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## IMPACT OF THE COVID-19 PANDEMIC ON THE RESULTS OF POLISH SOCIALLY RESPONSIBLE FUNDS<sup>1</sup>

### Summary

*Purpose* – The aim of the paper is the evaluation of the results of Polish socially responsible funds during the pandemic period in comparison to two previous subperiods.

*Research method* – In the research, the nonclassical meters of investment efficiency were used. They were designed for three research subperiods. They provided the basis for creating rankings and for studying the stability of results. The results were compared with the WIG and WIG-ESG index results.

*Results* – The studied socially responsible funds noted lower results in the period directly before the pandemic. In the pandemic period, they, however, noted higher results than the WIG index.

*Originality / value / implications / recommendations* – The paper bridges the research gap pertaining to the research on the results of Polish socially responsible funds during the pandemic period. The article, according to the authors' knowledge, is one of the first papers in Poland which studies the results of socially responsible funds during the pandemic period.

**Keywords:** mutual funds, socially responsible investments, investment efficiency

**JEL Classification:** G11, G23

### 1. Introduction

The greater care about the natural environment is reflected in many areas of economy and aspects of our life. It is visible both on the global as well as the local level. Caring about the environment and the efficient use of resources allows for sustainable growth (Europe 2020 strategy) [www 1]. The global framework of sustainable development is also reflected in the form of 17 adopted goals of sustainable development in the '2030 UN Agenda for Sustainable Development Goals'

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[www 2]. Their aim is to balance three areas of sustainable development, such as: the economic, social and environmental one.

Issues connected with environment protection, social responsibility and the observance of corporate governance (law) comprise the rules of responsible investment. In the case of a joint form of investment, such as the investment funds, those goals are realized by the socially responsible funds, which are also described as funds adhering to the ESG rules. The name issues are, however, not clear. ESG is sometimes understood as pertaining only to the environmental issues, but recently a wider approach has been accepted which pertains to the environmental, social and legal issues (*Environmental, Social, Governance – ESG*).

The aim of the paper was the evaluation of the results of Polish socially responsible funds during the COVID-19 pandemic period. The research focused on the pandemic period which was compared with two previous subperiods. The obtained results will provide information on the efficiency of this type of investments. Whereas, the designated fund rankings will allow to draw conclusions about the stability of obtained results. The additional confirmation will be provided by designing correlation coefficients of ranking positions. The paper bridges the research gap pertaining to the research on the results of Polish socially responsible funds during the pandemic period.

## **2. The SRI concept in the case of investment funds in Poland and in the world**

The investment funds which use the concept of socially responsible investment are becoming a popular alternative among the investors. The concept of socially responsible investment stems from religious injunctions, because investors want their funds to be invested not only in a profitable, but also responsible and ethical way. The recent increase in the socially responsible investment (SRI) popularity may be connected with the subprime crisis and the gradual increase of investors' demands related to the way of allocating their capital. The global financial crisis of 2008 weakened the investors trust regarding financial institutions and undermined the rationale of the purely financial investment criteria. It is difficult to determine if the increasing popularity of the funds claiming social responsibility is only a passing trend, started by those managing assets, or a new investment paradigm, resulting from the general need to thoroughly remodel the classic financial theory on the basis of social and ethical factors [Matczak et al., 2019, p. 112].

The idea of socially responsible investment has become extremely popular among investors and managers in the last three decades. Socially responsible investment (SRI) is a part of a wider concept of corporate social responsibility (CSR). The current interest in socially responsible investment may be described as strong, on almost all world markets. Financial markets constitute a very important element of all developed economies and may be perceived as crucial sources of information. Currently, in Poland, this concept is not as popular as in Western Europe or

Northern America, but there are still some institutions and investors using SRI in their investment decisions. The sign of the growing popularity of that concept in Poland is the emergence in 2009 of the RESPECT index, which brings together socially responsible companies listed on the Warsaw Stock Exchange [Jamróz, 2016, p. 495], as well as the research of Polish Association of Listed Companies on ESG criteria and the introduction of the Non-financial Information Standard. Investors are looking for profitable investment strategies with extraordinary returns and acceptable level of investment risk. In order to fulfil the investors' needs, new investment funds with different strategies and risk exposure have to emerge.

