

Efficiency of Sustainable Investment in Polish Regulated Market

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The objective of this paper is the analysis of sustainable investment in terms of its effectiveness. The scope of analysis encompasses sustainable companies included in the RESPECT index, banks from RESPECT Index as well as the assets of sustainable Investment Fund SKOK. In the research, the following question was posed: Is the effectiveness of the companies and banks reflected in RESPECT Index and Investment Fund SKOK higher/lower than main market indices? In order to answer the question, the Sharpe ratio was calculated from daily and weekly returns in the period of December 2009 when the RESPECT index was created. The benchmark applied was WIG20 which is the index of 20 major companies in terms of capitalization and free flow. The same research was conducted for the portfolio of banks, included in the RESPECT index from the beginning, which was compared with WIG Banks index. Investment Fund SKOK was compared with the broad market WIG index and WIG20 index. Logarithmic rates of return were applied. WIBOR ON and WIBOR SW were treated as risk-free interest rate. Moreover, the results of the RESPECT index were analyzed with the application of linear regression in order to specify Jensen's alpha. The influence of adding to the RESPECT index was analyzed by means of event study methodology. The effectiveness of RESPECT index was higher than that of WIG20 index. The portfolio of banks included in the RESPECT index was also higher than that of WIG Banks index. The effectiveness of investment fund SKOK is lower than benchmarks applied. Positive influence of return rates was noted at the moment of inclusion in the index. The period of analysis was relatively short for drawing general conclusions. The results might have a random character. The only exception is the investment in Investment Fund SKOK, the effectiveness is lower which might result from a wider investment array.

Keywords: sustainable development, social responsibility investment, investment funds, sustainability stock indices

Sustainable Development as a Basis for SRI

The United Nations World Commission on Environment and Development known as the Brundtland Commission released the report "Our Common Future" in 1987 which had a tremendous impact on the concept of sustainability. The idea of sustainable development as a mechanism responsible for global issues related to the environment and development was described as "the needs of the present without compromising the ability of future generations to meet their own needs" (The UN World Commission on Environment and Development). The concept described in the report is based on two notions: the notion of needs and the notion

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of limitations. The first one especially refers to meeting the basic needs of the poorest in the world, which should be given priority. The latter one refers to the environmental ability to meet present and future needs via technology and social organizations. The human-centered model of sustainable development has marginalized other “ecology-centered models”, such as those proposed in *Caring for the Earth*, the publication of the International Union of Conservation of Nature (IUCN), United Nations Environment Program (UNEP) and World Wide Fund for Nature (WWF). The definition by the Brundtland Commission emphasized “human needs rather than the protection of nature or the biosphere” and presently, it is the central point of national and international environmental policy.

For years, numerous attempts to clarify the definition of sustainable development have been undertaken. The pursuit of clarity is understandable especially from technocratic perspective which requires a precise definition. However, establishing a conceptual rule has turned out to be difficult not only because of various rules of the concept alone, but also because of a variety of ideological perspectives. Therefore, sustainable development may be discussed from many different perspectives. In terms of the economy, sustainable development in investments is granted as a significant importance. Here, it means the concept which combines environmental, social, and governance elements while taking investment decisions.

The idea of sustainable developments in Socially Responsible Investing (SRI) is not new and its origins date back to the beginning of 18th century. The idea was developed all over America and was motivated by religious values. Mid 20th century, starting from the beginning of the Vietnam War (1959-1975), it introduced a new era of responsible investment. It manifested itself in lack of support from the companies supplying fire arms manufactures with raw materials. Moreover, after 2000, in view of many corporate scandals (Enron, WorldCom, Xerox, and Tyco) a new concept of corporate governance was established. It introduced a series of standards and good practices regarding management and control in the companies.

The attempt to define the area of sustainable development in investment is difficult, due to many levels of concept since its functions has three dimensions: environmental, social, and governance. The often quoted and concise definition of SRI was presented by Euros in 2006. According to this definition, sustainable investment is about taking decisions according to ESG factors (environmental, social, and governance) in the investment process.

