THE PERFORMANCE OF SLOVENIAN MUTUAL FUNDS[1]

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I. Introduction

In this paper we evaluate and rank the performance of Slovenian mutual funds. The Slovenian market might be interesting as an example of a successful emerging market in Central Europe. In 1999, *The Wall Street Journal Europe* ranked the Slovenian mutual fund Galileo (size ≈ $120 million) first among open-end funds in the region. Another feature of the Slovenian capital market is its high transparency, with all market-related data available publicly. The assets of Slovenian mutual funds are composed of investments in transferable securities such as equity shares, bonds, central bank bills, bank deposits, and other nationally registered investments.

The question of how to evaluate the performance of a fund is far from academic. Just about a decade ago, investors were almost exclusively interested in funds having large annual returns or, in other words, funds capable of outperforming the market. An example of a star fund is the Fidelity Magellan mutual fund, under the guidance of Peter Lynch, which outperformed the S&P 500 index in eleven of thirteen years from 1977 to 1989 (see Marcus, 1990). Meanwhile many funds with outstanding profits during their lives have collapsed, and investors are more and more interested in the other dimension of fund performance, risk.

There were three typical periods: 1965–68, 1977–80, and 1991–93. The first period included the "go-go" era of investing, when extremely risky small stocks provided extraordinary returns, and the mutual fund industry responded by creating large numbers of highly aggressive funds. The conservative character of the industry changed

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during this period; funds accepted uncharacteristically high risks, and the S&P 500 Index's more modest short-term rewards made it look inadequate. The perception grew that mutual fund managers could easily outpace the market. However, when the go-go bubble burst in 1968, these newly formed funds collapsed, the returns on the average fund slumped, and the S&P 500 Index reclaimed its wide margin of superiority from 1969 through 1976 (Bogle 2000). In the other two periods many mutual funds did not recognize different growth rates of small, mid, and large caps.

This paper is organized as follows. First, we briefly explain the data. Then we introduce the performance measures used to evaluate funds: the Sharpe ratio (1994), the Treynor ratio (1966), Jensen's Alpha (1968), the Treynor appraisal ratio, and the Treynor-Mazuy timing measure (1966). Finally, we calculate the performance measures of Slovenian mutual funds and rank them according to results.

II. The data

The data consist of weekly returns calculated as the difference in logarithm of price in the period 1 January 1997 to 31 December 2003. We analyze only those funds which are older than three years. Some of them, such as Pika, Polzek, and Piramida (55%) are predominantly comprised of bonds, while Rastko (80%), Zajcek, Alpha, Galileo (65%), Hrast (55%), and Vipek are composed predominantly of stocks. Although most funds are comprised of a balanced combination of stocks and bonds, as a benchmark we use the Ljubljana Stock Exchange - SBI20 index, which is a market capitalization weighted average of the fifteen largest companies. In fig. 1 we show the annual return for some mutual funds. The average three-month Slovene Treasury Bill rate was nine percent for the period 1 July 2000–31 December 2003.

Among funds we highlight, the Galileo mutual fund was the most profitable investment fund on the basis of annual return, according to *The Wall Street Journal Europe*, for the period 13 May 2002–13 May 2003. The mutual fund Rastko, managed by the same company (KD Investments, which holds more than sixty percent of the mutual fund market in Slovenia), performed similarly.

Fig. 1. Annual growth rates for different mutual funds in Slovenia (1997–2002)

Fund/Year	1997	1998	1999	2000	2001	2002
Alpha	0.235	0.204	0.233	0.237	0.244	0.531
Pika	0.164	0.125	0.175	0.097	0.203	0.243
Galileo	0.285	0.315	0.205	-0.001	0.268	0.599
Rastko	0.282	0.276	0.331	-0.023	0.209	0.611
Piramida	0.141	0.142	0.142	0.101	0.141	0.289
Zajcek	0.261	0.188	0.160	0.018	0.169	0.537

III. Risk statistics

Funds usually try to attract potential investors by referring to past performance. Although past performance does not guarantee or even directly relate to future performance, it usually serves as an initial step in the process of making an investment decision. The following risk/return measures are better called ex-post measures because they are defined as historical averages, rather than expectations of future performance.

Several statistical measures are used to assess risk. For evaluations of risk of mutual funds the most commonly used are R^2 with the market portfolio, standard deviation of returns, and Sharpe, Treynor, and Jensen measures.