Using the SRI concept in the investment process is connected with searching for opportunities of the increase in investment efficiency and with shaping the image of financial institutions. According to the data of the European Sustainable Investment Forum – Eurosif, at the end of 2017, the most popular strategy in Europe was negative selection (exclusion), and the next, involvement in sustainable development issues and integration of ESG factors [Eurosif, 2018, p. 16]. Negative selection entails excluding from the investment portfolio those companies whose activities are questionable in ethical and social terms, e.g. not investing in alcohol, gambling, drug or pornographic industries, the lack of support for testing products on animals or for genetically modified food. On the other hand, involvement in sustainable development issues is a long-term strategy, based on active involvement in implementing social responsibility standards in companies' actions.

Until 2018 the biggest market of socially responsible investments in the world in terms of assets was Europe. In turn at the end of 2018 over 75% of European investment assets were managed by five countries: Great Britain (27%), France (18%), Germany (15%), Switzerland (9%) and the Netherlands (7%) [Ejama, 2020, p. 12]. The assets managed on the European markets of socially responsible funds doubled in the years 2012-2018, and by the end of 2018 reached the value of EUR 496 mld. Statistics state that in December 2018, 2816 socially responsible funds operated in Europe [www 3]. After introducing changes in defining sustainable investment in Europe and Australia, the biggest SRI market since 2020 has been the US with the 48% share of the worldwide value of assets. The following positions are occupied by: Europe with the 34% share, Japan (8%), Canada (7%) and Australia and New Zealand with the 3% of the worldwide value of assets. The value of global (worldwide) sustainable (socially responsible) investment amounted to USD 35.3 bln, where 35.9% of assets were managed by socially responsible funds [GSI, 2020, pp. 9-10].

Obviously, implementing the SRI concept in the investments funds activity entails conducting certain actions not only by the funds and associations, but also the involvement of all financial market members (investors, assets managers, financial and supervisory institutions). Therefore, the crucial factor in the SRI concept development in social terms is building social awareness regarding sustainable development. This goal may be achieved through large-scale educational and promotional campaigns [Jamróz, 2017, p. 223].

The research concerning ethical funds (SRI) in comparison with conventional funds did not show a significant difference in terms of achieved financial results according to, among others, Hamilton et al. [1993], Areala et al. [2013] (compare table 1). On the other hand, Bauer et al. [2005] suggest that American funds experienced some learning phases since the beginning till the end of the 90s of the 20<sup>th</sup> century. According to Renneboog, Horst and Zhang, the time and place of the research influence the achieved results, which might mean that the social investment had not been fully valued, but due to the SRI concept development over time, the markets started to award higher return rates. Worse results of the SRI funds in comparison to conventional funds are attributed to the fact that socially responsible funds use the negative selection strategy which results in the lower diversification of managed portfolios and in higher systematic risk.

**TABLE 1**

**The overview of selected research concerning the results of socially responsible funds (SRI)**

Researchers	Researched countries	Researched period	Results
Hamilton, Jo, Statman [1993]	USA	1981-1990	SRI funds did not achieve above-average results comparing to conventional funds.
Bauer, Koedijk, Otten [2005]	Germany, Great Britain, USA	1990-2001	There was little evidence to support above-average returns on investment in SRI funds. In the USA ethical funds achieved lower results than conventional funds. SRI funds achieved better results in the years 1998-2001, i.e. after the Asian crisis and during the Internet bubble.
Renneboog, Horst, Zhang [2008]	17 countries all over the world	1991-2003	SRI funds in many European and Asian countries achieved significantly lower results than national benchmarks. In the USA and Great Britain, SRI funds did not achieve above-average returns on investment.
Areal, Cortez, Silva [2013]	USA	1993-2009	Conventional funds achieve better results in non-crisis periods, and lower results in crisis periods in comparison with SRI funds.
Leite, Cortez [2014]	Europe	2001-2012	SRI funds achieve lower results than conventional funds in non-crisis periods.
Matallin-Saez et al. [2019]	USA	2000-2017	SRI funds perform worse than conventional funds during economic growth and better during recession, but the observed differences are not significant.

