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QUASI-HEDGE FUNDS MARKET IN POLAND IN VIEW OF THEIR PERFORMANCE PERSISTENCE

Abstract

Performance persistence analysis is important as it has a decisive influence on investor allocation decisions. Investors can use quasi-hedge funds' persistence to build effective investment strategies. Thus, the paper explores performance persistence of quasi-hedge funds operating at the Polish capital market. The methodology is based on constructing the new market performance index intended only for absolute return funds. It is validated regarding absolute returns of Polish quasi-hedge funds. The Absolute Return Index (ARI) is used to rate quasi-hedge funds' performance persistence in assessing their fundamental purpose: to deliver consistently positive returns in all market conditions. For this, their quarterly return rates are used. All 53 funds operating for at least 36 months and representing 48.2% of the entire segment of absolute return funds are analyzed. The use of ARI allows examining quasi-hedge funds' performance persistence in terms of market changes and the assessment of their purpose. In the short term (6 months) profitability remained persistent, while in the long term (12 months) such a hypothesis could be refuted. More than 40% of funds showed positive persistence within six months; only positive persistence occurred in the short term. 9.4% of funds repeatedly obtained negative returns, so absolute return funds' negative performance persisted neither in the short nor long term. Closed-ended investment funds showed much stronger persistence of above-average positive returns, which additionally tended to avoid repeating negative returns in two-quarter and four-quarter series. This confirms the assumption that in this respect the Polish market is similar to the developed ones.

Keywords

financial market, absolute return funds, trading
performance, absolute return index, Poland

JEL Classification

D53, G11, G23

INTRODUCTION

The segment of financial market related to the management of financial instruments has developed extremely rapidly. One of its key elements is funds that actively manage client portfolios. Their operation largely depends on their capacity to achieve returns exceeding those achievable from investing in passive strategies. Therefore, the most efficient methods of active management have been searched for years. The hedge fund segment has grown rapidly over the last two decades offering investors unique investment opportunities that are exposed to more complex risks than traditional investments. Since the late 1990s, the dynamic growth of the hedge fund market has changed the structure of the modern financial market. The rationale for the study on the growth of the hedge fund market is also high volatility in all segments of the financial market in the 21st century. Hedge funds, differently regulated, are regarded as best adapted to new financial market conditions due to their highest flexibility among all entities operating on this market.

That is why it is important to study the performance persistence of quasi-hedge funds, including within one country. Absolute return funds, like any financial instrument, are subject to evaluation and comparison, but the absence of a relevant benchmark makes this task difficult.

1. LITERATURE REVIEW

With the growth of the global investment fund market, the focus is put on the factors contributing to its transformation. In particular, attention was paid to the fundamental value associated with the funds, i.e. their investment performance, being calculated as rates of return. This allows to determine a fund's profitability and provides information on whether the fund has made a profit or a loss. The efficiency of funds refers to income per unit of invested capital at a certain level of risk. Miziołek and Trzebiński (2017) stated that the concept of efficiency, therefore, comprises profitability and the investment risk inherent in investing capital. Besides determining what investment results are achieved by the funds, another important question is how long they can maintain their rates of return over a given period, in other words, what is their performance persistence. Performance persistence is one of the major factors contributing to the growth of the investment fund market, since it facilitates predicting the funds' performance, which, in turn, influences the allocation decisions of both investors and fund managers wishing to achieve above-average investment results. Perez (2011) maintained that the performance of investment funds persists if:

- funds with low or negative profitability (rates of return) in one period achieve the same results in the subsequent period; they are called loser funds and hold low positions in the rankings;
- funds showing high profitability (rates of return) in one period are equally successful in the next period; they are called winner funds and occupy high positions in the rankings.

The performance persistence does not occur in the case of funds that, having achieved positive (or negative) rates of return in a given period and, as a result, being ranked high (or low) in the consecutive research period, do not achieve similar investment results, and therefore their position in the ranking is quite different than in the previous period. Performance persistence of investment funds has been studied since the 1970s. To study the funds' rates of return, funds' performance persistence, profitability, and efficiency measures

are used. These measures are most often divided into two groups: conventional and modern ones. The former is based on the Capital Asset Pricing Model (CAPM) and Arbitrage Pricing Theory (APT) stemming from Markowitz's classic portfolio theory. These include the Sharpe ratio (Sharpe, 1966) and the information ratio (Sharpe, 1994), as well as Jensen's alpha ratio, which is calculated based on Jensen's single-index model (Jensen, 1968), Fama and French's three-index model (Fama & French, 1992) or Carhart's four-index model (Carhart, 1997). The second group consists of modern measures, introduced in the last dozen or so years, which do not treat risk symmetrically and do not require assumptions about the normal distribution of rates of return.