R^2 with market portfolio roughly indicates the percentage of the portfolio returns that might be explained by market returns. The higher R^2, the stronger the correlation between a fund's return and the market return. The regression slope between the fund and the market is defined by coefficient through the well-known relationship of the capital asset pricing model (CAPM):

$$R_t = R_f + \alpha + \beta(R_{mt} - R_f) + \varepsilon_t$$

(1)

where R_m is market return, R_f is risk-free return, and R is the fund return. The higher the beta value, the higher the correlation between the returns on the market portfolio and the fund. For example, for a risk-free investment, beta is zero.

Standard deviation measures fluctuations of returns around their mean value. The standard deviation of a fund represents the total risk, which can be separated into systematic (market) risk and unsystematic risk through the relation $\sigma^2 = \beta^2 \sigma_M^2 + \sigma_e^2$. We see how market risk, $\beta^2 \sigma_M^2$, is directly related to the beta coefficient in eq. 1. Unsystematic risk, σ_e^2, can be reduced or even eliminated through proper diversification of a fund.

Over twenty-five years ago, Sharpe (1966) introduced a measure for the performance of mutual funds and proposed the term "reward-to-variability ratio" to describe it (the measure is also described in Sharpe, 1975). While the measure has gained considerable popularity, the name has not. Other authors have termed the original version the Sharpe Index (Radcliff 1990, Haugen 1993), the Sharpe measure (Bodie, Kane, and Marcus 1993; Elton and Gruber 1991; and Reilly 1989), or the Sharpe ratio (Morningstar 1993). Generalized versions have also appeared under various names (see, for example, Barra 1992 and Capaul, Rowley, and Sharpe 1993).The calculation of the original Sharpe ratio is straightforward. First we define the "excess return" as the return of risky investment in excess of the return on a risk-free investment. The annualized Sharpe ratio is calculated by dividing the annualized excess return by the standard deviation of the return:

$$S_h = \frac{\overline{R} - R_f}{\sigma}.$$

(2)

Note that the Sharpe ratio, as a measure of risk, uses the total risk or standard deviation of returns. The advantage of using the Sharpe ratio for evaluating portfolios is that it does not depend on the choice of a benchmark (market index).

The Treynor ratio (1966) is another popular indicator of fund performance. It is defined through the relation:

$$T_h = \frac{\overline{R} - R_f}{\beta}$$

(3)

The Sharpe and Treynor measures are similar in a way, since they both divide the risk premium by a numerical risk measure. The total risk is appropriate when we are evaluating the risk return relationship for not well-diversified portfolios. On the other hand, the systematic risk is the relevant measure of risk when we are evaluating fully diversified portfolios. For a well-diversified portfolio, the total risk is equal to systematic risk. Rankings based on total risk (Sharpe measure) and systematic risk (Treynor measure) should be identical for a well-diversified portfolio, as the total risk is reduced to systematic risk. Therefore, a poorly diversified fund that ranks higher on the Treynor measure, compared with another fund that is highly diversified, will rank lower on the Sharpe measure.

The second parameter of the CAPM model, Jensen's α, indicates whether the portfolio manager is superior or inferior in stock selection compared to the market. This measure indicates the difference between a portfolio's actual and expected return given its level of systematic risk. Annualized Jensen's α is the maximum amount of money the investor should be willing to pay a fund manager per year. An inferior manager has a Jensen's α that is significantly negative, while a superior manager obtains a positive value of α.

According to Jensen (1968), equilibrium average return on a portfolio would be a benchmark. Equilibrium average return is the return of the portfolio by the market with respect to systematic risk (volatility) of the portfolio. This is a return the portfolio should earn with the given systematic risk. The difference between the equilibrium average return and the average return of the portfolio indicates superior performance of the fund. This is called alpha (α). The appraisal ratio adjusts Jensen's α for unsystematic risk σ_e^2 through the equation:

$$AR_h = \frac{\alpha}{\sigma_e}$$

(4)

The smaller the unsystematic risk, the better the results the fund has established as measured by the appraisal ratio.

The Treynor-Mazuy timing measurement shows a manager's ability to shift funds between a riskier but more profitable market portfolio and risk-free assets such as treasury bills. It is defined by

including the squared market risk premium in the CAPM model of eq. 1. If the coefficient of that new term is positive, then the manager shows timing ability:

$$R_t = R_f + \alpha + \beta_1(R_{mt} - R_f) + \beta_2(R_{mt} - R_f)^2 + \varepsilon_t$$

(5)

IV. Results

Figure 2 contains the data on: size of funds (in millions of dollars), average annualized return (μ), excess return (D), and standard deviation (σ_D). We show annualized results calculated from weekly data (multiplying the average weekly return by 52 and the standard deviation of weekly returns by the square root of 52).