Source: own elaboration.

### 3. Characteristics of the research approach

Investment efficiency may be studied on the basis of various meters. The most frequently chosen coefficients are the classical ones which include Sharpe's, Treynor's or Jensen's coefficients. However, those require the fulfilment of additional conditions, which in the case of such data as time series, is not always possible. What is meant here is the normality and symmetry of distribution. The antidote to the unfulfilled required conditions are the non-classical meters. Many of them are correlated with the classic meters which results in similar indications regarding the choice of funds [Żebrowska-Suchodolska, 2017]. However, they present a different approach to risk-taking. The classical meters understand the risk as a neutral concept, which means that the achieved result may be better or worse than the expected one. The risk in this concept is understood, as, among others, a standard deviation. In the negative approach, presented by the non-classical meters, the risk is perceived as a loss, which is an adequate term from the investor's point of view. Here, the measure of risk is, among others, a standard semideviation described by the formula:

$$\sigma^- = \sqrt{\frac{1}{n-1} \sum_{t=1}^n ((r_t - m)^-)^2} \quad (1)$$

where  $(r_t - m)^-$  signifies a negative deviation of the return rates of the fund units from the determined break-even level.

The non-classical meters based on the negative concept of risk, frequently differ in their transcript of risk. Apart from the standard semideviation, it may also be the average value of absolute loss:

$$s^- = \frac{1}{n} \sum_{t=1}^n |(r_t - m)^-| \quad (2)$$

The structure of efficiency meters requires them to combine profit and to relate it to the risk, which is understood differently depending on the adapted concept. In the case of non-classical meters, as mentioned before, it is a bottom-up risk. One of such meters is the Sortino coefficient, which bases its transcript on Sharpe's coefficient, but here, the risk is a bottom partial moment of the second order, described by the formula (1). The Sortino coefficient is, therefore, transcribed as [Sortino, Price 1994]:

$$S = \frac{\bar{r} - m}{\sigma^-} \quad (3)$$

where:  $\bar{r} = \frac{1}{n} \sum_{t=1}^n r_t$ ,  $m$  – break-even level.

The coefficient described in such a way defines the average surplus return rate to risk which considers only loss. The expected values are, therefore, higher and positive. The negative ones indicate that the expected break-even level has not been achieved.

Another popular non-classical meter is the coefficient of the surplus return rate potential. Due to the fact that it is a modification of the Sortino coefficient, the risk is understood in the same way. The coefficient is described by the following transcript [Sortino at al., 1999]:

$$UPR = \frac{\frac{1}{n} \sum_{t:r_t > m} (r_t - m)}{\sigma^-} \quad (4)$$

The meter described in such a way rewards achieving results above the expected  $m$  threshold.

Another considered coefficient is the Omega coefficient. Its transcript partly resembles the UPR coefficient, but the risk is described as (2). The Omega coefficient is, therefore, described by the formula [Shadwick, Keating, 2002]:

$$O = \frac{\frac{1}{N} \sum_{t:r_t > m} (r_t - m)}{s^-} \quad (5)$$

Its interpretation is similar to the previously mentioned coefficients. It prefers higher values which mean higher profitability of a given fund.

The calculated particular fund efficiency coefficient may provide basis for prescribing ranking positions and researching the stability of results in different subperiods. Spearman's coefficient of rank correlation will prove helpful here; it is described by the formula [Luszniewicz, Slaby, 2003]:

$$\rho = 1 - \frac{6 \sum_{i=1}^N d_i^2}{N(N^2 - 1)} \quad (6)$$

where:  $N$  – the number of funds,  $d_i$  – the difference between the ranking positions of funds in the following subperiods.

The open market (FIO) of socially responsible funds in Poland is very scarce. Some funds which had existed not long ago, have already ceased to exist or have changed their investment profile. There are some new funds which have already taken their place, but, due to their short period of existence, they cannot be treated as the subject of research. The slow emergence of new funds indicates some interest in investing in this kind of assets. The research concerned selected Polish responsible investment funds. They were presented in table 2 together with benchmark and the value of their assets.

