

Are the Highest Mutual Fund Fees Justified by Their Performance?

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Alicja Fraś*

A mutual fund fee – being the price of a product – is related to the features of the product, like fund results, which are the base in the investor's purchase decision making process. In the present study, we examine whether there is a relation between good performance of the fund in the past (1- and 5-year-time horizons) and the current fee. The research for the Polish open-ended mutual funds market in 2017 indicates that there is no clear linear or non-linear relation between past performance and current charges. The computations were conducted using fitting curves packages in the R programming language and a correlation analysis. In the second part of the article, the strategies of investing in the cheapest and the most expensive funds were compared, with a split into fund types (stock, mixed and bond funds). The overall conclusion is that performance is not a driver for imposing higher fees on the investors. If it is not, then either fee distribution among the funds is random or other non-fundamental factors matters.

Keywords: mutual fund, fund fees, charges, fund performance.

Czy wyniki tłumaczą wysokość opłat w najdroższych funduszach inwestycyjnych?

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Opłata w funduszu inwestycyjnym – będąca ceną produktu – powinna być powiązana z cechami produktu, jak na przykład wyniki, na podstawie których inwestorzy podejmują decyzje odnośnie do zakupu. W niniejszej pracy sprawdzono czy istnieje zależność pomiędzy dobrymi wynikami funduszu w przeszłości (1- i 5-letni horyzont czasowy) a opłatą bieżącą. Badanie polskich otwartych funduszy inwestycyjnych w 2017 roku pokazuje, że nie ma wyraźnej liniowej bądź nieliniowej zależności między wynikami a opłatą bieżącą. Obliczenia zostały wykonane przy użyciu narzędzia dopasowywania krzywych w programie R i analizy korelacji. W drugiej części artykułu porównano strategie inwestowania w najdroższe i najtańsze fundusze z podziałem na typ funduszu (akcji, mieszane i obligacji). Wywnioskowano, że wyniki nie są istotnym czynnikiem podnoszącym opłaty. Jeśli opłaty nie zależą od rezultatów funduszu, to albo dystrybucja opłat pomiędzy funduszami jest losowa, albo wyjaśnienia należy szukać wśród czynników niefundamentalnych, jak reklama czy aspekty behawioralne.

Słowa kluczowe: fundusze inwestycyjne, opłaty, wyniki funduszu.

JEL: D53, G11, G23, C58

* **Alicja Fraś** – MS, Poznan University of Economics.

Correspondence address: Poznan University of Economics, al. Niepodległości 10, 61-875 Poznań; e-mail: alicja.m.fras@gmail.com.



1. Introduction

The mutual funds market is very diverse, and the products it offers differ strongly in terms of risk level, rates of return, repute, distribution or service but also in terms of charges. One may expect that paying high charges implies receiving a better product. In economics, this concept was embodied in the idea of market efficiency. Prices are distributed in a way that reflects fundamental factors like performance. As financial market actors have a very limited ability to predict the future, they can only base their decisions on historical data. Therefore, a well performing fund may be expected to do so in the future, and it is worth paying extra.

However, many factors contribute to the fact that the above is often not true, and the client chooses a more expensive fund, which is at the same time more risky and less profitable. On the other hand, funds can also successfully set high prices for low performing funds and (e.g. using effective marketing) find clients for such a mispriced product. One reason can be information asymmetry, that is the imbalance of knowledge between a fund seller and an investor. Another explanation can be behavioral effects that make people more likely to base their choices on non-fundamental factors, like a good name, advertisement or friend's recommendation.

In the following paper, the relation between the current charge of the fund and its historical performance will be investigated. As investors make decisions based on past data assuming that it is a good predictor for future returns, well performing funds will attract more customers and thus can be more expensive. The author makes an analysis for equity, mixed and bond funds. The hypothesis is that the market is efficient, and we should find a relation between past performance and imposed fees. The study begins with a correlation analysis and an attempt to find a linear or non-linear relation (using fitting curves packages in the R programming language). Then, the author compares the strategies of investing in the cheapest and the most expensive funds to see whether choosing the latter pays off.

