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Does Being Listed in BIST Sustainability Participation Index Affect Share Prices?

BİST Sürdürülebilirlik Katılım Endeksi'nde Listelenmek Hisse Fiyatlarını Etkiler mi?

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ABSTRACT

According to the Efficient Market Hypothesis, stock prices are affected by all market information simultaneously. Hence, it does not appear conceivable for the investor to obtain returns above the market average, according to this hypothesis. On the other hand, the market anomalies shown by empirical studies highlight the impossibility of an efficient market and the potential for divergent responses to news and announcements from the market and investors. Whereas the idea that stock prices reflect both recently made public announcements and historical information is described as an efficient market in semi-strong form, it is tested to see how the market responds to particular events that might have an impact on it and lead to predictable price movements. The main purpose of the research is to ascertain whether being included in the Borsa Istanbul Sustainability Participation Index has an effect on stock returns. Through using the Event Study approach, the analysis focused on the stock closing data of 23 companies whose uninterrupted data were acquired from 29 companies in the BIST Sustainability Participation Index, which began trading on November 12, 2021. The major findings demonstrate that the market is not efficient in a semi-strong form based on statistically significant findings in Average Abnormal Returns as well as Cumulative Average Abnormal Returns. It might be countered, though, that the fact that these outcomes are discontinuous suggests that the investor may face obstacles to achieving returns above the market average.

Anahtar Kelimeler:

BİST Sürdürülebilirlik

Katılım Endeksi,

Yarı Güçlü Formda Etkinlik,

Olay Çalışması

Jel Kodları:

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ÖZET

Etkin Piyasa Hipotezi piyasadaki tüm bilgilerin hisse senedi fiyatlarına eşanlı olarak yansıdığını ileri sürmektedir. Dolayısıyla, bu hipoteze göre yatırımcının piyasa ortalaması üzerinde getiri elde etmesi mümkün görünmemektedir. Öte yandan, yapılan ampirik çalışmalarda ortaya çıkarılan piyasa anomalileri, etkin bir piyasanın mümkün olamayacağını, piyasanın ve yatırımcının haber ve duyurulara karşı farklı reaksiyonlar gösterebileceği gerçekliğinin altı çizilmiştir. Hisse senedi fiyatlarının tarihsel bilgilerin yanı sıra kamuya açıklanan duyuruları da yansıttığı görüşü yarı-güçlü formda etkin piyasa olarak nitelendirilirken, piyasayı etkileyebilecek ve tahmin edilebilir fiyat hareketlerine neden olabilecek spesifik olaylara karşı tepkiler test edilmektedir. Bu doğrultuda, çalışmanın amacı Borsa İstanbul Sürdürülebilirlik Katılım Endeksi'ne dâhil olmanın hisse senedi getirilerine etkisinin var olup olmadığını bulabilmektir. Bu kapsamda, 12 Kasım 2021 tarihi itibariyle işlem göremeye başlayan BİST Sürdürülebilirlik Katılım Endeksi'nde yer alan 29 firmadan kesintisiz verilerine ulaşılan 23 firmanın hisse senedi kapanış verileriyle Olay Çalışması yöntemi kullanılarak analiz gerçekleştirilmiştir. Elde edilen ana bulgulara göre, hem Ortalama Anormal Getiriler hem de Kümülatif Ortalama Anormal Getirilerde tespit edilen istatistiksel olarak anlamlı bulgular piyasanın yarı güçlü formda etkin olmadığına işaret etmektedir. Ancak, bu sonuçların süreklilik arz etmiyor olması, yatırımcının piyasa ortalamasının üzerinde getiri elde etmede kısıtlarla karşılayabileceği öngörüsüne de işaret ettiği iddia edilebilir.