Such a conduct methodology created research possibilities to verify the following research hypothesis:

H1: The influence of the pandemic is less harmful in the case of socially responsible funds (in comparison with the wider market);

H2: Socially responsible funds remain quite stable.

TABLE 2

## Open investment funds selected for research

Mutual Fund	Benchmark	Value of assets (state on 30.06.2021)
NN Polish Responsible Investment FIO	100% WIG	PLN 236.85 ml
New Technology Investor SFIO	90% WIG+10% WIBID 6M	PLN 631.16 ml
PZU Medical	90% MSCI World Health Care + 10% WIBID 1M	PLN 111.32 ml
PKO Technology and Global Innovation	40% NASDAQ + 25% MSCI WORLD (USD) + 20% MSCI Europe IT + 15% WIBID O/N	PLN 2.65 bn

Source: own elaboration based on: [www 4].

The ethical funds present in Poland use different investment strategies. NN Polish fund invests at least 50% of assets in the shares of companies listed on the Polish stock exchange, and the rest in the shares of the Western European companies. Selection of companies on the basis of non-financial ESG factors. New Technology Investor aims to retain stable high involvement in shares and instruments based on them. The source of extraordinary results is to be the selection of technological companies, based on the fundamental analysis; it invests in Polish companies, as well as those listed on the stock exchange in Western Europe and the USA. PZU Medical invests globally, mostly in the shares of foreign companies whose activity is connected with health care (health care services, diagnostic and therapeutic equipment and developing new drug therapies). On the other hand, PKO Technology fund invests mostly in the shares of international companies (over 50%), which are leaders in their fields and technologies and have a stable financial situation.

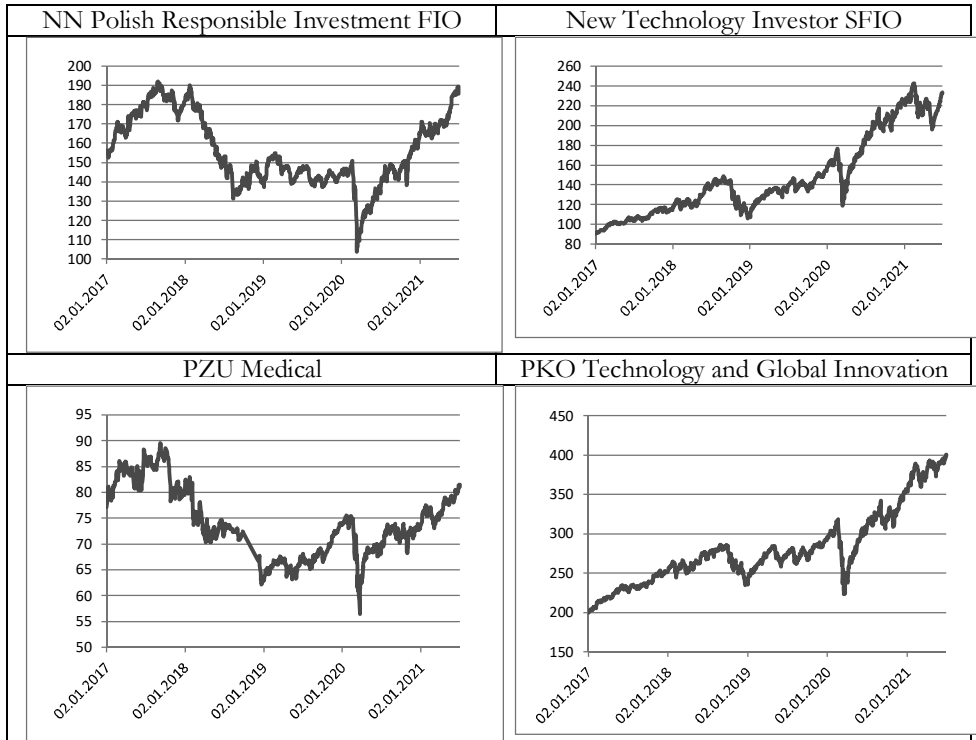
#### 4. Results

The research was conducted for three subperiods. These were I: January 2017-June 2018, II: July 2018-December 2019, III: January 2020-June 2021. Because of the fact that for the pandemic period, the data from January 2020 till June 2021, were taken into consideration, it was assumed that the earlier two periods should be of similar length. Hence, such a division into subperiods was adopted. January 2020 was assumed as the beginning of the pandemic period, as the first information of infection appeared in China already in December. Therefore, January was recognised as the moment when markets started to react more strongly to the appearing information.