2. Brief Overview of Relevant Literature

So far, much research has been done to investigate the topic of mutual fund charges. The area of particular interest is the relation with fund performance, flows to and from the fund (being the emanation of the demand for the fund) as well as the effect of incentivizing the fund manager. With cheap index funds growing rapidly, aggressive, active strategies have been questioned and undermined as ineffective and unfounded.

The development of research methods resulted in changes in some of the seemingly well-known and examined facts. In 1995, Malkiel revisited the data regarding fund returns and their benchmarks. In the new study, the survivorship bias was taken into consideration, and failed companies

were no longer excluded from the sample. The methodological change revealed that on average stock mutual funds did not beat their benchmarks (Malkiel, 1995). Nowadays, active funds suffer a lot in terms of flows due to the emergence of passive investment. However, in the '90 they still observed a strong growth in assets, while index funds already reported better performance for lower fees. In 1996, Gruber posed a question why active funds enjoyed such interest if they were less competitive. He indicated that they won by attracting the so-called “disabled investors” who based their decisions on non-fundamental factors, like advertisement or broker advice (Gruber, 1996). The Total Expense Ratio was collated with 4-factor alphas, showing no correlation. Moreover, the costs of top performers were over 0.3 percentage point lower than the worst performers' expenses.

Some researchers are still trying to figure out which strategy of active management is the smartest and most profitable (Bird et al., 2015; Węgrzyn, 2015). However, due to the discussions on after-cost profitability of active management and attractiveness of passive alternatives the choice of active management style may seem insignificant. Already in 1991, Sharpe showed – using solely a simple arithmetic – that on average it was impossible for active funds to beat the market and, fees included, active investing was a negative sum game (Sharpe, 1991). A year later, Fama and French analyzed the components of the rate of return and exhibited that between 1960 and 1991 the low capitalization companies portfolio gave on average 0.58 p.p. higher return monthly, while the high BV/P companies portfolio was on average 1 p.p. better at generating profits on a monthly basis (Fama & French, 1992). In 2000, Wermers published research on funds' performance, showing that stock funds outperformed the benchmark by 1.3% on average. However, taking into account all the charges and transaction costs, the rate of return lagged the benchmark by 1.0% (Wermers, 2000). In 2003, the same author presented a study proving that admittedly active funds tended to achieve better results than those driven by less risky strategies. Yet, in the long run, even the most active ones were on average unable to beat the benchmark (Wermers, 2003).

Some interesting studies have been conducted on managerial skills and the ability to maintain good results in the long run. Especially the emergence of passive funds created tools for robust assessment of managers' role in creating value. In 2009, Fama and French demonstrated with the bootstrapping simulations that very few fund managers had an intrinsic skill to surpass the benchmark. Furthermore, estimated alphas for the most effective active funds were no higher than for the big, passively managed ones (Fama & French, 2009). Very in-depth analyses of passive investments have been conducted by Petajisto. He discovered that some of the funds (“closet indexers”) only declared to be active, all while maintaining portfolios very similar to their benchmark and in fact acting like a purely passive fund. Thus, despite charging high-end fees, “closet indexers” bring a relatively low

value to the investor (Petajisto & Cremers, 2009; Petajisto, 2013). In his research, Miller came to similar conclusions, but from another perspective; however, the comparison was made between active mutual funds and hedge funds (instead of passive funds). Hedge funds, considered top expensive investment products, are in fact much cheaper than traditional active mutual funds. The key is to calculate the true cost of active investment in an active mutual fund, which is in fact widely engaging in “shadow” or “closet” indexing (Miller, 2007). Going further, Miller also calculated the cost of active management for large-cap US mutual funds, which amounted to the average of 6.44% – four times higher than the reported expense ratio of 1.2% (Miller, 2010). In 2011, Jones and Wermers provided a concise review of the current state of the art in the area of passive and active management. The conclusion is that, regarding the fees, active funds offer close to zero risk-adjusted rates of return. Nonetheless, they play an important role in the economy, facilitating capital flow and thus delivering value for the society. Aggressive funds, even though on average not better than passive ones, periodically offer extraordinary rates of return (which happens rarely among e.g. money market funds). This way they enhance investors to seek the best ones and act as a catalyst for efficient market allocation mechanisms (Jones & Wermers, 2011).