When analyzing the hedge funds' investment performance, all of the above models or their modifications are applied, adding other risk factors (Koh et al., 2003; Robiyanto et al., 2019). The HF investment performance analysis also uses other risk-weighted measures (Mentel et al., 2017). To confirm the persistence of investment funds' performance contingency, tables are most commonly used (Agarwal & Naik, 2000a). The tables are created by comparing funds from the best to the worst in terms of their rates of return in a given period. Then it is checked whether they have also achieved the highest or lowest rates of return in the consecutive period. If the rates of return of a given group of funds over two successive periods are above the assumed value (e.g. the median, the average rate of return for all the funds examined, or the average rate of return of the best funds that constitute e.g. 20% of the sample), their performance persist and they are referred to as winner funds. Funds, called loser funds are those that, during two subsequent periods, achieved bad investment results and, as a result, were ranked lowest and belonged to the group of the weakest funds that constitute, for example, 20% of the sample. Another method of investigating the investment funds' performance persistence is a linear regression of their current and past rates of return (Agarwal & Naik, 2000a). A positive and statistically significant beta coefficient represents the persistence of a positive (negative) investment result for two successive periods. Apart from the above methods of testing the persistence of investment funds' performance, other statistical tests are also used in the literature, namely: chi-square test (Malkiel

& Saha, 2005), Kolmogorov-Smirnow (Koh et al., 2003) and Spearman's Rank Correlation Coefficient (Harri & Brorsen, 2004). Eling (2009) used several methods simultaneously to confirm the results obtained, similarly to Kosowski et al. (2007)

As in traditional investment funds, there is no clear evidence in the literature of hedge fund managers' ability to maintain investment performance. Capocci et al. (2005), Gregoriou and Rouah (2001), Chen and Passow (2003), Kat and Menexe (2003), Souza and Gokcan (2004), and Malkiel and Saha (2005) stated that this phenomenon does not occur in hedge funds. The rationale behind this statement is the diversity of strategies used by hedge funds and poor skills of hedge fund managers (Malkiel & Saha, 2005). Yet, regardless of the adopted performance measures, Agarwal and Naik (2000b), Amenc et al. (2004), Henn and Meier (2004), and Kosowski et al. (2007) provided evidence that the performance of hedge funds does persist, but is of a rather short-term nature. It was emphasized that it usually concerns loss-making funds more often than the profit-making ones (Eling, 2009). The long-lasting performance persistence (2-3 years) has been described by Kouwenberg (2003) and Jagannathan et al. (2010). Harri and Brorsen (2004) and Boyson (2008) proved that the analyzed phenomenon occurs both in the short and long term. It has been underlined that the longer the study period, the lower the significance of its results. More interesting results are presented by Agarwal et al. (2014), where the performance of hedge funds before its "birth", i.e., the date when a hedge fund starts reporting to commercial databases, and after its "death" is analyzed, i.e. when the fund stops reporting to commercial databases. It is shown that funds initiate reporting after a long period of high returns, yet their performance deteriorates after they start reporting. Moreover, it was revealed that both the performance of the fund and the net flows decrease significantly after its "death". In addition, the comparison of the characteristics of funds that report and those that do not is presented, as well as the conclusion that funds facing higher disclosure costs are less likely to disclose them through reporting to commercial databases, while funds that are more likely to benefit from disclosure, i.e., young and mid-sized funds seeking funding, are more likely to start reporting (Agarwal et al., 2014).

Interesting findings concerning the phenomenon under study were presented by Stafylas et al. (2016), who proved that hedge funds can maintain their performance in the short and long term, and also pointed out that as regards age and size, small and young funds were more likely to maintain positive rates of return. Sun et al. (2018) provided evidence that fund managers are unlikely to ensure performance persistence and that hedge fund performance is persistent following a period of underperformance. Hamza and Kooli (2014) also examined performance persistence of hedge funds in 1994–2010. It was found that, in general, FoHFs had the capacity to maintain their returns in the short term. Moreover, the best funds tended to remain the best and the losers remained the losers over a short period. It was also observed that the performance persistence was considerable over three consecutive overlapping quarters. It was emphasized that the results were based on a study that covered all market conditions, the bull and bear market, as well as financial crises (Hamza & Kooli, 2014). According to Manser and Schmid (2016), the results on the persistence of HF performance differ significantly due to different methodologies, databases, study periods, and performance measures.