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1. INTRODUCTION

The efficient market is acknowledged as an opinion that the news spreads very quickly when the information is released and that it is immediately reflected in the prices of shares. It signifies that the securities markets are very efficient at reflecting information about the stock market (Malkiel, 2003: 59). Market efficiency is divided into three types according to Fama's (1970) Efficient Market Hypothesis. The first of them, known as weak-form efficiency, asserts that the stock price of today reflects all previous stock prices' history. This is the reason why it's impossible to forecast and outperform the market via technical analysis. Efficiency, in semi-strong form, indicates that all publicly available information is evaluated using the stock's most recent share price. This suggests that neither technical analysis nor fundamental analysis can be employed in order to achieve better gains. The strongest variation of market efficiency is strong form efficiency. It claims that a stock price accounts for all market information, both public and private. Even insider information, according to some, cannot benefit investors (Vulic, 2009). Therefore, the Efficient Market Hypothesis proposes that it is impossible for an investor to beat the market on average. Although the primary premise of the aforementioned hypothesis is that people are rational, certain scholars hold the opinion that people are neither rational nor just reasonable or irrational beings. It is asserted that investors may be able to generate abnormal returns as a consequence. Behavioral Finance Theory is based on scenarios in which an investor might choose to maximize value rather than reap benefits (Tversky & Kahneman, 1989; Kahneman, 2018; Housel, 2022). However, when examined from a different angle, it is well known that market anomalies play a significant role in the decision-making process for investors, in addition to value judgments or prejudices. It is crucial to consider if market participants who invest from an Islamic perspective and, consequently, with interest sensitivity, have the ability to outperform the market as this topic is evaluated in terms of investor behavior.

Corporate Sustainability is defined as the process of integrating economic, social, and environmental factors into organizational activities and decision-making processes in order to maximize long-term value to companies. It also includes overseeing any hazards that could arise from the aforementioned issues (Rahman, 2011). Four factors may be considered to make up the sustainability issues that need to be acknowledged and examined. The first of them is social impact, which is characterized as an assessment of how society as a whole affects the company in terms of stakeholder effect and social contract. The company's actions' effects on the geophysical environment are referred to as the environmental impact, which comes in second. The connection between the business and its internal stakeholders, particularly the workers, is defined as well as the corporate culture, which encompasses all facets of this relationship, and the financial resources are described in terms of providing a suitable rate of return for the degree of risk assumed (Aras & Crowther, 2009: 282). Companies trading on the Borsa Istanbul are deemed to have encountered the sustainability criteria and are qualified to participate in the BIST Sustainability Index if they have a general sustainability rating of 50 or higher, each main heading score of 40 or higher, and at least 8 category grades of 26 or higher. For investors who desire to engage in both the Participation and Sustainability Indices at the same time, the BIST Sustainability Participation Index was established on November 12, 2021.

The main motivation of this study is to examine the effect of being included in the sustainability participation index on firm performance, both within the framework of competition conditions and within the scope of the index created from an Islamic point of view, on the investor behavior of firms. In this perspective, the primary objective of the research is, under the assumption that all other factors remain constant, to analyze the impact of being a part of the BIST Sustainability Participation Index on stock prices by employing the Event Study approach. By evaluating the outcomes in view of the spectrum of hypotheses, it is possible to determine the efficiency of the market. In this vein, a literature study review was carried out, the data set and methodology were described, and the conclusions drawn from the analysis were assessed within the framework of all this theoretical underpinning.

2. LITERATURE REVIEW

In keeping with the objective of the research, the evidence from empirical investigations in the literature that produced both comparable and dissimilar outcomes are presented below.

Oberndorfer et al. (2013) used the Fama and French 3-Factor Model and t-GARCH (1,1) models to examine the impact of to be listed German firms in the Dow Jones STOXX Sustainability (DJSI STOXX) and Dow Jones Sustainability World (DJSI World) Indices. The results demonstrate the unfavorable effect of being a part of DJSIWorld. Regrettably, it was just not attainable to identify any significant cumulative average abnormal returns for their participation in DJSI. In a comparable sense, Özmen et al. (2022) evaluated by using the TOPSIS

(Technique for Order Preference by Similarity to Ideal Solutions) method in the research aiming to measure the financial performance of 15 companies included in the BIST Sustainability Index for the first time. The investigation revealed that, despite the positive impact on company performance of being included in the Index, these impacts were not statistically significant. On the other side, Uzunoğlu (2022) used event study method to examine how the Covid-19 pandemic affected the BIST Sustainability Index. While not statistically significant, the research's results suggested that there were negative abnormal returns on the event day. However, it was discovered that the cumulative abnormal returns were negative after the first death was reported.