There are also numerous papers focused on fund fees and their determinants. By applying simple statistical methods, Haslem, Baker and Smith identified funds with top management fees and expense ratios. They found a negative association between all performance measures and expense ratios and mixed results for management fees (Haslem et al., 2007). An interesting analysis of fund fees by Cullian and Zheng (2012) has shown that, among closed-ended funds, those investing in the least (level 3) securities are also more likely to impose higher management fees. Thus, fund fees are possibly more associated with fund costs of investment rather than its returns. However, no significant differences in fees were observed between funds investing in moderately (level 2) and low (level 1) liquid securities. Another paper compares the efficiency of the funds whose fees are based entirely on fund assets under management and those that charge management fees at least partially on performance. The study shows that performance-based fee funds perform significantly better and demonstrate a strongly positive relation between performance and fee, whereas the relation is negative in the others (Diaz-Mendoza et al., 2014). The analysis of SRI (*Socially Responsible Investment*) mutual funds leads to a conclusion that SRI funds are cheaper than other funds managed by the same company. Nevertheless, in general SRI fund fees did not differ significantly (Gil-Bazo et al., 2010).

Polish literature on mutual fund fees is not very broad. There are some more generic publications on a mutual fund as a whole (Perez, 2011; Perez, 2012). A more specific study was done by Szafranec, where she described distribution fees in Poland and their impact on the rate of return from

open-ended funds (Szafraniec, 2009). An interesting analysis was performed by Oleksy. He indicated that due to its wrong structure, in real estate funds the management fee did not enhance performance. However, the sample included only 9 real estate funds (Oleksy, 2015). Another study on mutual fund fees and performance in Poland was conducted by Fraś in 2017. The data for Poland and the United Kingdom show that the correlations are close to zero or negative for rates of return before fees and definitely negative in case of rates of return after fees. The above is in contradiction to the general concept of economic mechanisms – paying more, the investor received less. (Fraś, 2017). Moreover, fund fees in Poland are higher than in the UK. A possible reason may be the indulgence of the passive fund market in Poland (Fraś & Rogowski, 2015). Not only are fund prices away from the fundamentals. In the research from 2016, the same author proved that there was no relation between stock prices and the internal value of public listed companies in Poland. That means that for both funds and individual stocks the price is not in line with the fundamental factors (Fraś, 2016). The root of this contradiction is probably human behavior. Behavioral factors tend to take over the decision-making process. People are often badly informed or even misinformed, which is especially frequent in the case of complex products and a strong information asymmetry environment. In a study from 2006, participants were asked to invest money across four S&P500 index funds. Obviously, the best strategy would be to simply choose the cheapest fund; however, the participants overwhelmingly failed to minimize the charges (Choi, Laibson, & Madrian, 2006). We may expect that a similar mechanism drives ordinary investors in choosing mutual funds.

3. Methodology and the Sample Characteristic

The source of the database was mainly *analizy.pl* website that offers concise summaries of each of the Polish mutual fund's performance and characteristics. The sample covered 408 funds: 182 stock, 116 mixed and 110 bond funds.

The analysis concerns the relation between fees and performance. The fee is defined here as the current charge taken from the KIID¹. It encompasses all the commissions actually levied on the investor within the year (however, excluding fees that are dependent on invested quota or the result, i.e. handling fees and the reward fee). Figure 1 presents the density function of the current charge for three types of funds separately. The fees differ within each group and between groups, with stock funds being the most expensive. Mixed funds have the most dispersed fees, as their strategy may also differ strongly. Stock and bond funds are much more concentrated close to the average in the sample.

The fund's performance is measured as follows:

- the average daily log rate of return within the analyzed time period,

- risk defined as a standard deviation of the daily log rate of return within the analyzed time period,
- Sharpe ratio with a risk free rate equal to 2.5%²:

$$\text{Sharpe ratio} = \frac{R_x - R_f}{\sigma_x}$$

where: R_x is the log daily rate of return of fund x ; σ_x is the standard deviation of log daily rates of return of fund x , and R_f is a risk free rate, here 2.5% converted to the logarithm daily rate.

All the performance measures are calculated for a short term period – as last year’s result (i.e. 2016), and for a medium term (2011–2016). All the computing was performed in the R language, in the R Studio programming environment.