Scenarios of the Rate of Return on Socially Responsible Investment

Theoretical research indicates a potential advantage of the companies working, according to ESG factors over conventional companies.

The advantage regards increased rate of return. There exist two arguments to support this thesis. The first one is economic; and the other one (so called discriminational) results from investment preferences. The economic argument indicates that both costs and profits related to SRI companies are difficult to relate them to share prices. The information which is transmitted to the market has to be transparent and strong to influence share value (to have both positive and negative effect).

Therefore, the information might concentrate more on the profit and less on the cost incurred which influences estimation level. The other argument (discriminational) assumes that the relation between costs and profits is of secondary importance for investors. They value social responsibility. Obtaining the rate of return at the level above the average is not much important more. When the group of this type of investors is relatively big, another argument might be relevant here. It concerns additional risk, i.e. the risk of functioning in a group

of companies which do not implement ESG factors (conventional companies), and therefore, they incur higher capital cost which results in decreasing theoretical evaluation.

Despite a potential benefit, the empirical research has not supported higher effectiveness of SRI over traditional investment (Bauer, Koedijk, & Otten, 2005; Galema, Plantinga, & Scholens, 2008).

The relation between the ESG concept and the rate of return is difficult to analyze both theoretically and practically, due to the multi-level concept of ESG. In spite of objective difficulties, the research has been undertaken and its results facilitate the formulation of three alternative scenarios of the rate of return in SRI companies as opposed to conventional companies.

The first scenario (no effect scenario) assumes the lack of ESG factors which influence the rate of return. It is totally consistent with the efficient market hypothesis. If the company does not provide any information significant for evaluation, it will not influence the share price (Statman & Glushkov, 2009). Even in the event when the information is public, accessible and included in asset prices, there will be no difference in the share price of companies between implementing and not implementing ESG factors (Wall, 1995). In this case, it is impossible to distinguish whether ESG costs are higher or lower than the benefits if we observe only the rates of return. This scenario was researched in the group of funds functioning in accordance with ESG factors and conventional funds (Bauer et al., 2005). This scenario refers to no effect hypothesis concerning SRI returns versus conventional companies.

The second scenario (mispricing scenario) assumes that ESG activities influence cash flow in the company but, without available information on the subject matter, it will not be demonstrated in the share price. It influences higher or lower rate of return of the companies with high ESG factors depending on the net profit from ESG. If ESG profit is higher than the cost, but investors consequently underestimate the benefits or overestimate the costs, the rate of return of high ESG companies will be bigger than those of low ESG (Statman, 2006).

Underestimating ESG benefits might be demonstrated in positive surprises, for example, higher than assumed rates of return (Edmans, 2008) or reduced volatility (Derwall & Verwijmeren, 2007). However, each factor might lead to mispricing. Derwal researched the companies which positively influenced the environment in the years of 1995-2003 (Derwall, Gunster, Bauer, & Koedijk, 2005). Edmans researched the relations between employees within the years of 1984-2005 (Edmans, 2008). They both noticed that investments generated a higher rate of return, which was interpreted as mispricing.

In the research sample regarding International Corporation, Dowell has noticed that companies employing high environmental standards had a higher rate of return than a group of companies lacking such standards. It proves that in certain dimensions (connected with environmental protection) employing the ESG concept might lead to a higher rate than the average rate of return in the long term (Dowell, Hart, & Yeung, 2000).

It might happen (using an economic argument) that the rate of return of the companies with high ESG might be lower than underestimated benefits from ESG (benefits lower than costs), and overestimate benefits but underestimate costs. Barnea and Rubin showed that ESG activities might be the sources of agency cost, because managers are encouraged to promote ESG investment in order to gain reputation benefits with the cost incurred by shareholders. This hypothesis has an empirical support, because negative correlation between social company rankings and employee ownership has been discovered (Barnea & Rubin, 2006).

The scenario described above refers to two hypotheses concerning SRI returns versus conventional companies. The first hypothesis "*doing good but not well*" assumes that SRI returns are lower than the returns

from conventional companies. The second hypothesis “*doing well while doing good*” assumes that SRI returns are higher than those from conventional investments.