Fig. 2. Slovenian mutual funds ranked by the value of Sharpe ratio

7/00-12/03	Fund size* mil. $	Average annualized return (μ)	Excess return (D)	Standard deviation (σ_D)	Sharp ratio (S_h)
Alpha	40	0.27	0.18	0.08	2.19
Galileo	120	0.27	0.19	0.11	1.67
Zajcek	8.3	0.24	0.15	0.09	1.62
Piramida	2.8	0.18	0.09	0.06	1.58
Pika	2.6	0.17	0.08	0.05	1.58
Hrast	5.5	0.24	0.15	0.10	1.56
Rastko	43	0.25	0.16	0.11	1.47
Vipek	3.9	0.22	0.14	0.09	1.47
Polzek	4.7	0.10	0.11	0.08	1.43

Note: * value in December 2003

Funds are ranked according to the Sharpe rule, which states that in assessing between two funds we have to choose the fund with the higher Sharpe ratio. This ranking is biased towards funds containing a large share of low risk investments (bonds). An investor with a different risk preference (smaller risk aversion) might prefer a different ranking. For

example, Galileo, one of the most profitable mutual funds in the world, is not ranked first by the Sharpe rule.

The Sharpe ratio for mutual funds is typically between 0.5 and 3. A rule of a thumb is that if the annualized Sharpe ratio is over 1.0, the fund had a "pretty good" year. Outstanding funds have a Sharpe ratio over 2.0. From this point of view, most Slovenian mutual funds might be characterized as pretty good. The bond component of a portfolio significantly lowers the standard deviation. According to an analysis by Ibbotson Associates, from 1972 to 1997, a portfolio consisting of 25% intermediate-term government bonds and 75% stocks returned an average of 12.2% per year, almost the same as a portfolio consisting entirely of the S&P 500, and at the same time had a higher Sharpe ratio.

In fig. 3, we again rank Slovenian mutual funds according to their Sharpe ratios, but this time we report the Treynor ratio, Jensen's α, coefficient β, R^2 and the Treynor appraisal ratio. Values of β are lower than one due to the fact that most of the funds are 'balanced,' i.e. capital is allocated between stocks, bonds and cash. Allocation of capital in bonds in general decreases both the return and the standard deviation.

Fig. 3. Treynor's ratio calculated for different funds, 7/2000–12/2003

	Sharp ratio (S_h)	Treynor ratio (T_h)	Coeffi-cient (β)	Jensen's α	Treynor appraisal ratio (AR)	R^2	t-stati-stics
Alpha	2.19	0.40	0.49	0.110	2.11	0.59	3.93
Galileo	1.67	0.27	0.69	0.071	1.27	0.73	2.32
Zajcek	1.62	0.24	0.62	0.049	1.33	0.84	2.43
Piramida	1.58	0.24	0.38	0.029	1.13	0.80	2.14
Pika	1.58	0.25	0.32	0.028	1.09	0.73	2.14
Hrast	1.56	0.24	0.63	0.049	1.08	0.78	2.02
Rastko	1.47	0.23	0.71	0.047	0.87	0.75	1.61
Vipek	1.47	0.22	0.63	0.034	0.94	0.85	1.71
Polzek	1.43	0.22	0.49	0.028	0.77	0.77	1.42

Note: Benchmark market portfolio is Slovenian SBI20 index.

All funds are also specified by a positive Jensen's α, indicating that managers might have had the superior ability in market stock

selection. For the funds Alfa, Galileo, Zajcek, Piramida, Pika, and Hrast, we find a statistically significant α. For other funds, the hypothesis that α is zero cannot be rejected.

Hypothesis for the t-test: $H_0 : \alpha = 0, H_1 : \alpha \neq 0$.

Table 3 also shows that the funds' ranking is practically the same by the Treynor rule as by the Treynor appraisal ratio. It generally holds that the Sharpe and Treynor ratios provide similar rankings if funds are well diversified. The rankings reveal that all analyzed funds outperformed the market SBI20 on a risk-adjusted basis.