The very first step was a short analysis of the scatterplots and the fitted curves (with fitting methods available in R). Then, an analysis of Pearson correlations was performed. Finally, the strategies of investing in the most expensive and the cheapest funds were compared to each other. This was done by calculating average performance measures for 10% most expensive and 10% cheapest funds in a given category. Both results are also compared to the average in the whole group in order to verify if some of the funds (the cheapest or the most expensive) reported extreme gains.

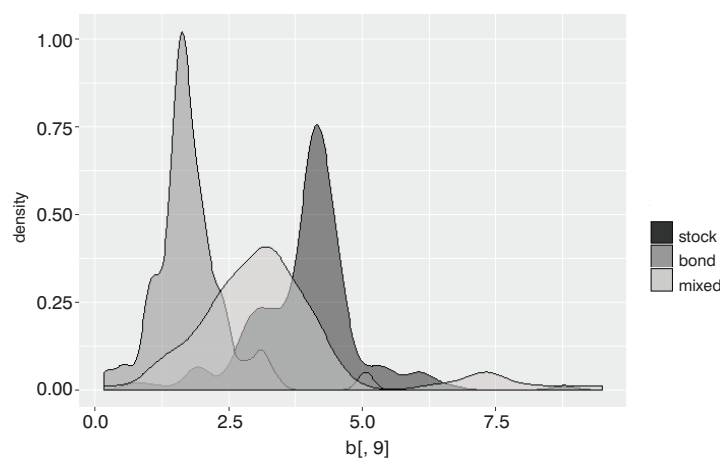


Fig. 1. Density chart of current charges for bond, mixed and stock funds in 2017. Source: Calculations made by the author, *analizy.pl*.

An important remark must be made regarding before- and after-fee rates of return. All the analyzed rates of return are after fees. This is because what we want to measure in this study is the results of the fund for the

investor and the way he is attracted by the historical fund performance. What the investor receives is the rate after fees. Even though expensive funds are discriminated, also the investor will perceive them as worse due to a high price. Anyway, even having paid an extra fee, the investor expects at least equal returns, for sure not lower.

4. Results

The chart in Figure 2 shows that hardly any relation – either linear or non-linear – can be observed for the 5-year efficiency ratio and current charges for all three types of funds. Also, none of the groups seems to demonstrate better results than the others. The attempts to fit curves with the R fitting methods also failed.

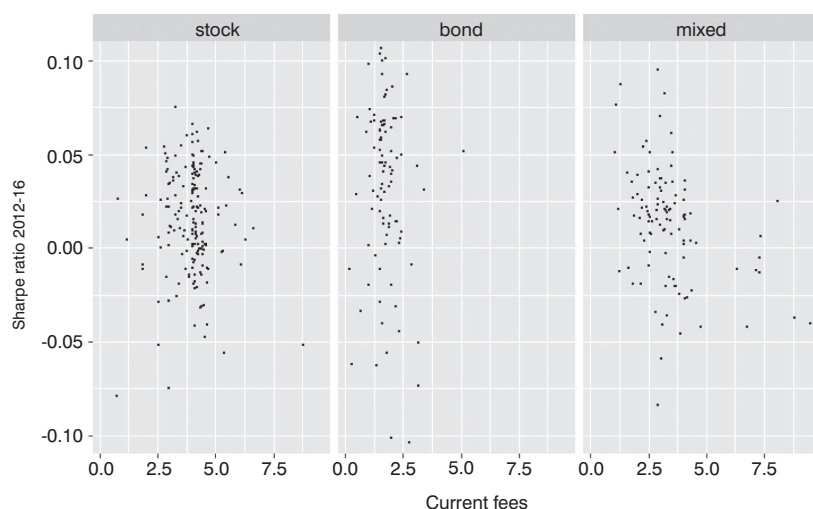


Fig. 2. Scatterplots of dependency between current charges and 5-year Sharpe ratios for bond, mixed and stock funds. Source: Calculations made by the author, *analizy.pl*.

The analysis of the correlations allows us to formally confirm the lack of a linear relation between Sharpe ratios. The results for the three time periods (1 year, 3 years and 5 years) are presented in Table 1.