The third scenario (risk factor scenario) assumes that the expected return from investment in companies with low ESG factor is initially higher, because the companies have benefits due to not being socially responsible. However, they run the risks related to the environment, products, governance, and work place quality (Dufresne & Savaria, 2004). Moreover, the risk might also regard legal risk, loss of investor’s trust, and other nonmaterial factors (Becchetti & Ciciretti, 2006). The risk might dramatically influence financial results of the companies in future. Therefore, taking into consideration increased sources of the risk coming from unsustainable development in which the investors expect higher benefits.

System disturbances of market estimation result in a higher expected return from low ESG companies. If the discrimination is only moral and ethical, the existence of investors benefiting from higher ESG companies might decrease the demand for low ESG companies, and therefore, it increase the cost of their capital. Heinkel, Kraus, and Zechner (2001) have developed a balance model in which he presented the impact on the cost of the companies.

Social responsibility of companies might influence the share price on condition that:

- information related to ESG activities is accessible for investors;
- a sufficient number of investors interested in this type of investment is present.

Each condition might change or influence the rate of return with various intensities. Therefore, the impact of ESG factors on the rate of return might vary in time.

RESPECT Index and Investment Fund SKOK

The index of socially responsible companies (RESPECT) has been present on the Warsaw Stock Exchange since November 2009. It is the second index of that kind in Central Eastern Europe. It has been initiated by business environment. Its purpose was to provide investors with a concise and reliable tool based on the international guidelines of the Global Reporting Initiative (GRI).

Without question, what was one of the most challenging elements during the preparation of methodology was adapting it to the reality of the Polish *post-emerging* economy. The International guidelines GRI were adapted to the requirements of the Polish market. Simultaneously, it was agreed that the requirements would be gradually increased. The companies in the WIG20, mWIG40, sWIG80 indices have been chosen for the research. So far, four editions have taken place.

After the first edition, a modification was introduced. The scope of the subject estimated was expanded to include capital groups and to differentiate the results depending on the branch. The process itself is based on questionnaires which are verified by the employees of the audit company (Deloitte). The answers are given a score (score 1-3 with different significance of the questions). The total score decides a rating class for the company.

Score AAA, AA, and A require results above 75%. The questionnaire takes into consideration the question of managing organization (CSR—*Corporate Social Responsibility* policy, functioning of stock exchange, and management system), economic aspects (settlements, remunerations, and supporting pro-community activities), environment criteria (environment management, natural resources, energy and water, climate, precipitation) and social criteria (health and safety at work regulations, professional development of the employees, human rights, and protection of personal data).

In the first edition of the RESPECT Index, 16 out of 114 companies were selected. They received over 75% of a total score (average score was 79.60%) and, therefore, they were granted A. However, none of the companies received the highest rating AAA. Among 114 rated companies, 27 received BBB and were not qualified for the RESPECT Index (average 72.31%). An Average score received by the all participating companies (114) was 66.09%. The question whether a company employs a verifiable strategy of social responsibility was asked. Fifty nine percent replied that the company conducts CSR activity, 14% replied that the company has a concise CSR strategy, and 79% admitted that they have not implemented CSR reporting process. As far as environmental issues are concerned, 50% of replies were negative and 41% positive. In the case of the question whether there is a functioning code of ethics, 59% of replies were negative.

What is very significant for the research results are management issues, especially a concise CSR policy (preparation of reports compatible with the GRI standards). Another important issue is the environment understood as environmental policy in which a general direction of environmental activities is specified. The questions of ethics are also examined. One of the questions refers to creating and implementing a code of ethics which should be supported with implementation of formal mechanisms enabling the execution of the code.

So far, four verifications of the RESPECT index have been conducted. Currently, 22 companies are included in the RESPECT Index, which is a profit index.

Investment Fund SKOK is the first, and so far, the only fund in Poland which has introduced ethical funds in its portfolio. There are:

- SKOK Investment Fund Ethical 1;
- SKOK Investment Fund Ethical 2.