V. Conclusions

In this paper we analyzed the performance of Slovenian mutual funds. The funds are ranked on a risk-adjusted basis. We find the rankings obtained by performing both the Sharpe and Treynor rules to be almost the same, implying that funds are well diversified. Some of the funds performed extremely well compared to other mutual funds worldwide. Slovenia's entry into the European Union will facilitate possible investment of foreign money into these funds. This process of investing money is not one-sided, since even now the Slovenian mutual funds are increasingly starting to invest part of their portfolios abroad. Including them in one's portfolio provides exposure to an emerging market that can provide a hedge to negative global trends. For example, this was the case with the Galileo fund, which provided a high return in the globally bearish period of March 2002–March 2003. However, an obstacle to the wider use of these funds is the relatively small capitalization of the Slovenian market.

Legislation dealing with mutual funds will have to be simplified if Slovenia is to see further development in this field. Apart from changing legislation, much work remains to be done in raising public awareness about this investment option. Although Slovenia's leading mutual funds are expected to see continued growth in the future, they will lose some market share on account of new mutual funds, especially foreign ones.

According to forecasts, the volume of retail savings in mutual funds shall account for no less than 25% of total bank deposits (at the moment, it accounts for 5%). In the EU, the share of commercial banks in the sale of mutual funds accounts for as much as 92% in Spain, 81% in Austria, and 73% in Germany, while in Slovenia at the moment only a

minor share of mutual funds is sold through banks. Therefore, in the future we expect foreign providers of mutual funds, especially commercial banks, to take an aggressive approach to the Slovenian financial market.

Despite the growing interest in mutual funds, which is mainly a result of falling interest rates in the country, Slovenia is still lagging behind the EU in terms of money invested in mutual funds per person. With 370 EUR invested in mutual funds per person, Slovenia is last among all EU members. However, analysts believe that this figure will grow to at least 800 EUR within the next five years, with some predicting that it may well exceed 1000 EUR if some stocks continue to perform extremely well. We believe that Slovene government policy is at the beginning of a long-term tendency towards encouraging reallocation of its citizens' savings. The reallocation will be a function of falling interest rates, expected tax on interest, gradually progressing pension reform, changed savings of the population, and improved competitiveness on the Slovenian financial market.

The growing preference of households for other forms of savings over saving in banks is also reflected by the development of mutual funds, the number of which expanded to twenty-nine in autumn 2004. The Slovenian mutual funds thus managed a total of SIT 174.6 billion (August 2004), which is 70.5% more than at the end of the previous year. Net inflows into mutual funds remain high, since the year-on-year weighted return of the total mutual funds remains very strong (28.3%). As regards further development of Slovenian mutual funds, their operations will gradually move to foreign capital markets and foreign securities. Although the majority of relatively unfavorable financial market indicators have already improved (such as poor stock market liquidity, controlled capital flows, insufficient protection of minor shareholders, worse position of foreign investors compared to that of domestic ones, and the absence of a clearly determined legal framework), the stock market is becoming overbought (Strašek and Jagrič 2004). In the absence of a developed primary security market in Slovenia and the prospect of a growing bubble on the domestic stock market, mutual funds will be forced to invest abroad.

Mutual funds face growing competition from new private pension funds, which are tax advantaged. In the longer term, however, mutual funds are expected to benefit from the growing strength of

pension funds, as they are likely to make the domestic capital market more efficient (Jagrič and Podbregar 2004; Jagrič, Podobnik, and Kolanovič 2004). Recent trends on the Slovenian capital market suggest that changing saving habits and new opportunities from the integration of Slovenian financial markets into global financial markets are the key determinants for future development of the mutual funds industry. An optimal strategy for developing the Slovenian market would be the creation of a pan-CEE capital market (Koke and Schroeder 2002), which would be tightly inter-connected with some Western exchanges, so that security issuers could benefit from a harmonized regulatory framework and easier access to Western markets.

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POVZETEK

USPEŠNOST SLOVENSKIH VZAJEMNIH SKLADOV

Še pred desetletjem je investitorje zanimala le visoka letna donosnost skladov. Mnogo skladov, ki so imeli nadpovprečne donose pa je danes propadlo. Zato investitorji posvečajo pozornost tudi drugi dimenziji uspešnosti sklada — tveganju. Investiranje je dejansko dvodimenzionalni proces, ki temelji na donosu in tveganju. Zato morata obe komponenti biti ustrezno ovrednoteni, da lahko pridemo do pravilne odločitve. Vzajemni skladi postajajo za vlagatelje vse bolj zanimivi tudi v Sloveniji, vendar kljub temu predstavljajo le majhen delež varčevanja prebivalcev v primerjavi z ostalimi državami. V tem prispevku analiziramo mere tveganja glede na donos za nekatere sklade, ki so starejši od treh let. Rezultati ne kažejo bistvenih razlik v rangiranju glede na izbrane mere.