Only the correlations for Sharpe ratios for year $t - 1$ for bonds and all the funds grouped together are in statistical terms significantly different from zero. Furthermore, in both cases the correlations are very low – 0.23 and 0.24, respectively. Based on the presented calculations, we need to reject the hypothesis that there is any significant linear relation between current fees and results in the past. Some of the funds are more expensive than the others; however, the differences do not stem directly from performance excellence.

Fund type	2016	2014–2016	2012–2016
Stock	0.11	-0.12	-0.02
Mixed	0.04	0.05	0.03
Bond	0.23*	0.13	0.08
All	0.24*	0.09	0.08

* Bold values are statistically significant within the confidence interval of 95%.

Tab. 1. Pearson correlation coefficients for current charges and Sharpe ratios in three time horizons. Source: Calculations made by the author, *analizy.pl*.

The last part of the present analysis is the comparison of the results of investments in 10% of the most expensive and 10% of the cheapest funds within each of fund types. Table 2 presents results of comparison of sample means for all types of funds.

	Year	Rate of return	Standard deviation	Skewness	Kurtosis
The most expensive	2016	8.0	0.008	-0.24	1.42
Average		6.5	0.000	0.51	6.16
The cheapest		1.5	0.002	-0.65	3.98
Expensive/cheap ratio		5.2	5.1	-	-
The most expensive	2012–2016	3.6	0.009	-0.29	29.16
Average		6.0	0.000	2.27	6.61
The cheapest		5.7	0.002	0.10	6.69
Expensive/cheap ratio		0.6	5.7	-	-

Tab. 2. Means of rates of return and standard deviations for all types of funds split into expensive and cheap funds. Source: Calculations made by the author, *analizy.pl*.

The data show that more expensive funds were over fivefold more profitable and risky in the previous year. In a longer time horizon, the profitability was lower (almost by a half) despite a higher risk. So, the most expensive funds demonstrated worse performance both in terms of risk and rates of return over the 5-year time period, which seems a bit counterintuitive. What is interesting here is that medium term rates of return for both the most expensive and the cheapest funds were lower than the average. In both time horizons, also the risk was lower for the average fund than for the cheapest or the most expensive one. This may suggest that extreme strategies enhance risk.

Regarding stock funds ratios presented in Table 3, again the previous year was successful and enhancing investors to bring their money to more expensive funds. They not only managed to deliver over three times higher rate of return but also maintained risk (measured as a standard deviation

of daily log rates) at a similar level as the cheapest stock funds. Again, the risk level is higher for extreme funds in terms of fees – the cheapest and the most expensive ones are much riskier than the average in both time horizons. However, 5-year historical data do not indicate any strong superiority of expensive funds over the cheapest ones.

	Year	Rate of return	Standard deviation	Skewness	Kurtosis
The most expensive	2016	19.2	0.009	2.12	4.54
Average		11.0	0.003	0.53	4.27
The cheapest		6.3	0.009	-0.98	1.01
Expensive/cheap ratio		3.1	1.01	–	–
The most expensive	2012–2016	6.8	0.009	2.07	3.73
Average		7.8	0.000	0.45	5.29
The cheapest		7.6	0.009	-0.95	-1.06
Expensive/cheap ratio		0.89	1.05	–	–

Tab. 3. Means of rates of return and standard deviations for stock funds split into expensive and cheap funds. Source: Calculations made by the author, *analizy.pl*.

Within the mixed funds, the rate of return was even negative in the previous year for the most expensive entities, while low, but still positive, for the cheapest ones, as shown in Table 4. It seems that both groups did worse than the average, with both lower returns and much higher risk; however, expensive funds in this group did especially badly, as their result is over 10 p.p. lower than the average. Looking back at the 5-year data, also expensive funds lose, though not that much. The cheapest group did a bit better than average in terms of returns. In both time horizons, a similar pattern is again observed – extreme strategies in terms of fees go with a significantly higher risk.