SKOK Investment Fund Ethical 1 which was introduced on December 23, 2008, invests no less than 70% in unit trust issued by the foreign fund Oppenheim Ethik Bond Opportunities (OP Ethik Bond) while unit trust might amount to 100%. According to the results of the report on June 30, 2011, 84.47% of the fund assets were unit funds of OP Ethik Bond. OP Ethik Bond is an Austrian fund investing in fixed income bonds issuers which includes the subjects conducting business pursuant to catholic ethics. Issuers related to alcohol, tobacco, firearms and contraceptives production are excluded. Such exclusion is also applied to the suppliers of nuclear technologies as well as pornography. The units are listed in the Euro, i.e. investing in SKOK 1 is connected with an exchange rate risk.

SKOK 2 was created subsequently. The first listing was conducted on August 18, 2010. The fund invests 100% in shares listed in the regulated market in Poland and the UE. It is forbidden to invest in bond and shares issued by the subjects conducting business illegally in the country where the issuer is based, and bonds and shares issued by companies are related to the production of firearms and ammunition, tobacco, and liquor, steel in which marten technology is used, pornography, money laundering, gambling casinos, and lotteries.

The analysis of financial audit of SKOK 2 shows that the fund invests in the shares listed on the CEE stock exchanges. In 2010, the investments mainly concentrated on the Warsaw Stock Exchange (GPW)—88.76% of investment with 69.57% of investment in shares. The portfolio of mid-year 2011 (80.66% of all the assets) was diversified geographically. The amount of shares on GPW has been decreased to 35.5%. Simultaneously, the amount of shares on the Prague Stock Exchange and Budapest SE has been increased to 23% and 35% respectively.

Among 24 Polish companies present in the portfolio at the end of 2010, only five were in the RESPECT index: Bank Handlowy, ING Bank Śląski, KGHM, PKN Orlen, and Telekomunikacja Polska. The companies

mentioned constituted 22.64% of the whole portfolio value. In the mid 2011, the number of companies in the RESPECT index was decreased to four (with decrease to 14 Polish companies) and constituted as little as 8.69% of the share portfolio value. Other stock exchanges in this region do not have a counterpart of the RESPECT Index.

Data and Methodology

The research was based on daily and weekly returns from December 31, 2009 to July 31, 2011 for the following instruments:

- Index WIG20;
- Index RESPECT;
- Index Banks.

The portfolio contains shares of two banks (ING, Handlowy) which have been present since the day RESPECT was listed.

In the case of SKOK Ethical 2's return rates, the research was conducted for the period of August 18, 2010 to November 17, 2011. For calculation a logarithmic rate of return that has been applied, WIBOR ON and WIBOR SW were treated as interest rate risk-free. For daily and weekly returns, the Sharpe ratio was calculated as follows:

$$SR = \frac{\mu - r_f}{\sigma}$$

where:

μ : average logarithmic rate of return;

r_f : logarithm of average return rate risk-free;

σ : standard deviation of logarithmic returns.

A logarithmic rate of return has been applied for calculation, WIBOR ON and WIBOR SW were treated as interest rate risk-free.

The results of the RESPECT index were researched with the application of linear regression. The purpose was the specifications of Jensen's alpha. The research was conducted for daily and weekly returns. The following model has been applied:

$$r_e(t) = \alpha + \beta r_{eB}(t) + \varepsilon(t) \quad (1)$$

where:

r_e : excess rate of return from index examined;

r_{eB} : excess rate of return from benchmark;

ε : random variable with standard normal distribution.

Excess rate of return was calculated for the following:

$$\begin{aligned} r_{ex}(t) &= r_x(t) - r_f(t-1) \\ r_x(t) &= \ln(I_x(t)) - \ln(I_x(t-1)) \\ r_f &= \frac{\ln(1 + r_{free})}{k} \end{aligned}$$

where:

r_{free} : risk-free rate of return;

k : number of base periods of the year;

I_x : Value of index x .

WIG 20 and the widest market index WIG have been used as a model index for model 1. WIBOR ON has been applied as risk-free rate of return for daily returns. WIBOR SW has been used for weekly returns.

