$$PV_t = \frac{\frac{P_t*(PD+D)}{PD} - P_{t-1}}{P_t} * 100\%, \quad (24)$$

where P_t = end of month t price (NAV),

P_{t-1} = end of month t-1 price (NAV),

PD = ex-dividend date price,

D = dividend.

Since our interest is monthly continuously compounded rate of return the following formula for its calculation is applied:

$$R_{jt} = \ln\left(1 + \frac{PV_{jt}}{100}\right), \quad (25)$$

where PV_{jt}= fund j's performance value provided by Reuters.

Datastream. As for Datastream the most appropriate indicator of funds performance available is total return index. This one shows a theoretical growth in value of a share holding over a specified period, assuming that dividends are reinvested to purchase additional units of fund at the closing price applicable on the ex-dividend date and calculated as follows:

$$RI_T = RI_{T-1} * \frac{P_T}{P_{T-1}}, \quad (26)$$

except when t = ex-date of the dividend payment D_t then:

$$RI_T = RI_{T-1} * \frac{P_T + D_T}{P_{T-1}}, \quad (27)$$

Where:

P_T = price (NAV) on ex-date,

P_{T-1}= price (NAV) on previous day,

D_T = dividend payment associated with ex-date *t.*

For Datastream funds j fund's monthly continuously compounded rate of return R_{jt} was estimated in the following way:

$$R_{jt} = \ln\left(\frac{RI_{jt}}{RI_{jt-1}}\right), \quad (28)$$

where:

RI_{jt} – return index value for the j'th fund at the end of month t,

We acknowledge that there exists a problem of survivorship bias. As pointed out by Brown et al. (1992), leaving out dead funds leads to an overestimation of average performance. Several studies argue suggest that the influence of survivorship bias on

performance inferences is not significant (Grinblatt and Titman, 1989, Kao et al., 1998, Goetzmann et al., 2000).

To limit a possible survivorship bias we also include funds that were closed down at any point during the sample period. In the Russian funds sample we have all funds, active and dead (as of May 2009) on which data was available. It might occur that some funds which ceased to operate during the full period were not included in the Russian funds sample. Thus, survivorship bias in our estimates could potentially occur.

Our sample of international funds may also suffer from survivorship bias since although Datastream base contains active as well as dead funds, Reuters base provides information only on active at the moment funds. Survivorship problem will bias performance estimates upward. In our research we try make the treatment of dead (inactive) funds as similar as possible for Russian and international funds samples.

Market returns. There are two widely used market indices describing the Russian stock market movement: the RTS and the MICEX indices. The RTS index is more representative and includes 50 stocks that are traded on the RTS board, seems to reflect the sentiment of the whole market more adequately and computed on USD basis. The MICEX index consists of 30 stocks, takes into account the real liquidity of stocks and is computed on RUB basis. Since two indices are highly correlated and the RTS is in USD we utilize it for computing market returns.

The estimated monthly continuously compounded rate of return on the market portfolio R_m is calculated as follows:

$$R_m = \ln\left(\frac{RTSI_t}{RTSI_{t-1}}\right), \quad (29)$$

where $RTSI_t$= level of the RTS index at the end of month t.

Risk-free rate. By definition a risk-free asset has a certain return; it must be some type of fixed-income security with no possibility of default. The risk-free asset should not be exposed to interest-rate (price) and reinvestment risk and has a maturity that matches the length of the investor's holding period (specifically, 1-month is of our interest).

In the research the risk-free rate is proxied by the 1-month LIBOR rate. LIBOR is the average interest rate charged when banks in the London interbank market borrow unsecured funds from each other. LIBOR rates that are fixed for U.S. dollar-denominated deposits, also known as Eurodollars[10], will be appropriate for using it as a proxy for a risk-free rate for international investors. The choice is also supported by the fact that the rate reflects well conditions on risk-free investing, is liquid and has directly 1-month maturity.

[10] Eurodollars are basically U.S. dollars that are deposited in any bank outside the United States, and are therefore not subject to regulation by the U.S. Federal Reserve.

The monthly continuously compounded risk-free rate of return is proxied by:

$$R_f = \ln\left(\left(1 + r_{LIBOR,t}\right)^{1/12}\right), \quad (30)$$

where $r_{LIBOR,t}$= average 1-month LIBOR interest rate in annual terms for the month t[11].

Information variables. As information variables we suggest to use the following 1-month lagged instruments:

- the dividend yield of a market index,
- a measure of the slope of the term structure,
- a measure of the level of short-term interest rates,
- a measure of RUB/USD exchange rate movement,
- a measure of oil prices movement.

The first three variables have been also used in most empirical studies conducted so far for international markets (for instance, see Ferson and Schadt, 1996, Christopherson, Ferson and Glassman, 1998; Cortez and Silva, 2002; Leite, Cortez, 2009). The latter two variables are supposed to bring value to predictability of stock market movement since the Russian economy is highly dependent on the US economy and exchange rate movement reflects currency risk as well as the economy's dependence on oil prices and associated with this commodity risk will be reflected by the factor of oil price movement. The meaningfulness of these factors for stock returns predictability on the Russian market was proved by Goriaev and Zabotkin (2006) as well as by Anatolyev (2005).

The dividend yield *DY* is the dividends payments in the prior 12 months divided by the current price of the RTS index (the RTS index dividend yield is calculated by Reuters and was obtained from it). The slope of the term structure *TS* is measured by the annualized yield spread between 10-years and 3-month US Treasury bonds[12]. The best proxy of term slope for the Russian market will be a spread between long term and short term Russian Eurobonds, however due to insufficient history on such instruments we use the US market data. The term slope measure is supposed to reflect global term slope. As an indicator of the short term rate the Moscow interbank offer rate (MIBOR) is used. A measure of RUB/USD exchange rate movement can be presented like an increment of exchange rate during the month (positive sign assumes that dollar appreciates):

$$EXCH_t = ln\left(\frac{E_{t,rub/usd}}{E_{t-1,rub/usd}}\right), \quad (31)$$

[11] Data is collected from http://www.wsjprimerate.us/libor/libor_rates_history.htm#libor.
[12] Data is collected from http://www.economagic.com/.

Where $E_{t,rub/usd}$ = direct exchange rate for USD on the last day of month t established by the Central Bank of Russia.

In the analogous way the measure of oil price movement is constructed:

$$OIL_t = ln\left(\frac{P_{t,oil}}{P_{t-1,oil}}\right), \quad (32)$$

where P_{oil} is the price of crude Brent oil[13].

Time horizon. All estimates are made on the full period 2005:1 to 2009:4 (52 observations) and two subperiods from 2005:1 to 2007:2 for subperiod 1 (26 observations), from 2007:3 to 2009:4 for subperiod 2 (26 observations). Subperiods are chosen in the above presented way in order to contain sufficient number of observations. Subperiod 1 is characterized by the rocket increase of the stock market: the RTS index rose more than 3 times over the first 26 month of our full period[14]. The remarkable feature of subperiod 2 is that it contains the current crisis times. From 2007:2 to 2009:4 the RTS index falls 50%. The mean monthly log-return of the RTS index is equal to 0.042 for subperiod 1 and -0.031 for subperiod 2. Over subperiod 2 the market shows higher volatility of log-returns: it is about 0.151 relative to 0.074 for subperiod 1[15]. Estimation of funds performance on two subperiods will help to compare the performance of funds during relatively good (subperiod 1) and relatively bad times (subperiod 2) and to make robust conclusion.

[13] Data are available at: http://www.indexmundi.com/commodities/?commodity=crude-oil-brent&months=60.
[14] See dynamics of the RTS index in Figure 1, Appendix 4.
[15] Descriptive statistics for the RTS index can be found in Table 1.

4 EMPIRICAL RESULTS

Table 1 provides return summary statistics. Over the full sample period an average mean return for Russian funds is -0.000292 and for international funds is 0.003281 per month

Table 1. Return Summary Statistics.