In their analysis spanning the years 2001–2006, Consolandi et al. (2008) identified firms with the highest CSR (Corporate Social Responsibility) ratings among those included in the Dow Jones Stoxx 600 Index. Through using the Event Study approach, it was determined how each of these firms' share prices reacted to being included or excluded in the Dow Jones Sustainability Stoxx Index (DJSSI). As a consequence, the benefits of inclusion in the index and the negatives of exclusion from the index were established. In contrast, Wai Kong Cheung (2011) evaluates the US equities added to or removed from the Dow Jones Sustainability Global Index between the years of 2002 and 2008 in order to investigate their impact on the share prices of firms included and excluded from the index. There was no conclusive proof that the announcement alone had a major influence on stock return, according to the examination of the impacts assessed on the basis of liquidity, risk, and return on equity. But nevertheless, it was found that the return of stocks included in (excluded from) the index had a substantial but transient boost (down) on the day of the shift.

Eyüboğlu & Bulut (2015) evaluated how stock performance was impacted by announcements made by firms quoted on the BIST 30. According to the statistical findings before and after the event, the market is not efficient in a semi-strong form. Parallel to this, Kavcar and Gümrah (2017) examined the impact on stock returns of Borsa Istanbul-based firms entering the BIST Corporate Governance Index. The event study methodology was employed in the experiment to gauge the market's efficiency. The results of this analysis included abnormal returns and the observation that the market was not efficient in a semi-strong form. In their study, Temiz and Acar (2018) used an event study to assess how firms trading in the BIST Sustainability Index reacted to the news that they had been included in the index. Accordingly, 44 firms listed in the Index were grouped according to earnings per share (EBK), indebtedness and Tobins' q values in the event windows created, and the findings were interpreted. The outcomes illustrate that, in terms of average abnormal returns, there is no noticeable difference between the series belonging to the companies categorized in accordance with the specified criteria. In a related manner, Parlakkaya et al. (2019) used the event study methodology to determine the impact of this shift on the stock returns of the firms included in the BIST Sustainability Index. When all years are considered independently and combined in the research conducted between the years 2014 and 2016, it is evident that statistically meaningful findings could not be reached.

Barroso Del Toro et al. (2022), aimed to measure the reactions of the shareholders of the leading US energy companies to the sustainability announcements. 4101 events were found using the Global Database of Events, which considered 207,386 news headlines from 2017 to 2019. As a result, it has been demonstrated that shareholder reaction to sustainability-related announcements is meaningful and substantial. In contrast, Çimen (2019) used the event study approach to look into the effect of company inclusion in the BIST sustainability index on stock returns. The impact of being included in the index was examined in the context of the seven-day event window. The study's conclusions show that the announcement of inclusion in the Sustainability Index has a positive impact on the performance of the company. It may be concluded from the results that the market is not efficient in semi-strong form. Also, in the research on the link between market-specific business performance metrics of firms quoted in Borsa Istanbul for the years 2014 to 2017, Yilmaz et al. (2020) examine the efficacy of corporate sustainability (CS-measured by participation in the sustainability index). The results demonstrate that being a part of the index lessens a company's total risk and improves its resilience relative to other firms that are not, safeguarding it against stock drops in the case of a major catastrophe.

When the studies in the literature are taken as a whole, it is clear that, within certain bounds, the influence of being included in sustainability-based indexes on the market value of the shares differs in both domestic and foreign securities markets. While Consolandi (2008), Wai Kong Cheung (2011), Eyüboğlu & Bulut (2015), Kavcar & Gümrah (2017) and Çimen (2019) found findings that the market was not efficient in a semi-strong form, statistically significant findings could not be reached in the studies of Oberndorfer et al. (2013), Parlakkaya (2019), Özmen et al. (2022); Uzunoğlu Ünlü (2022).