The RESPECT index contains almost exclusively companies from the WIG20, mWIG40 and sWIG80 indices, and therefore, model 1 has been modified by introducing additional variables explained in model (2) and in model (3):

$$r_e(t) = \alpha + \beta_1 r_{eB_1}(t) + \beta_2 r_{eB_2}(t) + \varepsilon(t) \tag{2}$$

$$r_e(t) = \alpha + \beta_1 r_{eB_1}(t) + \beta_2 r_{eB_2}(t) + \beta_3 r_{eB_3}(t) + \varepsilon(t) \tag{3}$$

where:

$r_{eB_1}, r_{eB_2}, r_{eB_3}$: excess rate of return from benchmarks.

WIG20, mWIG40 have been specified as benchmarks. Models (1)-(3) have been estimated by the classical method of least squares.

The event study methodology was used to analyze the influence of adding to the RESPECT index. Such event study analysis facilitates measuring the impact of a particular event on the company value. It means that the influence of a given event is reflected in the share price (MacKinley, 1997).

The event study analysis requires, first of all, to define the period in which the event under analysis influences the rate of return. Next, this period is divided into two parts (see Figure 1):

- estimation period for $t \in (T_0, T_1]$;
- event window for $t \in (T_1, T_2]$.

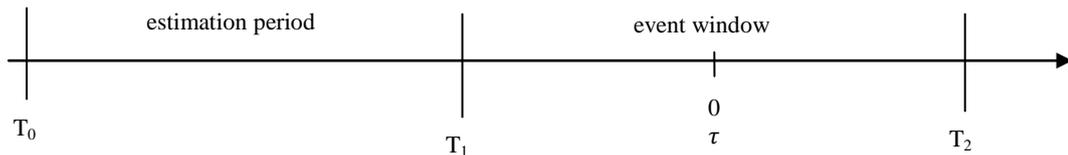


Figure 1. Time axis of an event study. Source: MacKinlay (1997).

The length of the study period was 21 days—it is most frequently assumed period of the event study (Peterson, 1989), whereas the estimation period is 250 days, i.e. the period of about one year before the event.

The event study analysis requires determining abnormal returns within one event window. An abnormal return is defined as the difference between the real return on financial instrument (ex-post) and normal returns. A normal return is an expected rate of return, if a particular event did not take place (MacKinley, 1997). The abnormal return on i -instrument and the event at the moment of τ may be calculated with the following equation:

$$AR_{i\tau} = R_{i\tau} - E(R_{i\tau}|F_\tau), \tag{4}$$

where:

$AR_{i\tau}$: abnormal return on i -instrument;

$R_{i\tau}$: real return on i -instrument;

$E(R_{i\tau}|F_\tau)$: normal return, calculated as a conditional expected value of the return against the information available at a particular moment τ (F_τ).

Normal returns are estimated by using different models which may be divided into two groups:

(1) statistical models, also referred to as a theoretical; the most popular include:

- Constant Mean Return Model;
- Market Model.

(2) economic models, which include:

- CAPM (Capital Asset Pricing Model);
- APT (Arbitrage Pricing Theory).

Statistical models, on the contrary to economic ones, assume that the character of the rates of return does not depend on economic factors. Moreover, in statistical models, it is crucial to assume that the rates of return have a normal distribution and are independent.

The research used the market model in which the rates of return on a given financial instrument correspond to the rates of return on the market portfolio. The relation is linear. For a randomly chosen i -instrument, the market model may be reflected in the equation below:

$$\begin{aligned} R_{it} &= \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \\ E(\varepsilon_t) &= 0, \text{Var}(\varepsilon_t) = \sigma_{\varepsilon_i}^2 \end{aligned} \quad (5)$$

where:

- R_{it} : return on i -financial instrument;
- R_{mt} : return on the market portfolio in t period;
- ε_{it} : remainder of the 0 average and variance $\sigma_{\varepsilon_i}^2$;
- $\alpha_i, \beta_i, \sigma_{\varepsilon_i}^2$: model parameters.

In order to estimate model parameters, the classical method of least squares is used, and the data come from the estimation period.