To recapitulate the results of the study on hedge funds' performance persistence, it can be repeated after Ammann et al. (2010) that although a vast number of articles on the persistence of hedge funds' performance have been published, no consensus has been reached as to whether their performance persists or not. The analysis of the literature confirms that most researchers still find evidence for the persistence of HF returns in the short term, i.e. up to six months. As for a period longer than 12 months, the findings are not equally conclusive, and the least evidence is provided for the persistence phenomenon to take place in the both short and long term.

The purpose of this paper is to assess the stability of investment funds based on the proposed methodology for studying the performance persistence of quasi-hedge funds operating on the Polish capital market. The proposed methodology was tested taking into account the absolute profitability of quasi-hedge funds. The study investigates the hypothesis whether the use of the absolute return index (ARI) allows studying the phenomenon of funds' performance persistence.

2. METHODOLOGY

The design of absolute return funds' portfolios and the absence of an official benchmark make it difficult to compare and evaluate their results. To implement this strategy efficiently, the absolute return funds need to be very flexible in terms of their investment policies. It is of less importance whether they deliver the highest returns over a long period because funds of this type are expected to generate profit, regardless of the conditions prevailing on the financial market in a given period.

In this paper, a methodology is proposed for studying the persistence of absolute return funds using the Absolute Return Index (ARI) as a specific fund benchmark. To verify the hypothesis that the application of ARI allows examining the performance persistence of quasi-hedge funds, an index was applied, in which the total return for quasi-hedge funds is indicated. It reflects changes in the funds weighted by the size of their assets. This means that changes in the returns of individual funds affect the global index value in proportion to the assets held by the fund. The ARI index is the average rate of return for quasi-hedge funds operating on the Polish market weighted by the shares of assets of individual funds in the total assets of such funds in Poland. It is expressed by the formula (1).

$$ARI_t = \frac{\sum_{i=1}^n x_{it}}{\sum_{i=1}^n x_{it}} \cdot R_{it}, \quad (1)$$

where x_{it} – value of assets of i -th fund in time t , R_{it} – return of i -th fund in time t , i – subsequent quasi-hedge fund, t – subsequent period.

Therefore, it can be assumed that if the fund return exceeds the value received for ARI, the fund performance is above average and its return may be satisfactory for investors. If the value of this rate stays above the ARI benchmark for the successive analyzed periods, it can be said that the fund performance persists. In this paper, not only the recurrence of above-average rates of return, in general, is analyzed, but also the length of these series. Positive and negative persistence of funds was examined for two and four quarters. What is shown in the study is that the persistence of returns is not only above the defined benchmark but

also below its values. In so doing, the funds that regularly maintain good results, as well as those that lose consistently, are identified.

3. RESULTS AND DISCUSSION

Using the proposed methodology, the persistence was investigated both in the short term, which was defined as 2 quarters, and the long term understood as 4 quarters. All absolute return funds operating on the Polish market for at least 36 months were subject to the study. The study period covered 48 quarters from Q3 2005 to the end of Q2 2017. Positive and negative persistence both for the short and long periods was studied. The funds were divided into two groups. The first group included open-ended investment funds (FIO) and specialized open-ended investment funds (SFIO). The latter group includes closed-ended investment funds (FIZ). Then the average quarterly return, the percentage of returns above Q3, and the volatility were analyzed. Additionally, correlation coefficients were also determined between the returns on assets under analysis on WIG, WIG20, WIG20USD, DAX, S&P500, and the Barclay Hedge Fund Index (BHFI), as well as ARI, during the entire period of operation of the absolute return funds on the Polish capital market (2005–2017), and in the periods of 2005–2011 and 2011 – end of June 2017. The rationale behind the choice of such periods was the dynamic expansion of these financial intermediaries that took place after 2011 when the regulations concerning the establishment of FIZs were liberalized. The strength of the relationships among the characteristics for the exemplary value ranges of the Pearson correlation coefficient was determined using the approach proposed by Gruszczyński (1986). The subjects to be included in the sample were selected on the basis of IZFiA data. According to the Classification of Investment Funds, the absolute return fund is a fund meeting the following three conditions:

1. There is neither a routine benchmark that can be mapped to the securities portfolio nor a benchmark portfolio that defines the investment policy of the fund.
2. The fund pursues an investment policy that takes into account at least two of the following assumptions:

- it uses investment techniques aimed at achieving positive rates of return regardless of the current market situation in the asset class in which the fund specializes, and when it invests in several asset classes – regardless of the current economic situation in these particular asset classes;
 - it systematically uses financial leverage by taking credits or loans having a significant share in the fund's assets, as well as by using derivative instruments or by applying other investment techniques, with the fund's total exposure, including the applied leverage, significantly exceeding the value of the fund's net assets;
 - it makes extensive use of short selling of financial instruments or short positions in derivatives.
3. The fund charges a variable management fee depending on the performance of the funds.

According to the IZFiA report on the state of the investment fund market in Poland as of 30 June 2017, the group of absolute return funds investing in national and international equities consisted of 110 entities, whose total net assets amounted to PLN 15,567 million. The group of absolute rates

of return funds laid out every tenth zloty invested in undedicated funds in Poland. From that group, the funds operating on the market for at least 12 quarters were qualified to the research sample, i.e. the funds younger than three years were excluded from the study. Thus, the sample is free of the survival effect, as defined by Grinblatt and Titman (1989). The segment of absolute return funds was responsible for 5.7% of the net asset value of the whole investment fund market in Poland and almost twice as much with non-public funds' assets excluded. The assets of the entire market at the end of the first half of 2017 amounted to PLN 272,212 million. In this study, the absolute return funds analyzed were valued in PLN, published their evaluations, and had not declared winding up. The absolute return funds trading foreign equities are not included in the study, because the difference in evaluating the absolute return funds investing in the Polish equities consisted only in the fact that the investment fund shares were valued in foreign currencies that were not secured by fund managers. Only two funds met the above conditions at the end of the period under examination. Due to the different frequency of evaluating the investment fund shares, their quarterly rates of return are used in this study. Finally, all 53 funds operating for at least 36 months and representing 48.2% of the entire segment of absolute return funds were analyzed. The total assets of 53

Table 1. Performance persistence of FIO and SFIO absolute return funds in 2005–2017

Source: Author's elaboration.

Fund name	Positive persistence (%)		Negative persistence (%)	
	for 2 qrts	for 4 qrts	for 2 qrts	for 4 qrts
AGIO Globalny (AGIO SFIO)	45.2	32.3	29.0	9.7
ALTUS Absolutnej Stopy Zwrotu Dłużny (FIO Parasolowy)	26.3	15.8	68.4	57.9
ALTUS Absolutnej Stopy Zwrotu Nowej Europy (FIO Parasolowy)	41.7	25.0	33.3	0.0
ALTUS Absolutnej Stopy Zwrotu Rynku Polskiego (FIO Parasolowy)	27.8	16.7	66.7	55.6
ALTUS Optymalnego Wzrostu (FIO Parasolowy)	21.0	0.0	50.0	33.3
BPH FIO Strategii Akcyjnej	38.2	23.5	20.6	2.9
BPH Selektywny (BPH FIO Parasolowy)	31.3	18.8	31.3	9.4
Ipopema Macro Alokacji (Ipopema SFIO)	36.4	13.6	22.7	0.0
Millenium Absolute Return (Millenium SFIO)	36.8	15.8	5.3	0.0
NN (L) Stabilny Globalnej Alokacji (NN SFIO)	38.5	23.1	7.7	0.0
Noble Fund Global Return (Noble Funds FIO)	45.5	30.3	12.1	3.0
Opera Alfa-plus.pl (Opera SFIO)	62.5	43.8	9.4	0.0
QUERCUS Selektywny (Parasolowy SFIO)	45.9	24.3	16.2	2.7
QUERCUS Stabilny (Parasolowy SFIO)	71.4	50.0	0.0	0.0
Skarbiec Market Neutral (Skarbiec FIO)	73.7	52.6	0.0	0.0
Skarbiec Market Opportunities (Skarbiec FIO)	84.6	61.5	0.0	0.0
Superfund Alternatywny (Superfund SFIO Portfelowy)	9.0	0.0	61.5	38.5

absolute return funds under study amounted to PLN 8,900 million, which constituted 57.2% of assets of the entire segment of funds of this type operating in Poland. The average age of the examined funds was 6 years and 2 months. In the study, the absolute return funds were divided into two groups. The first one included open-ended investment funds (FIO) and specialized open-ended investment funds (SFIO). The second group included closed-ended investment funds (FIZ).