3. DATASET AND METHODOLOGY

In light of the specific objectives of the research, 23 out of 29 firms that fulfill the Participation Index and Sustainability Index requirements and whose uninterrupted information is available are included in the analysis. The date of the event, 12 November 2021, was taken into consideration when these firms began to be listed in the Borsa Istanbul Sustainability Participation Index. The range of -20, and -270 before the day of the Event was considered as the estimation period in the Event study's content that is employed in the research. Also, during the timespans of 20 days prior to and 20 days following the event date, separate assessments of Average Abnormal Returns (AAR) and Cumulative Average Abnormal Returns (CAAR) are determined.

In semi-strong form, the idea that all information that is publicly available is reflected simultaneously on asset values is accepted in efficient markets. In other words, this theory is more comprehensive than weak-form efficient markets and includes news, comments, sales, profit for the time, capital increase, dividend distribution, mergers, transfers, and other corporate operations in addition to publicly published firm information. The event study approach is frequently employed in the literature to assess market efficiency within the context of the aforementioned premise. By taking the date of the firm's activities' public disclosure as day 0, this technique analyzes any potential differences in the stock returns of the company in the days before and after the event. Also, the post-event forecast window is frequently used to examine a firm's performance after announcements like a significant acquisition or initial public offering (IPO). The post-event prediction window enables determining the event's longer-term effects (Benninga, 2008: 333). The event study's approach consists of supposing that all other parameters remain constant while examining the information set on the inside of the analysis.

- The daily returns of the Index and associated firms are first estimated by calculating their natural logarithms in order to approximate the normal distribution as follows:

$$R_t = l_n(\frac{P_t}{P_{t-1}}) \times 100 \quad (1)$$

In this formula, R_t represents the logarithmic return of the stock in period t, P_t refers to the price of the stock in period t and P_{t-1} demonstrates the price of the stock on day t-1.

- The market model is used to determine the Expected Return on stocks in the following stage (Brenner, 1979):

$$E_{it} = \alpha_i + \beta_i \times R_{mt} + \varepsilon_t \quad (2)$$

R_{mt} indicates the market rate of return, while α_i and β_i are the regression coefficients for the stock's expected rate of return.

- In the next step, during the announcement process, the Abnormal Return is computed.

$$AR_{it} = R_{it} - E_{(r)it} \quad (3)$$

The average abnormal return rate, or AR, of the stock "i" is determined by subtracting the expected return from the actual return.

- In the last step, different event windows are used to determine the Cumulative Average Abnormal Returns employing the formula below:

$$CAAR_t = \sum_{t=0}^{x} ARi,_t \quad (4)$$

$CAAR_t$ is the stock's cumulative abnormal return within the event window period.

The analyses conducted lead to the conclusion that market efficiency is indicated by average abnormal returns and cumulative average abnormal returns that are near zero. On the other hand, the argument that the market is not efficient in a semi-strong form is supported by the fact that this value is not near zero, or, in other words, by a value other than zero (positive or negative) (Tekbaş, 2022: 271). The research's hypotheses were established as follows within the context of this theory:

H_0: Share returns are unaffected by being listed in the Borsa Istanbul Sustainability Participation Index.

H_1: Share returns are affected by being listed in the Borsa Istanbul Sustainability Participation Index.

In case of being included in the Borsa Istanbul Sustainability Participation Index, if statistically significant results are achieved, the H_0 hypothesis will be rejected based on the conclusions drawn from the analyses done within

these hypotheses. In light of the available data and the model, it is possible to conclude that the market is not efficient in a semi-strong form.

4. FINDINGS and ANALYSIS

From the perspective of the purpose of the study, 12 November 2021, when the companies included in the analysis started to be listed in the BIST Sustainability Participation Index, was considered the event day. The Event Study technique is used to uncover potential interactions. The Average Abnormal Returns that occurred on the day of the event and the Cumulative Average Abnormal Returns in different review windows are evaluated in this section of the research.