		Full period (2005:1-2009:4)		Subperiod 1 (2005:1-2007:2)		Subperiod 2 (2007:2-2009:4)	
		Average	Std Dev	Average	Std Dev	Average	Std Dev
	RUS mean return	-0.000292	0.004973	0.033072	0.005284	-0.033984	0.008840
	RUS std dev	0.112429	0.010893	0.063145	0.008643	0.139357	0.014831
	INT mean return	0.003281	0.004890	0.040733	0.009096	-0.034171	0.009295
	INT std dev	0.122129	0.016925	0.065087	0.009302	0.152003	0.023324
	LIBOR rate return	0.003134		0.003563		0.002705	
	LIBOR std dev	0.001241		0.000782		0.001465	
	RTS return	0.005860		0.042583		-0.030864	
	RTS std dev	0.123434		0.074045		0.150975	
RUS	% of funds with mean > RTS		13.95%		0.00%		34.88%
	% of funds with std dev > RTS		11.63%		9.30%		23.26%
INT	% of funds with mean > RTS		26.92%		26.92%		26.92%
	% of funds with std dev > RTS		51.92%		9.62%		55.77%

Notes: RUS refers to Russian funds. INT refers to international funds. Return statistics are based on monthly data from 2005:1 to 2009:4 (52 observations) for the full period, from 2005:1 to 2007:2 for subperiod 1 (26 observations), from 2007:3 to 2009:4 for subperiod 2 (26 observations) for Russian and international investment funds. All returns are calculated in USD. The columns report the cross sectional average and standard deviation.

while for the RTS index it is 0.005860. The ranking is the same in terms of sample standard deviation. The average standard deviation of returns for Russian and international funds are 0.112492 and 0.122129 whereas the standard deviation for the RTS index return is 0.123434. In both subperiods an average mean return of Russian funds is less than the corresponding value for international funds, the same refers to standard deviation. Interestingly, in subperiod 1 characterized by the rapid growth of Russian stock market average mean returns are less than the RTS index mean return for both Russian and international funds. In subperiod 2 the tendency has reversed: both types of funds show the average mean return slightly higher than the RTS index mean return. Also it can be noted that the percentage of funds that show mean returns higher than the mean return of the RTS index is lower for Russian funds in comparison with international funds for subperiod 1 and higher for subperiod 2. It can be supposed that in relatively bad times Russian funds seem to perform in the way similar to the international funds' one. Preliminary conclusion is that Russian funds provide a lower mean return as well as lower risk as compared to international funds investing in Russian equity.

We start by analyzing overall performance of the samples of funds according to different performance criteria.

Unconditional CAPM model. Results for the CAPM model and Jensen's alpha are presented in Table 2[16].

Table 2. CAPM model.

	Full period (2005:1-2009:4)		Subperiod 1 (2005:1-2007:2)		Subperiod 2 (2007:2-2009:4)	
	RUS	INT	RUS	INT	RUS	INT
Average alpha	-0,557%	-0,239%	0,062%	0,742%	-0,581%	-0,464%
Std dev of alpha	0,480%	0,494%	0,515%	0,850%	0,730%	0,738%
Average beta	0.868555	0.930451	0.740279	0.762367	0.896025	0.960177
Std dev of beta	0.096693	0.144776	0.128870	0.162932	10.56%	15.69%
Average R^2 adj.	0.903355	0.878138	0.747895	0.746211	0.933207	0.902798
% of funds with $\alpha>0$	16.28%	26.92%	55.81%	86.54%	16.28%	30.77%
% of funds that reject H_0: $\alpha=0$ in favour of H_1: $\alpha>0$	0.00%	1.92%	2.33%	5.77%	2.33%	0.00%
% of funds with $\alpha<0$	83.72%	73.08%	44.19%	13.46%	83.72%	69.23%
% of funds that reject H_o: $\alpha=0$ in favour of H_1: $\alpha<0$	39.53%	25.00%	0.00%	0.00%	25.58%	9.62%
Avg RUS alpha - avg INT alpha	-0.319%		-0.68%		-0.12%	
t(avg RUS alpha – avg INT alpha)	-3.17					
Avg RUS beta - avg INT beta	-0.061896		-0.022088		-0.064151	
t(avg RUS alpha – avg INT beta)	-2.40					

Notes: RUS refers to Russian funds. INT refers to international funds. 5% level is used for hypotheses testing. Error terms are adjusted for heteroscedasticity and autocorrelation according to Newey and West (1987).

Over the full period most funds of both types show poor performance. In fact, for both types of funds, the average estimates of alpha are negative being equal to -0.557% for Russian and -0.239% for international funds. The average betas for two types of funds are quite similar: 0.868555 and 0.930451 for Russian and international funds, respectively. Adjusted R^2 is also similar (see Table 2) assuming that both types of funds are diversified in a similar extent.

For 83.72% of Russian and 73.08% of international funds alpha is negative being significantly negative at 5% level for 39.53% of Russian funds and 25% of international funds for the full period estimate. Positive significant at 5% level alpha was shown by none of the Russian funds and by only 1.92% of international funds.

[16] Residuals were tested on heteroscedasticity and autocorrelation by using White's (1980) and the Breusch (1978)-Godfrey(1980) Lagrange-multiplier test, respectively. The tests detected heteroscedasticity and autocorrelation in residuals. In order to solve the problem of loss of efficiency of the least squares estimators and to obtain robust results the Newey-West procedure was used for calculation of covariance estimator that is consistent in the presence of both heteroscedasticity and autocorrelation of unknown form.

The picture slightly changes for subperiod 1: neither of funds in both samples (Russian and international funds) exhibit significant negative alphas. Most of funds have insignificant at 5% level alphas. For subperiod 2 alphas are negative and significant at 5% level for 25.58% of Russian funds and only for 9.62% for international funds. Significant at 5% level positive alpha was demonstrated by 2.33% of Russian funds and none of international funds.

Overall result is that fund managers of Russian as well as international funds in general do not possess superior stock picking abilities The results are consistent with most studies on performance evaluation and come in support of efficient market hypothesis. Of our interest is the following conclusion: surprisingly, Russian funds show poorer performance relative to international funds investing in Russia (based on the difference in average alphas and percentage of funds that reject that reject H_o: $\alpha=0$ in favour of H_1: $\alpha<0$). Thus, in first approximation locals do not perform better than foreigners in the case of mutual funds investing in Russian equity.

Sharpe and Treynor ratios.

Simple indicators of funds performance, namely Sharpe and Treynor ratios, are provided in Table 3. Over the full period both sets of funds show Sharpe and Treynor ratios lower than that for the RTS index. The average Sharpe ratio is -0.030068 for Russian funds, 0.001058 for international funds whereas the RTS index has Sharpe ratio of 0.022082.

Table 3. Sharpe and Treynor ratios.

	Full period (2005:1-2009:4)			Subperiod 1 (2005:1-2007:2)			Subperiod 2 (2007:2-2009:4)		
	RUS	INT	RTS	RUS	INT	RTS	RUS	INT	RTS
Average Sharpe ratio (SR)	-0.030068	0.001058	0.022082	0.470705	0.565748	0.526973	-0.264228	-0.240625	-0.222343
Std dev of SR	0.044605	0.048878		0.080043	0.148719		0.062911	0.046636	
Average Treynor ratio (TR)	-0.003916	-0.000141	0.002726	0.040552	0.050474	0.039019	-0.041166	-0.038412	-0.033568
Std dev of TR	0.005774	0.007503		0.008048	0.029365		0.009733	0.008667	
% of funds with SR > RTS	13.95%	26.92%		18.60%	63.46%		23.26%	34.62%	
% of funds with TR > RTS	16.28%	26.92%		55.81%	86.54%		16.28%	30.77%	
Avg RUS SR - avg INT SR	-0.031126			-0.095043			-0.023603		
t(avg RUS SR - avg INT SR)	-3.21			-3.76			-2.10		
Avg RUS TR - avg INT TR	-0.003775			-0.009922			-0.002754		
t(avg RUS TR - avg INT TR)	-2.70			-2.15			-1.46		

Notes: RUS refers to Russian funds. INT refers to international funds.

The average Treynor ratio is -0.003916 for Russian funds, -0.000141 for international funds whereas the RTS index Sharpe ratio is 0.002726. Thus, for the full period neither

international nor Russian funds were not able on average to bring excess return per unit of risk greater than the market portfolio brings. Only 13.95% of Russian funds and 26.92% of international funds have average Sharpe ratios greater than that of the RTS index. As for Treynor index 16.28% of Russian and 26.92% of international funds show Treynor ratio greater than that of the RTS index. Additionally, the difference between the average Russian funds Sharpe ratio (as well as Treynor ratio) and the average international funds Sharpe ratio (Treynor ratio) is statistically significant at 5% level (t-stat=-3.21 (-2.70 for Treynor ratio)). As it can be seen results for Russian funds is worse than those of international funds investing in Russia.

Relative ranking between Russian and international funds remains unchanged for both subperiods. Russian funds show results worse than those shown by international funds. It refers to the average Sharpe ratio, Treynor ratio, as well as percentage of funds with Sharpe ratio greater than the RTS index Sharpe ratio (see Table 2). The difference between Russian and international funds ratios is significant at 5% level except for Treynor index for subperiod 2.