The data was downloaded from the portal Stooq.pl. The research was conducted using the Excel spreadsheet and Statistica. The unit values of the studied funds were presented on chart 1.

CHART 1

## The unit values of the funds chosen for research



Source: own elaboration on the basis of Stooq.pl [date of entry: 7.07.2021]

The daily values of participation units of funds were the basis for determining logarithmic return rates, which were used to calculate efficiency coefficients of the studied funds in the three subperiods according to the formulas (3)-(5). The coefficient values calculated in each subperiod for the studied funds were presented in tables 3-5. It is considered that the investment goal is the investment with at least zero return rate, which does not produce losses. Obviously, it is a simplified assumption as it does not take into consideration the necessary transaction costs.

The graphic presentation of the values of participation units points to significant differences in the courses of curves in the first subperiod. The funds of technological character have a clear tendency to increase, while the values of participation units of NN POI and PZU Medical funds begin to decrease after reaching their maximum. It is reflected in the results of the efficiency coefficients. The values of the Sortino coefficient of NN POI and PZU Medical funds are below zero, which proves they have not reached the assumed break-even level. The values of two remaining funds achieve positive results in terms of Sortino coefficient.



**TABLE 3**

**Values of Omega, Sortino and UPR meters in the 1<sup>st</sup> subperiod**

Funds	Omega	Sortino	UPR
NN POI	0.9792	-0.0107	0.5059
Investor	1.4310	0.2002	0.6646
PZU	0.9509	-0.0237	0.4593
PKO	1.3747	0.1678	0.6155

Source: own elaboration.

**TABLE 4**

**Values of Omega, Sortino and UPR meters in the 2<sup>nd</sup> subperiod**

Funds	Omega	Sortino	UPR
NN POI	0.9529	-0.0221	0.4464
Investor	1.0691	0.0323	0.4995
PZU	1.0377	0.0143	0.3929
PKO	1.0717	0.0334	0.4997

Source: own elaboration.

In the second subperiod, NN POI i PZU Medical funds still achieve lower results in terms of Sortino coefficient, in the case of the NN POI fund those are negative values. However, in the third subperiod, after the lower results and the slump in March 2020, the funds started to make up for their losses and finally, the values of efficiency coefficients were mostly higher than in the previous periods. The values of Sortino coefficient of the studied funds were also positive.

**TABLE 5**

**Values of Omega, Sortino and UPR meters in the 3<sup>rd</sup> subperiod**

Funds	Omega	Sortino	UPR
NN POI	1.1622	0.0622	0.4460
Investor	1.1860	0.0774	0.4938
PZU	1.0728	0.0307	0.4522
PKO	1.1842	0.0707	0.4548

Source: own elaboration.

To compare the results, the efficiency meters for the WIG and WIG-ESG indexes were also calculated for the studied subperiods. In the first subperiod, the values of coefficients for the WIG-ESG index were not calculated as that index was not yet calculated during that period. The values of efficiency meters for the WIG and WIG-ESG indexes were presented in table 6.

TABLE 6

## Values of Omega, Sortino and UPR meters

Subperiod	Index	Omega	Sortino	UPR
I	WIG	1.0666	0.0360	0.5764
	WIG-ESG	-	-	-
II	WIG	1.0264	0.0143	0.5563
	WIG-ESG	0.075	-0.0013	0.5387
III	WIG	1.0666	0.0280	0.4484
	WIG-ESG	1.0366	0.0158	0.4493

Source: own elaboration.