Table 1. AAR Outcomes for Firms Listed in the BIST Sustainability Participation All Index

Days	AAR	Std. Dev.	P-Value	Negative AARs (%)
-20	0.007227	0.016958	0.32588	0.39
-19	-0.001088	0.013422	0.06387*	0.57
-18	-0.000979	0.013214	0.05837*	0.48
-17	-0.005283	0.017225	0.23804	0.65
-16	-0.001077	0.015920	0.05333*	0.52
-15	-0.003987	0.011558	0.26660	0.65
-14	-0.004337	0.013996	0.24043	0.74
-13	0.001400	0.012978	0.08495*	0.39
-12	-0.002760	0.018611	0.11653	0.43
-11	-0.003009	0.014012	0.16805	0.61
-10	-0.008512	0.018410	0.35162	0.70
-9	-0.006948	0.020817	0.25828	0.61
-8	-0.013171	0.025727	0.38622	0.87
-7	-0.002746	0.021474	0.10059	0.57
-6	-0.001578	0.021316	0.058332*	0.57
-5	-0.003865	0.016625	0.18170	0.65
-4	-0.003149	0.016855	0.14651	0.52
-3	0.000215	0.023198	0.00732***	0.61
-2	0.006806	0.024003	0.22059	0.43
-1	0.001987	0.015336	0.10189	0.57
0	***-0.016324***	***0.026905***	***0.44975***	***0.74***
1	-0.002547	0.024184	0.082915*	0.65
2	-0.003259	0.012316	0.20622	0.57
3	-0.006631	0.016873	0.30186	0.74
4	0.008101	0.030449	0.20732	0.30
5	0.007969	0.014905	0.40174	0.30
6	0.010032	0.034156	0.22826	0.48
7	-0.001106	0.033928	0.0257**	0.57
8	-0.009339	0.020406	0.34832	0.74
9	0.000451	0.033015	0.01076**	0.48
10	0.001803	0.029012	0.04899**	0.65
11	0.006500	0.028276	0.17968	0.52
12	-0.001803	0.023515	0.06041*	0.57
13	-0.004001	0.020807	0.15073	0.65
14	-0.001557	0.022321	0.05496*	0.70
15	-0.006031	0.025537	0.18451	0.57
16	-0.003170	0.024844	0.10038	0.65
17	-0.007802	0.022599	0.26679	0.65
18	0.003797	0.025691	0.11616	0.57
19	0.003805	0.026359	0.11345	0.52
20	-0.004000	0.032919	0.0956*	0.70

Statistical significance is indicated by *, ** and *** at the 10%, 5%, and 1% levels, respectively.

Table 1 presents the AAR values for the stocks included in the Borsa Istanbul Sustainability Participation Index. While the day of the event, 12 November 2021, was labeled as day 0, it is worth noting that the AAR values that appeared on this day were negative. Admittedly, this outcome is not statistically significant. Six significant outcomes in total were obtained in the 20 days before the event day when the other findings listed in Table 1 are taken into consideration. According to the observations, the 3rd day before the event day is positive at the 1% significance level, the 6th day is negative at the 10% significance level, the thirteenth day is positive at the 10% level, and the sixteenth, eighteenth, and nineteenth days seemed to be positive at the 10% significance level. On the other hand, 10% significance level and negative outcomes were obtained on the 1st, 12th, 14th, and 20th days following the event day; on the 9th and 10th days, positive AAR values were detected at the 5% significance level. Also, an extra negative abnormal return is figured out on the 7th day at 5% significance level. It may be argued that the BIST Sustainability Participation Index is not efficient in semi-strong form when the significant AAR findings from the analyses are assessed within the framework of the Efficient Markets Hypothesis. But, the lack of continuity in the relevant data leads to the conclusion that, for the purposes of a particular trend, it is impossible to outperform the market.