Unconditional Treynor & Mazuy quadratic model. Main results are presented in Table 4. Taking timing into account in a manner suggested by Treynor and Mazuy remains average alpha negative for Russian funds and makes it positive for international funds (this refers to the whole period and two subperiods). Difference between two groups' average alphas becomes even more significant than in the case of the simple CAPM model. Positive significant alphas were exhibited by 9.30% of Russian and 11.54% of foreign funds investing in Russia. Negative significant alphas were shown by 9.30% of Russian funds and none of international funds.

Regarding timing coefficient τ, over the full period it is negative for an average Russian as well as for an average international fund (the same refers to subperiod 2 and it is positive in subperiod 1). The difference in average τ's between two groups of funds is significant at 5% level for the full period and subperiod 2 and insignificant for subperiod 1. However, the percentage of funds that reject Ho: $\tau=0$ in favour of H_1: $\tau>0$ is greater for Russian funds than for international funds: 4.65% versus 0%, 25.58% versus 5.77%, 13.95% versus 0% (for the full and for both subperiods, respectively). Significant at 5% level negative τ attributes to 55.81% of Russian and 76.92% of international funds. Interestingly, negative timing ceases in subperiod 1: it was shown by 4.65% of Russian and 0% of international funds (managers did not tend to make wrong forecasts during the market boom). In subperiod

2 negative timing comes to a play: 48.84% of Russian and 50% of international funds have significant negative τ.

Based on the unconditional Treynor and Mazuy model we conclude that on average both groups of funds exhibit no superior market timing. Moreover, on average over the full period it is negative. In terms of significant relatively good and significant relatively bad behavior, Russian funds seem to look better than international funds: relatively more of them are good market timers and relatively fewer of them are negative market timers in comparison to international funds.

Table 4. Treynor and Mazuy quadratic model.

	Full period (2005:1-2009:4)		Subperiod 1 (2005:1-2007:2)		Subperiod 2 (2007:2-2009:4)	
	RUS	INT	RUS	INT	RUS	INT
Average alpha	-0,148%	0,520%	-0,247%	0,528%	-0,239%	0,274%
Std dev of alpha	0,508%	0,581%	0,503%	0,925%	0,803%	0,572%
Average beta	0,828901	0,858355	0,712001	0,742776	0,859387	0,880640
Std dev of beta	0,083752	0,143370	0,156126	0,185410	0,095161	0,166637
Average tau	-0,269034	-0,495211	0,616163	0,426886	-0,201653	-0,436242
Std dev of tau	0,313246	0,437263	1,219586	0,913514	0,356372	0,480369
Average R^2 adj.	0,910261	0,894069	0,756685	0,746679	0,940393	0,918117
% of funds with α>0	32,56%	82,69%	32,56%	78,85%	34,88%	73,08%
% of funds that reject Ho: α=0 in favour of H_1: α>0	9,30%	11,54%	0,00%	9,62%	9,30%	1,92%
% of funds with α<0	67,44%	17,31%	67,44%	21,15%	65,12%	26,92%
% of funds that reject Ho: α=0 in favour of H_1: α<0	9,30%	0,00%	6,98%	1,92%	18,60%	0,00%
% of funds with τ>0	23,26%	11,54%	67,44%	69,23%	32,56%	11,54%
% of funds that reject Ho: τ=0 in favour of H_1: τ>0	4,65%	0,00%	25,58%	5,77%	13,95%	0,00%
% of funds with τ<0	76,74%	88,46%	32,56%	30,77%	67,44%	88,46%
% of funds that reject Ho: α=0 in favour of H_1: τ<0	55,81%	76,92%	4,65%	0,00%	48,84%	50,00%
Avg RUS alpha - avg INT alpha	-0,668%		-0,775%		-0,513%	
t(avg RUS alpha - avg INT alpha)	-5,892903		-4,920479		-3,626023	
Avg RUS beta - avg INT beta	-0,029454		-0,030775		-0,021253	
t(avg RUS beta - avg INT beta)	-1,189149		-0,864014		-0,741861	
Avg RUS tau - avg INT tau	0,226177		0,189277		0,234589	
t(avg RUS tau - avg INT tau)	2,841122		0,864084		2,653953	

Notes: RUS refers to Russian funds. INT refers to international funds. 5% level is used for hypotheses testing. Error terms are adjusted for heteroscedasticity and autocorrelation according to Newey and West (1987).

Unconditional Henriksson-Merton model. Accounting for timing in the way suggested by Henriksson and Merton gives following results (see Table 5). Average alpha for

Russian funds is 0.019% while being equal to 0.978% for international funds. The difference in average alphas for two groups of funds is significant at 5% level for the full period and both subperiods. Over the full period 40.38% of international funds show positive significant alphas compared to 9.30% of Russian funds. However this difference in percentage disappears when considering subperiods: numbers became identical. Negative significant alphas are exhibited by higher percentage of Russian funds compared to international funds over the full and both subperiods. Despite no superior stock picking abilities being possessed by managers of both types' funds Russian funds' managers seem to be worse stock pickers in general than their international peers.

Table 5. Henriksson-Merton model.

	Full period (2005:1-2009:4)		Subperiod 1 (2005:1-2007:2)		Subperiod 2 (2007:2-2009:4)	
	RUS	INT	RUS	INT	RUS	INT
Average alpha	0,019%	0,978%	-0,834%	0,112%	0,005%	0,865%
Std dev of alpha	0,664%	0,840%	0,732%	0,872%	1,027%	0,971%
Average $beta_1$	0,785516	0,756832	0,849726	0,839348	0,810858	0,767818
Std dev of $beta_1$	0,115528	0,175407	0,141217	0,141630	0,162502	0,237544
Average gamma	-0,127592	-0,268203	0,308866	0,217243	-0,121221	-0,274163
Std dev of gamma	0,180809	0,222164	0,316618	0,250826	0,232694	0,283926
Average R^2 adj.	0,906750	0,886576	0,760800	0,748744	0,937693	0,911480
% of funds with $\alpha>0$	58,14%	90,38%	11,63%	63,46%	51,16%	86,54%
% of funds that reject Ho: $\alpha=0$ in favour of H_1: $\alpha>0$	9,30%	40,38%	0,00%	0,00%	9,30%	9,30%
% of funds with $\alpha<0$	41,86%	9,62%	88,37%	36,54%	48,84%	13,46%
% of funds that reject Ho: $\alpha=0$ in favour of H_1: $\alpha<0$	9,30%	0,18%	25,58%	3,85%	9,30%	1,92%
% of funds with $\gamma>0$	23,26%	11,54%	81,40%	82,69%	30,23%	13,46%
% of funds that reject Ho: $\gamma=0$ in favour of H_1: $\gamma>0$	2,33%	0,00%	41,86%	5,77%	6,98%	0,00%
% of funds with $\gamma<0$	76,74%	88,46%	18,60%	17,31%	69,77%	86,54%
% of funds that reject Ho: $\gamma=0$ in favour of H_1: $\gamma<0$	34,88%	71,15%	0,00%	0,00%	37,21%	48,08%
Avg RUS alpha - avg INT alpha	-0,960%		-0,946%		-0,860%	
t(avg RUS alpha - avg INT alpha)	-6,079935		-5,653668		-4,186381	
Avg RUS beta - avg INT beta	0,028684		0,010378		0,043040	
t(avg RUS beta - avg INT beta)	0,919588		0,355979		1,008491	
Avg RUS gamma - avg INT gamma	0,140612		0,091622		0,152942	
t(avg RUS gamma - avg INT gamma)	3,335399		1,573786		2,831694	

Notes: RUS refers to Russian funds. INT refers to international funds. 5% level is used for hypotheses testing. Error terms are adjusted for heteroscedasticity and autocorrelation according to Newey and West (1987).

Analysis of the market timing coefficient gamma reveals that both types of funds in general do not exhibit superior market timing abilities (only 2.33% of Russian and none of international funds have positive significant gammas over the full period). However international funds show slightly poorer timing compared to their Russian peers. That is supported by the fact that greater percentage of international funds relative to Russian ones show negative significant gammas over the full period and subperiod 2. Additionally, an interesting thing happens in subperiod 1: 41.86% of Russian funds versus 5.77% of international funds show positive significant market timing coefficients gammas. Also, as in the case of Treynor-Mazuy model, no one fund from the whole sample of funds is a definitely negative market timer for subperiod 1 which assumes that over the period of market rise managers in general do not make definitely wrong market forecasts.