The lowest values of both the Omega and Sortino coefficients were noted in the second subperiod. This statement concerns both the WIG, as well as the WIG-ESG index. In the case of the Omega coefficient for the WIG index, the result in the first subperiod was identical to that in the third one. On the other hand, in the case of the Sortino coefficient for the WIG index, the value in the first subperiod was slightly higher than in the third one. The results for the UPR coefficient are different due to this meter's construction. The highest value of the meter for the WIG index was noted in the first subperiod, then it decreased in the following subperiods.

For the WIG-ESG index it was possible to compare the second and the third subperiod. The results in table 6 of the Sortino coefficient for the WIG-ESG index present better results in the third subperiod. The assets in the ESG index, after some loss, in the second subperiod achieved better results than those in the WIG index. At the end, the results of the funds' and the WIG index' efficiency coefficients were collected and compared (compare table 7). In table 7, ↑ signifies the result of the fund higher than that of the WIG index. On the other hand, ↓ signifies the result of the fund lower than that of the WIG index.

TABLE 7

## Comparison of the efficiency meters' results in each subperiod for the funds and the WIG index

Funds	I subperiod			II subperiod			III subperiod		
	Omega	Sortino	UPR	Omega	Sortino	UPR	Omega	Sortino	UPR
NN POI	↓	↓	↓	↓	↓	↓	↑	↑	↓
Investor	↑	↑	↑	↑	↑	↓	↑	↑	↑
PZU	↓	↓	↓	↑	=	↓	↑	↑	↑
PKO	↑	↑	↑	↑	↑	↓	↑	↑	↑

↑ signifies the result of the fund higher than that of the WIG index,

↓ signifies the result of the fund lower than that of the WIG index

Source: own elaboration.

Half the funds in the first subperiod achieved worse results than the WIG index. In the second subperiod, three funds achieved higher results of the Omega and Sortino coefficients than the WIG index. In the third subperiod, apart from one result, the funds achieved higher results than the WIG index. The coefficient values enabled ranking of the funds. They were presented in table 8.

**TABLE 8****The funds ranking**

Funds	I subperiod			II subperiod			III subperiod		
	O	S	UPR	O	S	UPR	O	S	UPR
NN POI	3	3	3	4	4	3	3	3	4
Investor	1	1	1	2	2	2	2	1	1
PZU	4	4	4	3	3	4	4	4	3
PKO	2	2	2	1	1	1	1	2	2

Source: own elaboration.

The funds rankings are similar in each subperiod. It may result from a small number of the funds chosen for the research. The meters' values in each subperiod are similar, therefore, the fund's policy as well as the policy of the socially responsible company must be reflected in those. Those statements are also confirmed by the determined coefficient of Spearman correlation between the subperiods (see table 9). Its values reach the level of about 0.6-0.8. Not enough data does not allow to research the importance of the achieved result, but if it were possible, those values would be statistically significant.

**TABLE 9****Values of the coefficient of Spearman correlation between the subperiods**

Subperiod pairs	Omega	Sortino	UPR
I-II	0.60	0.60	0.80
II-III	0.80	0.60	0.60

Source: own elaboration.

**5. Conclusions**

The aim of the authors' was to focus on Polish socially responsible funds during the COVID-19 pandemic. In order to compare the results, the research concerned also two earlier subperiods, before the pandemic. The calculated values of the funds' and the ESG index's efficiency meters in each subperiod and comparison with the values calculated for the WIG index prove that socially responsible investments cope better. This confirms the validity of the stated H1 hypothesis and the lack of grounds for its rejection.

The designated funds rankings for each subperiod and the values of the coefficients of Spearman rank correlation point to quite a stable situation of funds' activity. It is probably influenced by the policy of the companies which chose social responsibility, but also by the right selections of portfolio assets by the managers. This is, therefore, consistent with the second stated hypothesis (H2).

The study bridges the research gap pertaining to the research on the results of Polish funds during the pandemic period. It may also be helpful in making investment decisions in the periods of strong reactions to various crises. The studied socially responsible funds were a particularly good investment choice during the pandemic period in comparison to the wide stock market. The research will be continued for the next subperiods and new socially responsible funds.

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