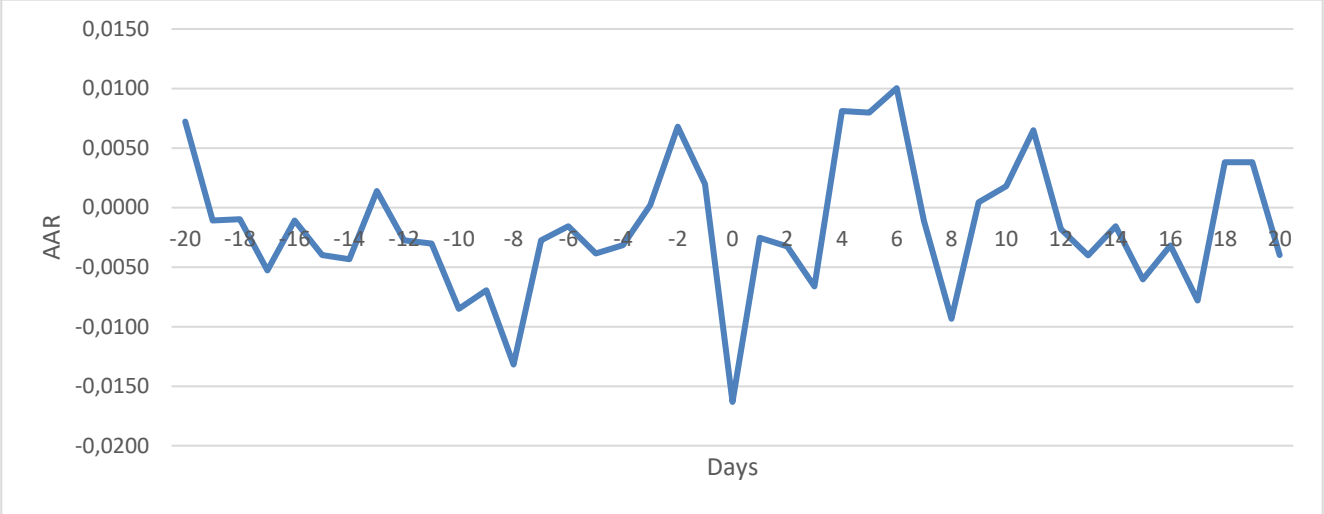

Chart 1. Graphical Representation of AAR Outcomes for Firms Listed in the BIST Sustainability Index

The average abnormal return outcomes for the firms quoted in the BIST Sustainability Participation Index throughout the predefined timeframe are represented graphically in Chart 1. This indicator is developed to monitor potential fluctuations in the pre- and post-event periods. The graphic obviously demonstrates that neither the day included in the Index nor the days around it exhibit any discernible trend. It might be argued that there is no obvious path to be taken in this manner or proposed for market participants.

Table 2. CAAR Outcomes for Firms Listed in the BIST Sustainability Participation All Index

	CAAR	Std. Dev.	P-Value	Negative CAARs (%)
[-20,20]	-0.069965	0.153128	0.34778	0,61
[-15,15]	-0.061395	0.124219	0.37397	0,83
[-10,10]	-0.041811	0.098146	0.32576	0,78
[-5,5]	-0.010697	0.067650	0.12419	0,57
[-1,1]	-0.016884	0.031330	0.40463	0,65
[-20,0]	-0.044854	0.098050	0.34817	0,65
[-15,0]	-0.059978	0.088548	0.49475	0,70
[-10,0]	-0.047285	0.084881	0.41689	0,74
[-5,0]	-0.014330	0.056937	0.19638	0,70
[0,2]	-0.022129	0.027646	0.56798	0,78
[0,5]	-0.012690	0.056086	0.17691	0,48
[0,10]	-0.010850	0.107745	0.07929*	0,39
[0,15]	-0.017741	0.120954	0.11527	0,48
[0,20]	-0.025111	0.135591	0.14523	0,57

Statistical significance is indicated by *, ** and *** at the 10%, 5%, and 1% levels, respectively.

Table 2 illustrates the CAAR outcomes at various review intervals as of November 12, 2021, the first day when companies began being listed on the BIST Sustainability Participation Index. Once the table is examined, it can be seen that the event window [0,10] had a negative statistically significant CAAR value at the 10% level of significance. It is interesting to observe that all of the other windows in the table have a negative cumulative average abnormal return. Given that no obvious pattern has been identified in the context of any of the aforementioned analyses, it is less unlikely that investors would outperform the market by using the information provided. Another viable defense for this unfortunate situation is the market's propensity to purchase expectations and sell real circumstances.