Further analysis of funds performance is continued by application of conditional models to the funds considered.

Conditional Models

We start with the analysis of significance of the lagged information variables. We run both simple and multiple regressions of the market (proxied by the RTS index) excess return on the 1-month lagged information variables (demeaned as required by Ferson and Schadt model). Results are presented in Table 1A, Appendix 4. As it can be seen individual impact of these variables except for OIL is insignificant at 10% level however their regression coefficients become significant at 5% level, except for STR, in the multiple regression. Thus, STR was excluded from the list of information variables. This result allows supposing existence of multicollinearity. Preliminary analysis reveals that market excess return positively depends on the short term rates, dividend yield, change in the oil price and negatively depends on the term slope and change in the RUB/USD exchange rate. Results are to be expected: high short term interest rates are associated with rise of the market. Then, the higher the dividend yield, the higher is the market excess return. Notoriously, oil-dependency of the Russian stock market is revealed: increase in the oil prices positively affects the prices of oil companies' stocks that in turn lead to increase in the market return and then excess return. Negative impact of term slope is also expected: higher difference between long-term and short-term interest rates . Dollar appreciation badly influence the market: excess market return decreases in case of dollar appreciation against the Russian ruble.

Being aware of spurious regression possibility associated with the nature of information variables (this problem of persistent regressors used for stock returns

predictability was arisen by Ferson, Sarkissian and Simin, 2003) we conduct a detailed study of the information variables. As it can be seen from Table 2A (Appendix 4), variables show high correlation with each other. Moreover, each of them exhibits high first order correlation. We tested all series for stationarity by applying the augmented Dickey-Fuller test and come to conclusion that such series as DY and OIL are stationary (at MacKinnon 1% critical level the null hypothesis of a unit root can be rejected) and TS and EXCH are non-stationary (even at 10% critical level the null hypothesis of a unit root cannot be rejected). Following suggestion provided by Ferson, Sarkissian and Simin (2003) TS and EXCH were detrended subtracting off a trailing 12-month moving average of their own past values. Detrended series exhibit stationarity.

The explanatory value of D_TS and D_EXCH (stochastically detrended TS and EXCH, respectively) for next month's market excess return increases for individual regressions. Moreover, all four regressors (D_TS, D_EXCH, DY, OIL) are significant at 5% level in a multiple regression (see Table 1B, Appendix 4).

Conditional CAPM model. Allowing beta to change over time in response to the lagged information variables we get the following results for the CAPM model (see Table 6).

Table 6. Conditional CAPM model.

	Full period (2005:1-2009:4)		Subperiod 1 (2005:1-2007:2)		Subperiod 2 (2007:2-2009:4)	
	RUS	INT	RUS	INT	RUS	INT
Average alpha	-0,423%	0,320%	-0,007%	0,839%	-0,446%	0,150%
Std dev of alpha	0,518%	0,400%	0,517%	0,941%	0,673%	0,461%
Average R^2	0,911536	0,897203	0,751155	0,750665	0,948042	0,927919
Wald	67,44%	63,46%	39,53%	23,08%	81,40%	75,00%
% of funds with $\alpha>0$	23,26%	76,92%	51,16%	76,92%	23,26%	67.31%
% of funds that reject Ho: $\alpha=0$ in favour of H1: $\alpha>0$	2,33%	3,85%	2,33%	13,46%	4,65%	1.92%
% of funds with $\alpha<0$	76,74%	23,08%	48,84%	23,08%	76,74%	32.69%
% of funds that reject Ho: $\alpha=0$ in favour of H1: $\alpha<0$	23,26%	0,00%	4,65%	5,77%	18,60%	1.92%
Avg RUS alpha - avg INT alpha	-0,744%		-0,846%		-1,285%	
t(avg RUS alpha - avg INT alpha)	-7,891522		-5,266928		-7,499755	

Notes: RUS refers to Russian funds. INT refers to international funds. 5% level is used for hypotheses testing. Error terms are adjusted for heteroscedasticity and autocorrelation according to Newey and West (1987). Wald corresponds to a test of no time variation in betas, i.e. a test for H_0: the coefficients on the additional variables, or conditional betas, are jointly equal to zero. Wald reports the ratio of rejected null hypotheses at 5% level.

For Russian funds the average estimate of alpha is negative being equal to -0.423% and 0.320% for international funds the average alpha is slightly positive being equal to 0.320%. The relative ranking of funds by the average alpha remains the same for both subperiods. The difference in average alphas between two groups is significant.

Adjusted R^2 is similarly high (about 90%) for both types of funds over the full period and subperiod 1 assuming that both types of funds are diversified in similar extent. For both groups of funds adjusted R^2 is decreases to about 75% for subperiod 2 estimation, pointing out that funds hold not "the" whole market in their portfolios but only some securities being to the less extent diversified.

The significance of the conditional variables which add explanatory power to the models was testes by the Wald test. Over the full period the hypothesis of equality of all lagged variables coefficients is rejected for 63.44% and 63.46% of Russian and international funds, respectively. This numbers are two times lower for subperiod 1 and to some extent higher for subperiod 2. Perhaps, during the market boom managers pay less attention to public information and thus change the beta of portfolio in response to public information to the less extent compared to the times of bad market.

For 76.74% of Russian and 23.08% of international funds alpha is negative being significantly negative at 5% level for 23.26% of Russian funds and none of international funds for the full period estimate. Positive significant at 5% level alphas was shown by 2.33% of Russian funds and by 3.85% of international funds.

The picture slightly changes for subperiod 1: 4.65% of Russian and 5.77% of international funds exhibit significant negative alphas. Positive significant alpha is possessed by 13.46% of international funds and 2.33% of Russian funds. This leaves most funds having insignificant at 5% level alphas. For subperiod 2 alphas are negative and significant at 5% level for 18.60% of Russian funds and only for 1.92% for international funds. Significant at 5% level positive alpha was demonstrated by 4.65% of Russian funds and 1.92% of international funds. Again, most funds have insignificant at 5% level alphas.

Overall result is that fund managers of Russian as well as international funds in general do not possess superior stock picking abilities The results are in line with the unconditional CAPM model results.

Conditional Treynor and Mazuy quadratic model.

Incorporating beta conditional on the lagged information variables support the results derived from applying unconditional quadratic model. Allowing beta to change and capturing market timing by the quadratic term makes an average alpha to be negative for Russian funds

and positive for international funds as in the unconditional case (this refers to the whole period and two subperiods). Difference between two groups' average alphas is significant at 5% level. Only 6.98% of Russian and 20.93% of international funds investing in Russia exhibit positive significant alphas. Negative significant alphas were shown by 4.65% of Russian funds and 2.33% of international funds. Over subperiod 2 none of Russian and 9.30% of foreign funds has positive significant alphas, and the corresponding figures for subperiod 2 are 6.98% and 4.65%, respectively. Thus, in general, neither Russian nor international funds exhibit superior performance. In relative terms Russian managers have poorer security selection abilities in comparison with international funds' managers.

Table 7. Conditional Treynor and Mazuy quadratic model.

	Full period (2005:1-2009:4)		Subperiod 1 (2005:1-2007:2)		Subperiod 2 (2007:2-2009:4)	
	RUS	INT	RUS	INT	RUS	INT
Average alpha	-0,126%	0,580%	-0,242%	0,390%	-0,305%	0,290%
Std dev of alpha	0,548%	0,591%	0,587%	0,962%	0,762%	0,491%
Average tau_c	-0,260347	-0,622144	-0,422062	1,241598	-0,197976	-1,814506
Std dev of tau_c	0,655315	0,935338	0,699121	1,493381	1,242105	1,667342
Average R^2 adj.	0,916848	0,906735	0,816848	0,756940	0,955252	0,940136
Wald	67,44%	44,23%	37,21%	21,15%	20,93%	50,00%
% of funds with $\alpha>0$	37,21%	80,77%	41,86%	80,77%	20,93%	78,85%
% of funds that reject Ho: $\alpha=0$ in favour of H_1: $\alpha>0$	6,98%	20,93%	0,00%	9,30%	6,98%	4,65%
% of funds with $\alpha<0$	62,79%	19,23%	58,14%	19,23%	79,07%	21,15%
% of funds that reject Ho: $\alpha=0$ in favour of H_1: $\alpha<0$	4,65%	2,33%	11,63%	2,33%	13,95%	0,00%
% of funds with $\tau_c>0$	23,26%	23,08%	30,23%	76,92%	39,53%	11,54%
% of funds that reject Ho: $\tau_c=0$ in favour of H_1: $\tau_c>0$	13,95%	23,26%	9,30%	9,30%	27,91%	13,95%
% of funds with $\tau_c<0$	76,74%	76,92%	69,77%	23,08%	60,47%	88,46%
% of funds that reject Ho: $\alpha=0$ in favour of H_1: $\tau_c<0$	34,88%	25,58%	13,95%	2,33%	34,88%	48,84%
Avg RUS alpha - avg INT alpha	-0,705%		-0,632%		-0,595%	
t(avg RUS alpha - avg INT alpha)	-5,979427		-3,763324		-4,593449	
Avg RUS tau_c - avg INT tau_c	0,361797		-1,663660		1,616530	
t(avg RUS tau_c - avg INT tau_c)	2,138482		-6,717291		5,262052	

Notes: RUS refers to Russian funds. INT refers to international funds. 5% level is used for hypotheses testing. Error terms are adjusted for heteroscedasticity and autocorrelation according to Newey and West (1987). Wald corresponds to a test of no time variation in betas, i.e. a test for H_0: the coefficients on the additional variables, or conditional betas, are jointly equal to zero. Wald reports the ratio of rejected null hypotheses at 5% level.