If $L_1 = T_1 - T_0$ and $L_2 = T_2 - T_1$, then the parameters estimators of the model (5) look as follows:

$$\begin{aligned} \hat{\beta}_i &= \frac{\sum_{\tau=T_0+1}^{T_1} (R_{i\tau} - \hat{\mu}_i)(R_{m\tau} - \hat{\mu}_m)}{\sum_{\tau=T_0+1}^{T_1} (R_{m\tau} - \hat{\mu}_m)^2} \\ \hat{\alpha}_i &= \hat{\mu}_i - \hat{\beta}_i \hat{\mu}_m \\ \sigma_{\varepsilon_i}^2 &= \frac{1}{L_1 - 2} \sum_{\tau=T_0+1}^{T_1} (R_{i\tau} - \hat{\alpha}_i - \hat{\beta}_i R_{m\tau})^2 \end{aligned}$$

where:

- $\hat{\mu}_i$: average rate of return on i -instrument in the estimation period;
- $\hat{\mu}_m$: average rate of return on the market portfolio in the estimation period;
- $R_{i\tau}$: rate of return on i -instrument in τ period;
- $R_{m\tau}$: rate of return on the market portfolio in τ period.

The parameters of the market model enable the calculation of abnormal returns in an event window:

$$\widehat{AR}_{i\tau} = R_{i\tau} - \hat{\alpha}_i - \hat{\beta}_i R_{m\tau}$$

Then, the abnormal return is a disruption of the market model which is not included in the test. The variance of abnormal returns equals:

$$\sigma^2(\widehat{AR}_{i\tau}) = \sigma_{\varepsilon_i}^2 + \frac{1}{L_1} \left[1 + \frac{(R_{m\tau} - \hat{\mu}_m)^2}{\hat{\sigma}_m^2} \right]$$

where:

- $\hat{\sigma}_m^2$: variance of the return rate on the market portfolio in the estimation period.

In order to check if abnormal returns in the event window are crucial, the J statistics was used (Patell 1976):

$$J = \frac{1}{\sqrt{N}} \sum_{t=1}^N \frac{\widehat{AR}_{it}}{\sigma^2(\widehat{AR}_{it})}$$

where N is the number of observation. The zero hypothesis of the test assumes that abnormal returns equal zero in the observation window.

Results

The results with the statistics applied are presented in Table 1. Daily and weekly average rates of return for the RESPECT index were bigger than that for the WIG20 index. In the case of daily returns, it was twice as big and for weekly returns the RESPECT index was three times bigger than the WIG20 Index. A standard deviation for daily and weekly rates of return for the RESPECT index are lower, the Sharpe ratio for this index is significantly higher.

Table 1

Basic Statistics of the RESPECT Index for Model Portfolios

Instrument		RESPECT	WIG20	WIG Banks	Banks RESPECT
Daily return	Average return	0.1385	0.0683	0.0630	0.0943
	Standard Deviation	1.5449	2.6304	2.0681	1.7515
	Sharpe ratio	0.0838	0.0226	0.0261	0.0487
Weekly return	Average return	0.6347	0.2324	0.1965	0.4731
	Standard Deviation	3.2504	3.6146	4.8966	4.2115
	Sharpe ratio	0.1953	0.0643	0.0401	0.1123

Note. Source: Own calculation.

What is interesting is the juxtaposition of returns obtained by sector index WIG banks and hypothetical portfolio including banks present in the RESPECT index since the beginning of the listing—ING and Handlowy. Portfolio banks RESPECT has obtained averages of daily and weekly returns which are bigger than the sector index WIG Banks (3.1 BPS for daily returns and 27.75 BPS for weekly returns). For the WIG20 index, it was 2.6 BPS and 24.07 BPS respectively. Also the Sharpe ratios for portfolio banks RESPECT were significantly higher. For daily returns rates, it was 1.9 times bigger than for the sector index and 2.2 times bigger than for the WIG20 index. In the case of weekly returns, the Sharpe ratio was 2.75 times bigger than the WIG20 index and 2.8 times bigger than the WIG Banks index.