Table 1 shows the results of the study on the perfor-

mance persistence of individual funds above the benchmark over the period of 47 quarters. Based on the data presented in Table 1, it has been concluded that on the Polish quasi-hedge fund market, among the FIOs and SFIOs, there are funds that are characterized by the persistence of positive, above-average performance, and those that systematically lose to the market. The former group includes Skarbiec Market Opportunities (Skarbiec FIO), Skarbiec Market Neutral (Skarbiec FIO), and Opera Alfa-plus.pl (Opera SFIO). It is worth emphasizing that the above funds show above-aver-

Table 2. Performance persistence of FIZ absolute return funds in 2005–2017

Source: Author's elaboration.

Fund name	Positive persistence (%)		Negative persistence (%)	
	for 2 qrts	for 4 qrts	for 2 qrts	for 4 qrts
Acer Aggressive FIZ	57.9	47.4	5.3	0.0
Allianz Discovery FIZ seria A	27.3	13.6	13.6	0.0
Allianz Long-Short Strategy seria A)	40.0	23.3	10.0	0.0
ALTUS Absolutnej Stopy Zwrotu FIZ GlobAl)	23.1	23.1	7.7	0.0
ALTUS Absolutnej Stopy Zwrotu FIZ Obligacji 1	52.0	36.0	0.0	0.0
ALTUS Absolutnej Stopy Zwrotu FIZ Rynku Polskiego 2	80.0	65.0	0.0	0.0
ALTUS Absolutnej Stopy Zwrotu Rynków Zagranicznych (ALTUS Absolutnej stopy zwrotu FIZ)	80.6	67.7	0.0	0.0
ALTUS Absolutnej Stopy Zwrotu Rynku Polskiego (ALTUS Absolutnej Stopy Zwrotu FIZ)	67.7	51.6	0.0	0.0
ALTUS FIZ GlobAl 2	42.1	31.6	5.3	0.0
Andromeda FIZ seria A	57.9	42.1	21.1	10.5
BPH FIZ Multi Inwestycja	41.7	29.2	29.2	8.3
CORUM Absolute Return FIZ	46.7	26.7	13.3	0.0
CORUM Opportunity Absolute Return FIZ	80.0	66.7	0.0	0.0
FWR Selektyny FIZ	54.5	18.2	9.1	0.0
InReturn FIZ	65.4	53.8	11.5	3.8
Investor Absolute Return FIZ	47.6	28.6	4.8	0.0
Investor FIZ	19.1	4.3	40.4	19.1
Ipopema Global Macro FIZ	36.8	21.1	10.5	0.0
Ipopema Opportunity FIZ	30.6	11.1	27.8	11.1
Noble Fund Opportunity FIZ	54.5	39.4	21.2	6.1
Open Finance Absolute Return FIZ	26.3	10.5	36.8	26.3
Opera FIZ	25.5	14.9	19.1	2.1
Opera Za 3 Grosze FIZ	32.5	20.0	27.5	5.0
Opoka One FIZ	57.1	28.6	7.1	0.0
PKO Globalnej Makroekonomii FIZ seria A	45.5	22.7	13.6	0.0
PKO Globalnej Strategii FIZ	60.0	40.0	6.7	0.0
PKO Strategii Dłużnych FIZ seria A	75.0	41.7	8.3	0.0
PKO Strategii Obligacyjnych FIZ	83.3	58.3	0.0	0.0
Provide Able 2 Trend FIZ	34.6	23.1	15.4	3.8
PZU FIZ Forte	68.4	47.4	0.0	0.0
QUERCUS Absolute Return FIZ	68.4	42.1	0.0	0.0
QUERCUS Absolutnego Zwrotu FIZ	46.4	17.9	17.9	3.6
Total FIZ	48.0	32.0	12.0	4.0
Trigon Polskie Perty FIZ	39.4	27.3	21.2	6.1
Trigon Quantum Absolute Return FIZ	89.0	83.3	0.0	0.0
Trigon Quantum Neutral FIZ	73.7	57.9	0.0	0.0

age performance persistence for both two- and four-quarter series. The latter group of funds consists primarily of ALTUS Absolutnej Stopy Zwrotu Dłużny (FIO Parasolowy), ALTUS Absolutnej Stopy Zwrotu Polskiego (FIO Parasolowy), and Superfund Alternatywny (Superfund SFIO Portfelowy).