As regards to timing abilities, coefficient τ_c, over the full period it is negative for an average Russian as well as for an average international fund (the same refers to subperiod 2 and it is positive for international funds in subperiod 1 remaining negative for Russian funds).

The difference in average τ's between two groups of funds is significant at 5% level for the full period and both subperiods. Concerning positive market timing evidence is rather mixed for different estimation periods: 13.95% of Russian versus 23.26% of international funds show significant positive alphas over the full period. For subperiod 1 these figures are 9.30% and 9.30%, respectively, and for subperiod 2: 27.91% and 13.95%. Percentage of funds with significant negative timing coefficients τ also behaves differently for different estimation periods.

The only conclusion that can be made basing on the conditional quadratic model is the following one. On average both groups of funds exhibit no superior market timing. As for the security selection abilities, in general both groups of funds do not possess superior abilities and Russian funds behave worse in this respect compared to international funds.

Conditional Henriksson and Merton model. This model seems to capture changing portfolio beta and to distinct security selection and market timing abilities in the most appropriate way (in comparison to all other above considered methods). The main results for application of this model to the Russian and international Russia dedicated funds are presented in Table 8.

Average alphas become positive for both groups of funds. Thus over the full period average alpha is 0.099% for Russian and 0.381% for international funds. Over the full period only 2.33% of Russian and 9.62% of international funds show positive significant at 5% level alphas. However, there is no funds with significantly negative alphas in both groups of funds. The same pattern can be observed for both subperiods. Hence, generally, neither Russian nor foreign fund managers show superior stock selection ability on the Russian market.

Turning to the market timing abilities we can conclude that in general funds do not have superior market timing abilities if we look at the full period. Over subperiod 1 characterizied by the market boom more than half of all funds in both groups (Russian and international funds) exhibits positive significant $gamma_c$. Over subperiod 2 which captures the current crisis, 6.98% of Russian and 9.62% of international funds show positive timing abilities. With respect to negative timing this one is exhibited by greater percentage of Russian funds than international ones over the full period and over subperiod 2. Over subperiod 1 of market boom there is no one fund that have negative timing coefficient significant at 5% level.

Table 8. Conditional Henriksson and Merton model.

	Full period (2005:1-2009:4)		Subperiod 1 (2005:1-2007:2)		Subperiod 2 (2007:2-2009:4)	
	RUS	INT	RUS	INT	RUS	INT
Average alpha	0,099%	0,381%	-0,587%	-0,527%	0,005%	0,250%
Std dev of alpha	0,435%	0,719%	0,719%	0,775%	1,027%	1,175%
Average $gamma_c$	-0,154475	-0,049761	1,850039	1,323379	-0,121221	0,033459
Std dev of $gamma_c$	0,160345	0,169653	1,208662	1,020604	0,232694	0,457189
Average R^2 adj.	0,917355	0,908454	0,797332	0,808328	0,937693	
% of funds with $\alpha>0$	60,47%	76,92%	11,63%	26,92%	51,16%	71,15%
% of funds that reject Ho: $\alpha=0$ in favour of H_1: $\alpha>0$	2,33%	9,62%	0,00%	0,00%	9,30%	0,00%
% of funds with $\alpha<0$	39,53%	23,08%	88,37%	73,08%	48,84%	28,85%
% of funds that reject Ho: $\alpha=0$ in favour of H_1: $\alpha<0$	0,00%	0,00%	18,60%	19,23%	9,30%	0,00%
% of funds with $\gamma_c>0$	13,95%	36,54%	100,00%	98,08%	30,23%	51,92%
% of funds that reject Ho: $\gamma c=0$ in favour of H_1: $\gamma_c>0$	0	9,62%	55,81%	59,62%	6,98%	9,62%
% of funds with $\gamma_c<0$	86,05%	63,46%	0,00%	1,92%	69,77%	48,08%
% of funds that reject Ho: $\alpha=0$ in favour of H_1: $\gamma_c<0$	25,58%	11,54%	0,00%	0,00%	37,21%	1,92%
Avg RUS alpha - avg INT alpha	-0,282%		-0,060%		-0,245%	
t(avg RUS alpha - avg INT alpha)	-2,250869		-0,388472		-1,068876	
Avg RUS $gamma_c$ - avg INT $gamma_c$	-0,104714		0,526660		-0,154679	
t(avg RUS $gamma_c$ - avg INT $gamma_c$)	-3,069314		2,302935		-2,012228	

Notes: RUS refers to Russian funds. INT refers to international funds. 5% level is used for hypotheses testing. Error terms are adjusted for heteroscedasticity and autocorrelation according to Newey and West (1987).

Having performed different tests on funds performance we summarize the main results received.

Analysis based on traditional measures and Jensen's alpha from the CAPM model in the Russian case reveals that Russian funds show results worse than those shown by international funds. Although being rather rough estimators these measures support the conclusion that in general neither Russian nor international funds show abnormal return relative to the market. This comes in line with previous studies by Cumby and Glen (1990),

Droms and Walkers (1994), Romacho and Cortez (2005), etc. Secondly, in relative terms locals perform worse than foreigners. This finding is in contradiction with findings in previous literature on local versus foreign managers' performance (Shukla and van Inwegen (1995), Engstrom (2003), Romacho and Cortez (1995), etc.). However Jensen's alpha suffers from drawbacks: it is biased downward if managers use market timing strategies (as showed by Ross (1985), Grinblatt and Titmann (1989)), hence the results should be interpreted with caution.

Capturing of market timing was done by two models: quadratic one of Treynor and Mazuy and model with dummy variable of Henriksson and Merton. The second one seems to distinguish between market timing and selectivity abilities better while the first is unable to do it correctly (Lehman and Modest (1987)). Nevertheless, Jensen's alpha adjusted for market timing increases for both types of funds compared to the CAPM model. However in general it is insignificant for both types of funds. In relative terms Russian managers show poorer security selection abilities in comparison with international funds' managers.

Application of Treynor-Mazuy and Henriksson-Merton's models reveals that, in general, Russian as well as international funds do not show superior market timing abilities as well as definitely negative market timing. This finding is in line with previous studies results (see Henriksson (1984), Chang and Lewellen (1984), Armada (1992), Fletcher (1995), Kao et al. (1998) and Rao (2000), Engstrom, (2003)). Moreover, international funds show slightly poorer timing compared to their Russian peers that supports result of Shukla and van Inwegen (1995) for the US local funds and UK funds investing in the US market. That seems rather reasonable since local managers are supposed to be better informed about the local market and able to better predict its movement relative to international funds. However result is opposite to that reported by Romacho and Cortez (2005) who considered Portuguese based local and international funds: according to them local funds show poorer market timing relative to foreign funds.

Incorporating the information variables into the models and allowing beta of portfolio to change in response to those lagged variables leads to an improvement of mutual funds performance estimates. The common result for all three models (CAPM, Treynor-Mazuy and Henriksson-Merton models) is that in general neither Russian nor international funds exhibit superior performance relative to the market. CAPM and Treynor-Mazuy models reveal that Russian funds are relatively bad stock pickers compared to international funds. Henriksson-Merton model's results remove the difference in relative abilities of stock picking between local and foreign funds. Managers of both types exhibit no superior security selection abilities, which allows to conclude that locals perform relatively in the same way as

foreigners. This result contradicts to previous studies concluding that local managers perform better than foreigners. As for market timing both Russian and international funds do not exhibit superior market timing abilities and perform in a similar way.