Table 2

Basic Statistic for Fund SKOK Ethical 2 vs. Model Portfolios

Instrument		RESPECT	WIG20	Fund SKOK Ethical 2
Daily return	Average return	0.0429	-0.0248	-0.0523
	Standard Deviation	1.1092	0.8761	0.5642
	Sharpe ratio	0.0294	-0.0400	-0.1109
Weekly return	Average return	0.5638	0.1701	0.0178
	Standard Deviation	2.2885	1.8652	1.3113
	Sharpe ratio	0.2463	0.0912	0.0136

Note. Source: Own calculation.

The same type of research was conducted for rates of return in Investment Fund SKOK Ethical 2 (see Table 2). An average return rate, both daily and weekly, was lower for the Fund than for the RESPECT and WIG20 indices. Also the Sharpe ratio was lower.

Table 3 presents the results concerning Jensen's alpha. The ratios are significant and positive, which means that the RESPECT index gave better investment results than benchmarks.

The sensitivity of excess return rates for the RESPECT index are presented in Table 4. Variations of excess return rates from the WIG20 index have the biggest impact.

Table 3

Jensen's Alpha for Daily and Weekly Returns of the RESPECT Index

	model 1 WIG	model 1 WIG20	model 2 WIG20, mWIG40	model 3 WIG20, mWIG40, sWIG80
Daily returns	0.0495	0.0730	0.0696	0.0697
Weekly returns	0.1365	0.1024	0.1244	0.1214

Note. Source: Own calculation.

Table 4

Sensitivity of Excess Return Rates

	WIG20	mWIG40	sWIG80	R ²
model 2				
Daily returns	0.8168	0.1084	-	0.8726
Weekly returns	0.7213	0.2325	-	0.9005
model 3				
Daily returns	0.8131	0.0866	0.0329	0.8727
Weekly returns	0.7246	0.2523	-0.0287	0.9006

Note. Source: Own calculation.

Table 5

Abnormal Returns and Patell's J-statistic

Day	AR	J statistics	Day	AR	J statistics
-10	-0.43%	-1.223	0	1.55%	3.576
-9	0.02%	-0.457	1	0.67%	1.141
-8	-0.34%	0.267	2	0.56%	1.675
-7	-0.25%	-0.678	3	0.02%	-0.233
-6	-0.54%	1.007	4	0.34%	1.837
-5	-0.12%	-0.254	5	-0.08%	-0.17
-4	0.70%	-0.018	6	0.15%	0.457
-3	0.37%	-2.677	7	0.09%	0.135
-2	-0.45%	-1.678	8	0.09%	0.377
-1	0.20%	-1.23	9	-	-

Note. Source: Own calculation.

The abnormal returns around the dates are calculated when an announcement on a stock's inclusion in the RESPECT index is made. *J*-statistics are used to test the significance of the abnormal returns. The obtained results are listed in the Table 5. On day - 3 before the announcement, an abnormal return is exhibited. With WIG20 blue chip index as the benchmark, the abnormal return amounts to 0.37%. This could indicate that the market expects the particular stock to be included in the index. In compliance with our expectations the announcement day exhibits the largest abnormal return (1.55% with the blue chip index as a benchmark) in the

whole event window, and this return is also significant. Also, in the following days after the announcement, positive returns are observed, yet they are not statistically significant.

Conclusions

The analysis of empirical research, conducted under similar conditions in other countries, does not confirm the higher effectiveness of the specified type of investment. There are three hypotheses: “doing good but not well”, “doing well while doing good”, and “no-effect”. The results of the research incline the second hypothesis which is due to the higher Sharpe ratio and Jensen’s alpha for sustainable investment. However, at this stage, due to a relatively short history of the RESPECT index, it is difficult to draw conclusions concerning profitability of investment. The results might have a random character or it might be a result of KGHM (the leader of recent increase) company which has a significant representation in the index. It results from the fact that there are no strong supply and demand mechanisms which is sustainability—oriented on the Polish market.

The only exception is investment in Investment Fund SKOK. The effectiveness is lower which comes from the fact that SKOK has a wider investment array, encompassing CEE countries. Moreover, portfolio companies had a lower rate of return than the ones reflected in the RESPECT index. The analysis of the RESPECT’s profitability and risk, compared with WIG20, shows that it had a higher rate of return and lower risk in this period.

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