Table 2 shows that on the Polish quasi-hedge fund market, among FIZs, it is possible to indicate FIZ funds with positive performance persistence over both the 6- and 12-month period, as well as those with negative performance persistence over the same periods under study. The former group of funds includes Trigon Quantum Absolute Return FIZ; PKO Strategii Obligacyjnych FIZ, CORUM Opportunity Absolute Return FIZ, PKO Strategii Dłużnych FIZ seria A, ALTUS Absolutnej Stopy Zwrotu FIZ Rynku Polskiego 2, ALTUS Absolutnej Stopy Zwrotu Rynku Zagranicznych (ALTUS Absolutnej Stopy Zwrotu FIZ), and Acer Aggressive FIZ. The latter group with negative persistency in both bilateral and quadrilateral series consists of Investor FIZ and Open Finance Absolute Return FIZ.

For more accurate evaluation of investment funds in connection with the evaluation of the incidence of the persistence phenomenon, Table 3 shows

the rates of return and the volatility of absolute return funds, as well as the percentage of episodes throughout the study period when the rate of return of a given fund was among the top 25%. Among the FIO and SFIO funds that showed positive persistence, the highest average rate of return was reported by the Opera Alfa-plus.pl (Opera SFIO). It is worth noting that throughout 33% of the analyzed period that particular fund was ranked among the best 25% of funds. QUERCUS Selective (Parasol SFIO) also belonged to the group persisting positive performance, and in 26% of the analyzed periods, its rates of return were above Q3, but it was exposed to the highest risk in the group under study. Such a situation can be explained by the volatility, as shown in the far-right column of Table 3. In the case of funds with positive performance persistence, the volatility is relatively low (2-3%). In the group of funds performing with negative persistence, some reported positive rates of return accompanied by relatively high risk. The most interesting situation, however, concerns the Superfund Alternatywny (Superfund SFIO Portfelowy) that reported a negative average rate of return (−0.31%) and was not even once ranked among the best funds.

Among all the FIZ funds listed in Table 4 that showed positive persistence, the highest average

Table 3. Quarterly return and risk for FIO and SFIO in 2005–2017

Source: Author's elaboration.

Fund name	Average rate of return* (%)	Percentage of returns above Q3	Volatility (%)
AGIO Globalny (AGIO SFIO)	0.65	34	5.262
ALTUS Absolutnej Stopy Zwrotu Dłużny (FIO Parasolowy)	0.91	18	0.723
ALTUS Absolutnej Stopy Zwrotu Nowej Europy (FIO Parasolowy)	0.72	0	0.966
ALTUS Absolutnej Stopy Zwrotu Rynku Polskiego (FIO Parasolowy)	0.61	6	0.729
ALTUS Optymalnego Wzrostu (FIO Parasolowy)	0.09	0	0.322
BPH FIO Strategii Akcyjnej	0.34	19	3.105
BPH Selektyny (BPH FIO Parasolowy)	1.39	20	2.096
Ipopema Macro Alokacji (Ipopema SFIO)	0.92	20	2.645
Millenium Absolute Return (Millenium SFIO)	1.18	29	2.218
NN (L) Stabillny Globalnej Alokacji (NN SFIO)	0.13	0	0.319
Noble Fund Global Return (Noble Funds FIO)	0.85	23	3.962
Opera Alfa-plus.pl (Opera SFIO)	1.65	33	2.965
QUERCUS Selektyny (Parasolowy SFIO)	1.23	26	4.043
QUERCUS Stabillny (Parasolowy SFIO)	0.47	0	0.319
Skarbiec Market Neutral (Skarbiec FIO)	0.43	6	0.705
Skarbiec Market Opportunities (Skarbiec FIO)	1.16	27	1.451
Superfund Alternatywny (Superfund SFIO Portfelowy)	−0.31	0	0.508

Note: * – geometric mean.