Some interesting notes can be pointed out regarding estimations over different subperiods. During market boom both Russian and international fund managers improve their timing abilities and in general do not exhibit negative timing as compared to the full period and the subperiod incorporating the current crisis. Additionally, their diversification level decreases in the similar extent for Russian and international funds during good times when funds concentrate on some stocks.

Basing on the traditional unconditional models' estimations we make the conclusion that both international as well as Russian funds do not outperform the market, which makes passive strategies a rather reasonable way of investing. This is in line with efficient market hypothesis saying that it is not possible to get superior excess returns on the market by using information that the market already knows.

Comparing funds performance in terms of stock selection and market timing abilities it can be said that neither Russian nor international funds exhibit superior stock picking as well as market timing abilities. However, basing on the unconditional models' results we find out that Russian funds are poorer stock pickers and international funds are poorer market timers. For the latter the explanation is in line with informational advantage that Russian managers have relative to the international funds managers. The second finding seems on the first sight to be rather counterintuitive. How can foreigners be able better select stock on our market? However, since we deal with such an emerging country as Russia, several arguments can be put forward for explanation. First of all, it is a well-known fact that international mutual funds are a large player on the Russian stock market and their behavior influence the market. Creating supply and demand for stocks funds can determine the price of stocks. For example, creating demand on some stocks a fund can increase its price that would positively influence the return exhibited by the fund. Secondly, being traded on the international markets in the form of ADRs/GDRs our stocks become dependent on the behavior of receipts' prices which are in turn determined by international mutual funds. The other argument is that Russian companies are priced relative to their foreign analogs. In this case foreigners being experts in their countries and their own local markets (mainly it refers to US market) are able to assess Russian stocks in appropriate way basing on the public widely available information.

Nevertheless we believe that Henriksson-Merton model put by Ferson and Schadt into the conditional set seems to produce more robust results than the other models. First, it distinguishes well between market timing and stock selection abilities. Second, by allowing

beta to change in response to public information it supposes a manager to have positive market timing only if he possesses superior privately owned information regarding market movement. The conclusion of no superior stock picking and no market timing abilities of Russian and international funds and their relatively similar performance seems to be most robust. Thus neither Russian nor international funds have informational advantages regarding Russian stocks and the whole market when the lagged public information is taken into account.

Conclusions were based on the models testing backed by "other things being equal" assumption. However, Russian and international funds can differ in the strategies they use (contrarians and momentums), the stocks they choose (large or small-cap stocks), etc. At the same time funds face institutional constraints: for example, Russian funds are prohibited to have more than 20% of securities of one emitter. Secondly, instruments the funds use are different. While international funds may prefer to trade ADRs and GDRs compared to stocks Russian funds deal with stocks themselves. Other differences that are not captured by the models used in the research could influence performance of Russian and international funds.

5 CONCLUSION

The goal of the thesis was to compare performance of Russian and international funds that invest in Russian equity. A unique dataset of international funds with investment focus on Russian equity and a dataset of Russian equity open-ended funds were collected. Comparison of funds performance was done by applying different methodologies aimed at funds performance evaluation and trying to distinguish between stock picking and market timing abilities. The answer to the question in the thesis heading "Do locals perform better than foreigners: evidence from mutual funds investing in Russia" appears to be no, given the funds considered and the sample period from January 2005 till April 2009.

Generally, both Russian and international funds are not able to outperform the market which is in line with effective market hypothesis. The relative comparison of funds from two groups revealed that international mutual funds have significantly higher Sharpe ratios, Treynor ratios and higher Jensen's alphas than Russian funds. Unconditional models of Treynor and Mazuy (1966) and Henriksson and Merton (1980) reveal that international funds' managers are relatively good stock pickers compared to Russian funds' managers. This result contradicts previous literature (Shukla and van Inwegen, 1995) suggesting that locals have informational advantage over foreigners. Our explanation of this fact is that here we deal with an emerging market that is dependent on the developed countries, which stock market is influenced by international funds behavior. International funds possibly determine the prices for stocks on the market and thus by their own behavior effect the return they exhibit.

However, international funds exhibit relatively bad market timing abilities compared to Russian funds which is in line with the finding of Shukla and van Inwegen (1995) and the argument of information advantage of Russian managers relative to international ones.

Using conditional models and allowing beta to change in response to lagged public information variables brings value to estimates. In the Russian case such information variables as the dividend yield, the term slope measure, the measure of oil price change and the measure of exchange rate change show explanation power in predicting excess return and were utilized as informational variables. The conditional CAPM model and Treynor and Mazuy models support the result that managers of Russian funds are relatively poor stock pickers than international fund managers. Application of the model of Henriksson and Merton (1981) in a conditional set suggested by Ferson and Schadt (1996) removes differences between Russian and international funds with respect to market timing and stock picking. Russian and international funds seem to perform similarly (this finding is in line with Otten and Bams, (2009)) and exhibit no superior market timing and no superior stock picking abilities. We suppose this finding to be most robust since the last model seems to better

distinguish between market timing and stock picking and capture the influence of only superior privately owned information instead of publicly known information on the ability of a manager to forecast the market (to have positive market timing skills).

Further research might be done in order to determine whether locals generally outperform foreigners. More sophisticated techniques of performance evaluation and distinguishing of stock picking and market timing abilities can be applied. Longer time period for estimation will be of worth. Carhart's four factor model as well as other multifactor models can be utilized. The accuracy of managers' performance measurement can be increased if returns gross of fund expenses are used. This will give the returns that managers earn on the market. Another interesting field of research is examination of portfolio holdings in order to find out what type of stocks are held by Russian and international funds and possibility of these findings to explain the results received in the paper.

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APPENDICES

Appendix 1

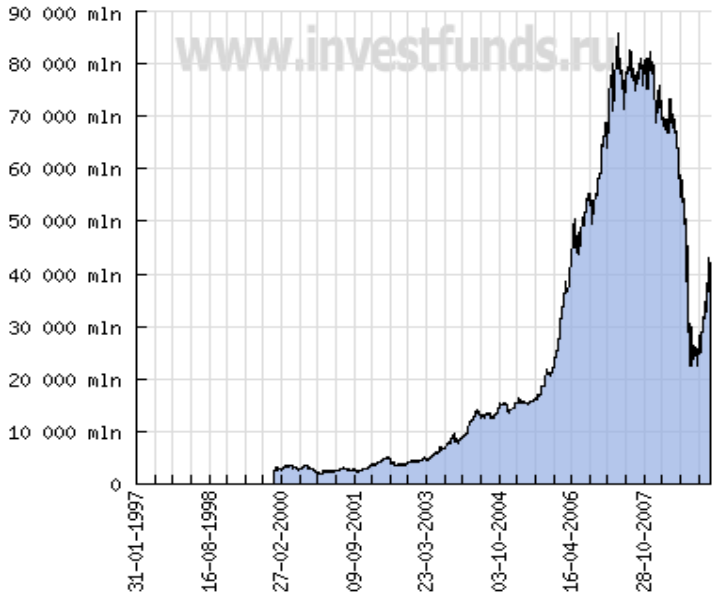

Figure 1. Net asset value of Russian open ended equity funds, rubles.
Source: http://pif.investfunds.ru/analitics/statistic/market_profile/

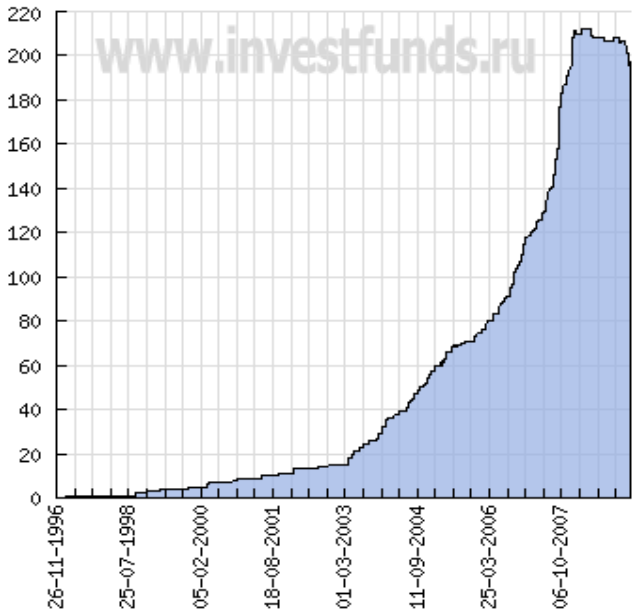

Figure 2. Number of open ended equity funds in Russia.
Source: http://pif.investfunds.ru/analitics/statistic/market_profile/

Appendix 2

Table 1. Russian actively managed equity investment funds existed as of January 2005.