	Year	Rate of return	Standard deviation	Skewness	Kurtosis
The most expensive	2016	-8.3	0.008	0.10	-1.53
Average		3.2	0.000	-2.00	7.29
The cheapest		1.5	0.002	-1.24	0.61
Expensive <u>minus</u> cheap ratio*		-9.8	4.9	–	–
The most expensive	2012–2016	-3.8	0.009	0.10	-1.53
Average		3.6	0.000	-2.03	6.75
The cheapest		4.4	0.002	-0.08	-1.48
Expensive <u>minus</u> cheap ratio*		-8.2	5.5	–	–

Tab. 4. Means of rates of return and standard deviations for mixed funds split into expensive and cheap funds. Source: Calculations made by the author, *analizy.pl*.

Table 5 depicts the data for the least risky bond funds. In a one-year time horizon, the rate of return is lower for expensive funds – roughly saying by the management fee. This would suggest that rates of return before fees would be similar, as rates of return for bonds are rather stable. The rate of return for the investor actually varies by the fee level. Risk is higher for expensive funds and, again, the pattern is that the most expensive and the cheapest funds demonstrate the riskiest strategies. In the long run, all bond funds appeared to be similar in terms of both rate of return and risk.

	Year	Rate of return	Standard deviation	Skewness	Kurtosis
The most expensive	2016	0.9	0.002	-1.43	0.08
Average		2.3	0.000	0.14	6.43
The cheapest		2.4	0.001	0.55	0.62
Expensive/cheap ratio		0.4	2.13	-	-
The most expensive	2012–2016	5.7	0.001	-0.29	-2.25
Average		5.6	0.000	2.27	7.85
The cheapest		5.4	0.001	0.10	-0.94
Expensive/cheap ratio		1.0	1.3	-	-

Tab. 5. Means of rates of return and standard deviations for bond funds split into expensive and cheap funds. Source: Calculations made by the author, *analizy.pl*.

In general, kurtosis is higher for the moderately expensive funds, which may imply a lower risk; returns centered more around the mean and less around outliers. No specific pattern has been observed in skewness.

5. Conclusion

Summarizing the results, within stock funds the fees reflect more last year's results than the medium term tendencies, while it is the opposite for the rest of fund types. In all the cases, the most expensive funds could not boast better profitability in the past 5 years. On average, they brought almost half the return of the cheapest funds. Probably, this can partly be explained by high fees; however, we would expect that funds encourage investors to pay high fees with more attractive performance. In general, the data show the opposite – high fees were foregone by lower returns and almost 6 times higher risk.

What is interesting is the consistency of higher risk among top- and low-fee funds within all the groups – both measured with a higher average standard deviation and kurtosis. A possible explanation may be that a non-standard charging scheme needs non-standard investment strategies which are associated with a higher risk. This might be a good area for further research.

In terms of risk, both expensive and cheap funds do not differ much in case of stock and bond funds. Big differences are observed in both time horizons for mixed funds – possibly due to the highest diversity.

A general conclusion would be that there is no strong evidence that funds impose higher fees when they can show good track in the past. Based on the 1-year and 5-year historical data, the most expensive funds do not offer encouraging results when compared to the average or even the cheapest funds. The only case when good performance is followed by a high fee is one year data for stock funds. But that suggests that they only look one year back. Based on the gathered database, we can conclude that expensive stock funds had very good results last year, but the results were worse in a longer time horizon. Another conclusion is that if historical results do not affect current fees, then either the prices of the funds are random or there are other factors that determine the price. Both hypotheses may be an interesting topic for further studies.

Thus, based on the classical interpretation of market efficiency, the market is not efficient as a higher price does not guarantee, or at least increase, the chances for a better product, i.e. for example a higher profit. A possible reason may be that the investors are not rational in the conventional sense. They do not chase efficient funds with a good risk-return ratio but rather make decisions based on other factors, which would be very wise to investigate in further studies. Another area for consecutive research is a comparison of the fund market in Poland to other, possibly similar, countries. This could help answer the question which of the observed phenomena is country specific, and which one is a widely observed relation independent of individual market conditions.

Endnotes

- ¹ Key Investor's Information Document.
- ² Which is the approximation of the rates on 5-year treasury bonds in Poland (4-year bonds are 2.4%, and 10-year bonds are 2.7%; we simplify that the interest rate on bonds grows linearly with maturity time, which implies 2.45%, rounded here to 2.5%).

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