Table 4. Quarterly return and risk for FIZ in 2005–2017

Source: Author's elaboration.

Fund name	Average rate of return* (%)	Percentage of returns above Q3	Volatility (%)
Acer Aggressive FIZ	4.80	76	8.187
Allianz Discovery FIZ seria A	0.53	15	2.777
Allianz Long-Short Strategy seria A	0.73	11	2.939
ALTUS Absolutnej Stopy Zwrotu FIZ GlobAI	0.09	0	0.349
ALTUS Absolutnej Stopy Zwrotu FIZ Obligacji 1	1.43	39	1.793
ALTUS Absolutnej Stopy Zwrotu FIZ Rynku Polskiego 2	2.20	44	1.994
ALTUS Absolutnej Stopy Zwrotu Rynków Zagranicznych (ALTUS Absolutnej stopy zwrotu FIZ)	2.96	52	3.362
ALTUS Absolutnej Stopy Zwrotu Rynku Polskiego (ALTUS Absolutnej Stopy Zwrotu FIZ)	2.74	41	2.744
ALTUS FIZ GlobAI 2	0.83	24	1.670
Andromeda FIZ seria A	1.88	53	6.558
BPH FIZ Multi Inwestycja	0.10	14	2.371
CORUM Absolute Return FIZ	1.13	54	2.383
CORUM Opportunity Absolute Return FIZ	2.96	69	1.531
FWR Selektywny FIZ	0.63	33	1.245
InReturn FIZ	2.84	67	4.469
Investor Absolute Return FIZ	1.28	32	2.348
Investor FIZ	0.58	29	11.715
Ipopema Global Macro FIZ	0.77	6	1.744
Ipopema Opportunity FIZ	0.08	15	6.417
Noble Fund Opportunity FIZ	2.17	42	6.599
Open Finance Absolute Return FIZ	0.04	29	2.226
Opera FIZ	-1.16	18	12.140
Opera Za 3 Grosze FIZ	-0.80	29	10.501
Opoka One FIZ	1.44	27	2.472
PKO Globalnej Makroekonomii FIZ seria A	1.11	25	3.471
PKO Globalnej Strategii FIZ	0.46	0	0.804
PKO Strategii Dłużnych FIZ seria A	0.36	0	0.339
PKO Strategii Obligacyjnych FIZ	0.42	0	0.269
Provide Able 2 Trend FIZ	-0.04	17	3.193
PZU FIZ Forte	1.08	29	1.237
QUERCUS Absolute Return FIZ	0.83	18	1.166
QUERCUS Absolutnego Zwrotu FIZ	1.81	35	5.229
Total FIZ	1.83	43	3.596
Trigon Polskie Perły FIZ	2.33	55	9.153
Trigon Quantum Absolute Return FIZ	2.15	100	0.680
Trigon Quantum Neutral FIZ	2.18	41	2.741

Note: * – geometric mean.

rate of return was reported by Acer Aggressive FIZ fund (4.8%), which also belonged to the group of funds with persistent positive returns. In 76% of cases, its rates of return were above Q3. However, its investments were burdened with very high risk in comparison to the rest of the group (8.19%). As to the closed-ended funds with both positive and negative performance persistence, the volatility was much higher than that of the open-ended funds (4%-5%). Opera FIZ is the most interesting absolute return fund in the study. Its investment

results (-1.16%), no performance persistence, and very high risk (12.14%) clearly show that this fund does not fulfill the provisions of its statute and is not an absolute return fund.

The performance persistence of Polish quasi-hedge funds is shown in Table 5. It clearly shows that although in the short term (6 months) the returns remained persistent, in the long term (12 months) such a hypothesis could definitely be denied. More than 40% of funds showed positive persistence

Table 5. Proportion of Polish quasi-hedge funds showing performance persistence in 2005–2017

Source: Author's elaboration.

Persistence	Over 2 quarters	Over 4 quarters
Positive for all funds	41.5	20.7
Negative for all funds	9.4	3.7
Positive for FIO and SFIO	23.5	17.6
Positive for FIZ	50	22.2
Negative for FIO and SFIO	17.6	11.7
Negative for FIZ	3.8	0

Table 6. Correlation coefficients of returns on assets for WIG, WIG20, WIG20USD, DAX, S&P500, hedge fund index BHFI and ARI in 1997–2017

Source: Author's elaboration.