No.	Fund's name	Asset management company	Status
1	Monomakh-Perspektiva	Monomah	Active
2	Stremitel'nyi	Adekta	Active
3	AVK - Fond privilegirovannyh akcii	AVK Dvorcovaya ploschad'	Dead
4	AVK - Fond svyazi i telekomunikacii	AVK Dvorcovaya ploschad'	Active
5	Pallada – akcii	Pallada Asset Management	Active
6	Troika Dialog - Dobrynya Nikitich	Troika Dialog	Active
7	Bazovyi	Capital Asset Management	Dead
8	BKS - Fond Golubyh Fishek	Brokerkreditservis	Active
9	AVK - Fond TEK	AVK Dvorcovaya ploschad'	Active
10	Stoik	BFA	Active
11	Ermak – fond kratkosrochnyh investicii	Ermak	Active
12	Ingosstrakh akcii	Ingosstrakh - Investicii	Active
13	Aton - Fond akcii	Aton-management	Active
14	Solid-Invest	SOLID Management	Active
15	Petr Stolypin	OFG INVEST (Deutsche UFG Capital Management)	Active
16	Kapital' – Akcii	Kapital' Upravlenie aktivami	Active
17	Al'fa-Kapital Akcii	Al'fa Kapital	Active
18	TRINFIKO Fond rosta	TRINFIKO	Active
19	Tol'yatti-Invest Akcii	Invest-menedjment	Active
20	Region Fond Akcii	Region Asset Management	Active
21	OLMA - fond akcii	OLMA-FINANS	Active
22	ZERICH Fond Akcii	Zerich	Active
23	Kapital' – Perspektivnye vlojeniya	Kapital' Upravlenie aktivami	Active
24	Raiffaizen - Akcii	Raiffaizen Kapital	Active
25	Gazovaya promyshlennost' – Akcii	Lider	Active
26	Dolgosrochnye vzaimnye investicii	VTB Upravlenie aktivami	Active
27	Rikom – akcii	Rikom-Trast	Active
28	Metropol' Zolotoe Runo	Metropol'	Active
29	Stremitel'nyi	Adekta	Active
30	GLOBEKS – Fond akcii	Bazis-Invest	Active
31	AK BARS - Akcii	AK BARS KAPITAL	Active
32	RUSS-INVEST paevoi fond akcii	Russ-Invest	Active
33	AGANA - Fond regional'nyh akcii	AGANA	Active
34	Petr Bagration	Parma Menedjment	Active
35	Fond Akcii	PIOGLOBAL Asset Management	Active
36	AGANA – Ekstrim	AGANA	Active
37	KIT Fortis - Fond akcii	KIT Fortis Investments	Active
38	DOHOD' - Fond akcii	DOHOD'	Active
39	Intrast Fond Akcii	Intrast	Active
40	Aliance Rosno - Akcii	Aliance ROSNO Upravlenie Aktivami	Active
41	Profit-Akcii	Aliance ROSNO Upravlenie Aktivami	Active
42	InvestKapital – fond akcii	Investicionnyi Kapital	Active
43	OTKRYTIE-Akcii	OTKRYTIE	Active

Sources: www.pif.investfunds.ru, www.nlu.ru. Status is as of 15 June 2009.

Table 2. Reuters' sample of active international open-ended equity funds with focus on Russian equity actively managed form abroad and launched before January 2005.

No.	Fund's name	Domicile	Launched	Dividends	Legal structure	Fund's currency
1	Alfred Berg Rusland	Denmark	12.04.1997	paid	InvesteringForening	Danish Krone
2	Alfred Berg Ryssland	Sweden	04.22.1998	paid	Vardepappersfond	Swedish Krona
3	Baring Russia C	Luxembourg	03.24.1997	retained	LU SICAV Part 1	US Dollar
4	Danske Invest Russia Kasvu	Finland	02.05.2004	retained	FI - Sijoitusrahasto	Euro
5	Danske Invest Russia Tuotto	Finland	02.05.2004	paid	FI - Sijoitusrahasto	Euro
6	DWS Russia	Luxembourg	04.22.2002	retained	LU FSP Part 1	Euro
7	East Capital Bering Russia Ser1 (Master Ser 2004)	Cayman islands	2004	retained	Open ended investment fund	US Dollar
8	East Capital Ryssland	Sweden	05.18.1998	retained	Vardepappersfond	Swedish Krona
9	Evli Greater Russia A	Finland	09.30.2004	paid	FI - Sijoitusrahasto	Euro
10	Evli Greater Russia B	Finland	09.30.2005	retained	FI - Sijoitusrahasto	Euro
11	FIM Russia	Finland	03.16.1998	retained	FI - Sijoitusrahasto	Finnish Marka
12	Global Market Opportunities Fund Limited	British Virgin Islands	01.01.2002	retained	Open ended investment fund	US Dollar
13	Hansa Russian Equity EUR	Estonia	10.07.2004	retained	Open ended investment fund	Euro
14	HQ Rysslandfond	Sweden	10.27.1997	paid	SE - Vardepappersfond	Swedish Krona
15	Magna Russia A EUR	Dublin	03.31.2003	retained	ICVC	Euro
16	Magna Russia C EUR	Dublin	03.31.2003	retained	ICVC	Euro
17	MC Russian Market Fund A share	Luxembourg	06.10.1996	retained	LU SICAV Part 2	US Dollar
18	MC Russian Market Fund B share	Luxembourg	12.31.2004	retained	LU SICAV Part 2	US Dollar
19	Meitav (L) Russia (4D)	Israel	12.31.2001	retained	IL - Joint investment Trust	Israeli Shekel
20	Neptune Russia & Greater Russia A Acc	UK	12.31.2004	retained	OEIC	UK Pound Sterling
21	Neptune Russia & Greater Russia B Acc	UK	12.31.2004	retained	OEIC	UK Pound Sterling
22	OP-Venaja A	Finland	02.16.2004	retained	FI - Sijoitusrahasto	Euro
23	OP-Venaja B	Finland	02.16.2005	paid	FI - Sijoitusrahasto	Euro
24	Pioneer Funds Austria - Russia Stock T	Austria	11.18.2002	retained	AT - Publikumfonds	Euro
25	Pioneer Funds Austria - Russia Stock VA	Austria	11.18.2003	retained	AT - Publikumfonds	Euro
26	Pioneer Funds Austria - Russia Stock VI	Austria	07.28.2004	retained	AT - Publikumfonds	Euro
27	Russian Investment Company	Luxembourg	06.27.1996	retained	LU SICAV Part 2	US Dollar
28	Russian Prosperity A	Cayman islands	09.19.1996	retained	Open ended investment scheme	US Dollar
29	Russian Prosperity B	Cayman islands	09.19.1996	retained	Open ended investment scheme	US Dollar
30	Russian Prosperity C	Cayman islands	10.30.2003	retained	Open ended investment scheme	US Dollar
31	Seligson & Co Russian Prosperity Fund Euro A	Finland	03.09.2000	retained	FI - Sijoitusrahasto	Euro
32	Swedbank Robur Rysslandsfond	Sweden	03.23.1998	paid	SE - Vardepappersfond	Swedish Krona
33	UBP Multifunds II - Russian Equity A	Luxembourg	03.28.2002	retained	LU SICAV Part 2	US Dollar
34	UBP Multifunds II - Russian Equity I	Luxembourg	10.21.2004	retained	LU SICAV Part 2	US Dollar
35	Swedbank Russian Equity EEK	Estonia	09.26.1997	retained	Open ended investment fund	Estonian Kroon

Source: Reuters and web-sites of asset management companies. Status is as of 15 June 2009. Domicile denotes country in which the fund is legally registered.

Table 3. Datastream's sample of international open-ended equity funds with focus on Russian equity managed form abroad and launched before January 2005 (only funds not included in Reuters sample are presented).