2005–2017							
	WIG	WIG20	WIG20USD	DAX	S&P500	BHFI	ARI
WIG	1						
WIG20	0.959	1					
WIG20USD	0.895	0.928	1				
DAX	0.757	0.716	0.670	1			
S&P500	0.756	0.731	0.750	0.808	1		
BHFI	0.300	<u>0.248</u>	0.159	0.090	0.148	1	
ARI	0.394	0.361	0.330	0.329	<u>0.292</u>	-0.018	1
2005–2011							
	WIG	WIG20	WIG20USD	DAX	S&P500	BHFI	ARI
WIG	1						
WIG20	0.937	1					
WIG20USD	0.892	0.876	1				
DAX	0.388	0.289	0.231	1			
S&P500	0.090	0.037	0.120	0.569	1		
BHFI	0.273	0.277	0.251	0.125	-0.110	1	
ARI	-0.294	-0.209	-0.228	-0.223	0.141	-0.244	1
2011–2017							
	WIG	WIG20	WIG20USD	DAX	S&P500	BHFI	ARI
WIG	1						
WIG20	0.973	1					
WIG20USD	0.901	0.948	1				
DAX	0.872	0.876	0.823	1			
S&P500	0.866	0.898	0.887	0.888	1		
BHFI	0.303	0.247	0.148	0.080	0.175	1	
ARI	0.445	0.431	0.378	0.412	0.319	-0.00654	1

Note: Underlined indices are significant for $p < 0.05000$; $N = 48$ for the period of 2005–2017; $N = 22$ for the period of 2005–2011, and $N = 26$ for the period of 2011–2017. Strong and very strong correlation coefficients are in bold.

over six-month periods. Thus, it can be concluded that in the short term only positive persistence occurred. A mere 9.4% of the funds repeatedly obtained negative returns, therefore it can be inferred that absolute return funds' negative performance persisted neither in the short nor in the long term. Depending on the form of quasi-hedge funds, a much stronger persistence of above-average positive returns was shown by closed-ended investment funds, that additionally tended to

avoid repeating negative returns in two-quarter and four-quarter series. That confirms that in this respect the Polish market is similar to the developed markets.

In Table 6, coefficients of correlation are shown between the values of returns from selected stock exchange indices and ARI. As can be seen (bolded values of correlation coefficients mean values that are statistically significant at 0.05), the significant

relationships among variables are clearly seen in the second period (2011–2017). Strong statistical correlations occur among stock exchange indices, but not with BHFI. On the one hand, this is good news for people hedging their portfolios with such instruments, but on the other hand, more efficient portfolio hedging is obtained for negative correlation coefficients, which were only obtained for the correlation between ARI and BHFI throughout the whole study period. Interestingly, in 2005–2017, it was ARI that showed better properties as a hedge index than BHFI, as it showed a moder-

ate (albeit insignificant) negative correlation with most stock exchange indices, while BHFI was only in a weak (albeit insignificant) negative correlation with S&P500.

Although the method is very simple (and therefore can be used by individual investors), it only shows the difference between market movements and movements of a fund. Therefore, this can be a possible base point for the application of quantitative tools and evaluation of investment strategies.

CONCLUSION

The purpose of the study was to assess the performance persistence of investment funds (quasi-hedge funds) operating in the Polish capital market. The assessment was carried out on the basis of the proposed methodology, which was tested taking into account the absolute return of quasi-hedge funds. The study was based on the assumption of the correctness of the absolute return index.

Through the use of ARI, information was obtained on above-average returns, which, in turn, helped to find positive and negative persistence. From a design point of view, the ARI is an efficient tool. An additional advantage of the index is its close relationship with the funds it represents, as opposed to indirect relationships with S&P500, DAX, or WIG.

It is shown in the paper that although in the short term (6 months) the returns remained persistent, this hypothesis can definitely be refuted in the long term (12 months). More than 40% of funds demonstrated positive persistence over six-month periods. One can conclude that only positive persistence took place in the short term. Only 9.4% of funds repeatedly received negative returns, therefore it can be concluded that the negative performance of funds with absolute returns did not persist either in the short or long term.

In Poland, performance persistence is observed only for short periods and discontinues in the long term, which allows recognizing the similarity of the Polish investment fund market with the developed ones.

AUTHOR CONTRIBUTIONS

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Investigation: Waldemar Aspadarec.

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