No.	Expanded Name	Domicile	Launched	Dividends	Legal structure	Fund's currency	Status
1	ABN Amro Funds Lux Russia Equity A EUR	United Kingdom	19.11.2004	retained	LU SICAV Part 2	Euro	Active
2	Capital Invest Die Kapitalanlagegesellschaft Der Bank Austria Creditanstalt GRU Russia Stock T (now Pioneer Funds Austria - Russia Stock T)	Austria	18.11.2002	paid	AT - Publikumfonds	Euro	Active
3	Capital Invest Die Kapitalanlagegesellschaft Der Bank Austria Creditanstalt GRU Russia Stock V (now Pioneer Funds Austria - Russia Stock V)	Austria	18.11.2002	retained	AT - Publikumfonds	Euro	Active
4	Capital Invest Russia Stock VT	Austria	28.07.2004	retained	AT - Publikumfonds	Euro	Active
5	Charlemagne Magna Russia A ER	Cayman Islands	10.04.2003	retained	Open ended investment fund	Euro	Active
6	Charlemagne Magna Russia C ER	Cayman Islands	10.04.2003	retained	Open ended investment fund	Euro	Active
7	Clariden LEU GUE Russia Equity Fund B	United Kingdom	30.09.1994	retained	OEIC	United States Dollar	Active
8	East Capital Russia ER	International	17.09.2003	retained		Euro	Active
9	East Capital Russia SEK	Sweden	31.01.2003	retained	SE - Vardepappersfond	Swedish Krona	Active
10	East Capital Russian Blue Chip SEK Dead	Sweden	31.01.2003	retained	SE - Vardepappersfond	Swedish Krona	Dead
11	East Capital Russian EUR Fund Capital	Sweden	25.05.2004	retained	SE - Vardepappersfond	Swedish Krona	Active
12	Foreign and Colonial Emerging Russia	Luxembourg	9.08.2000	retained	LU SICAV Part 2	United States Dollar	Active
13	ING Russia Fund Class A	United States	9.12.1996	paid	Open ended mutual fund	United States Dollar	Active
14	Kazimir Partners United Kingdom LTD Russian Growth	United Kingdom	21.02.2000	retained	OEIC	United States Dollar	Active
15	New Millennium Q7 Russian Focus Dollar	Luxembourg	8.01.2004	retained	LU SICAV Part 2	United States Dollar	Active
16	Russian Federated Federation 1 Mercantile A	United Kingdom	14.06.2002	retained	OEIC	United States Dollar	Active
17	Willerequity Russia and Eastern Europe Dollar	Luxembourg	8.01.2004	paid	LU SICAV Part 2	United States Dollar	Active

Source: Datastream and web-sites of asset management companies. Domicile denotes country in which the fund is legally registered.

Appendix 3

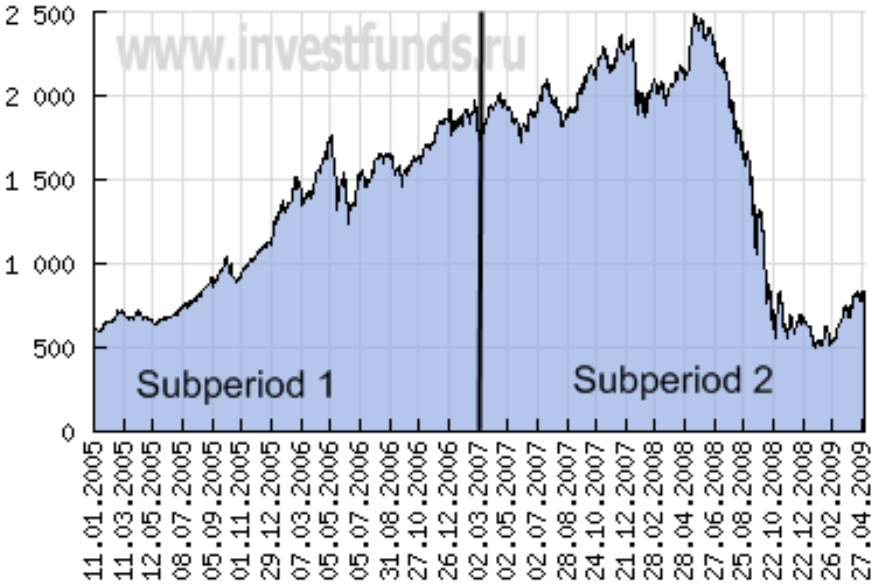

Figure1. RTS index dynamics during the full period (2005:01-2009:04) and 2 subperiods.
Source: www.investfunds.ru

Appendix 4

Information variables.

Table 1A. Regressions of the RTS index excess return on the lagged information variables.
Individual:

	STR	TS	DY	OIL	EXCH
coef	0.100711	-2.980383	0.022716	0.403281	-1.031550
PV(t-stat)	0.8477	0.2604	0.9910	0.0238	0.1919
R2 adj.	0.001208	0.068640	0.000005	0.120944	0.064082

Multiple:

	STR	TS	DY	OIL	EXCH	R^2 adj.
coef	0.228215	-5.175006	6.567614	0.411140	-1.679946	0.294464
PV(t-stat)	0.6789	0.0492	0.0381	0.0058	0.0002	
coef		-5.201833	7.286233	0.419398	-1.652240	0.264385
PV(t-stat)		0.0482	0.0044	0.0054	0.0002	

Notes: STR – short term rate, TS – term slope measure, DY-dividend yield, OIL – measure of oil price movement, EXCH – measure of RUB/USD exchange rate movement (all regressor variables are demeaned and lagged 1 month). Newey-West procedure of adjustment for autocorrelation and heteroscedasticity was applied.

Table 1B. Regressions of the RTS index excess return on the lagged information variables (with stochastic detrending).
Individual:

	D_TS	D_EXCH
coef	-5.095761	-1.465715
PV(t-stat)	0.0703	0.0888
R2 adj.	0.112667	0.103079

Multiple:

	D_TS	D_EXCH	DY	OIL	R^2 adj.
coef	-3.828611	-1.435918	3.040841	0.351735	0.264384
PV(t-stat)	0.0693	0.0007	0.0248	0.0303	

Notes: TS – term slope measure, DY-dividend yield, OIL – measure of oil price movement, EXCH – measure of RUB/USD exchange rate movement (all variables are demeaned and lagged 1 month). Newey-West procedure of adjustment for autocorrelation and heteroscedasticity was applied.

Table 2A. Descriptive statistics and autocorrelations for the information variables (without stochastic detrending)

	TS	DY	OIL	EXCH
Mean	-1.50E-06	-0.001068	5.07E-18	-5.60E-18
Median	-0.002560	-0.006062	0.023402	-0.004397
Maximum	0.023592	0.038839	0.151147	0.162391
Minimum	-0.015010	-0.010264	-0.315078	-0.052600
Std. Dev.	0.010843	0.012056	0.106358	0.030267
Skewness	0.399666	2.009675	-1.224741	3.224365
Kurtosis	1.932448	6.142100	4.249077	17.49099
ρ1	0.894	0.781	0.434	0.481
ρ6	0.438	0.136	-0.067	0.018
ρ12	0.096	0.081	0.103	0.031

Notes: TS – term slope measure, DY-dividend yield, OIL – measure of oil price movement, EXCH – measure of RUB/USD exchange rate movement. All variables are demeaned.

Table 2B. Correlation matrix for the information variables (without stochastic detrending)

	TS	DY	OIL	EXCH
TS	1.000000	0.646013	-0.289163	0.395228
DY	0.646013	1.000000	-0.413646	0.653572
OIL	-0.289163	-0.413646	1.000000	-0.366209
EXCH	0.395228	0.653572	-0.366209	1.000000

Notes: : TS – term slope measure, DY-dividend yield, OIL – measure of oil price movement, EXCH – measure of RUB/USD exchange rate movement. All variables are demeaned.

Table 3A. Descriptive statistics and autocorrelations for the information variables (with stochastic detrending)

	D_TS	D_EXCH
Mean	-0.000273	0.005319
Median	-0.002929	0.000639
Maximum	0.017992	0.150968
Minimum	-0.012150	-0.081763
Std. Dev.	0.008729	0.029230
Skewness	0.435450	2.139330
Kurtosis	1.944790	14.47586
ρ1	0.157	0.295
ρ6	0.009	-0.006
ρ12	0.005	0.008

Notes: D_TS – detrended term slope measure, D_EXCH – detrended measure of RUB/USD exchange rate movement. All variables are initially demeaned.

Table 3B. Correlation matrix for the information variables (with stochastic detrending)

	D_TS	DY	OIL	D_EXCH
D_TS	1.000000	0.039952	-0.174665	0.142745
DY	0.039952	1.000000	-0.413646	0.466426
OIL	-0.174665	-0.413646	1.000000	-0.352842
D_EXCH	0.142745	0.466426	-0.352842	1.000000

Notes: D_TS – detrended term slope measure, DY-dividend yield, OIL – measure of oil price movement, D_EXCH – detrended measure of RUB/USD exchange rate movement. All variables are initially demeaned.