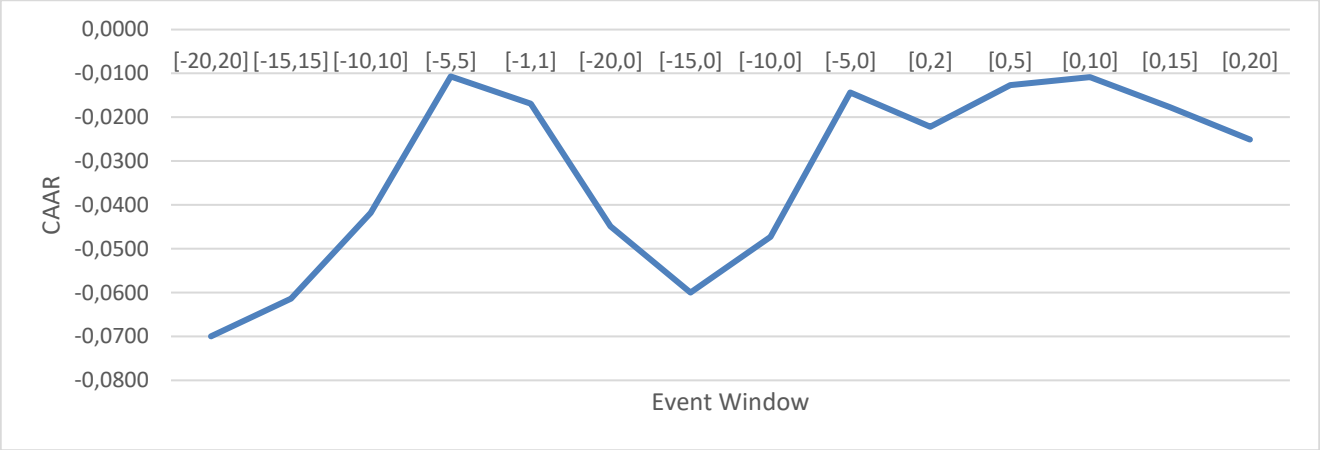

Chart 2. Graphical Representation of CAAR Outcomes for Firms Listed in the BIST Sustainability Index

The Cumulative Average Abnormal Return results in various periods before and after the firms were included in the BIST Sustainability Participation Index are shown graphically in Chart 2. it is easy to observe how the results in Table 2 are distributed and how strongly negative they are.

5. CONCLUSION

Semi-strong form efficiency tests among efficient market models are conducted to determine if current security prices accurately and simultaneously represent all information that is currently accessible to the public. Nonetheless, each particular test may be related to an evaluation of worth in relation to cases that offer a collection of data regarding security prices (such as stock splits, the announcement of financial reports by firms, and new securities issuances). Hence, each test offers evidence to support the model, with the expectation that gathering this data will ensure the model's validity. Researchers employ Event Studies to experimentally examine the effectiveness of the market in a semi-strong form. The abnormal returns around the time of the first announcement are often the focus of studies of these events.

The objective of this research is to ascertain whether the inclusion of firms listed in the BIST Sustainability Participation Index, which is made up of companies that fulfill both the BIST Participation Index and BIST Sustainability Index criteria and whose transactions started to be calculated as of November 12, 2021, has an impact on stock prices. In this regard, a data set containing the closing prices of 23 firms on a daily basis was produced using uninterrupted data obtained from 29 companies participating in the BIST Sustainability Participation Index and analyzed by employing the Event Study. The statistically significant results indicated that the market was not efficient in the semi-strong form and that the launch of the list in the Borsa Istanbul Sustainability Participation Index had an impact on the stock returns of the companies. Although the H_0 hypothesis was rejected in this manner, it was concluded that using this information set would make it challenging for us to outperform the market since the facts gleaned from the results lack continuity. Therefore, it can be concluded that investors cannot outperform the market in light of the findings when the findings are examined from the perspective of market participants who make investment decisions from an Islamic perspective in regard of being included in the BIST Participation Sustainability Index.

At this point, it can be said that the findings of this research and those of Oberndorfer et al. (2013) and Parlakkaya et al. (2019) are in conflict. Nonetheless, similarities may be shown in the research of Çimen (2019), Kavcar and Gumrah (2017), Eyübolu & Bulut (2015), and Consoladi et al. (2008). Furthermore, since the creation of the BIST Sustainability Participation Index, the BIST Participation 50, the BIST Participation 30 and the BIST Participation

Dividend Indices accompanied similar processes, it can be extrapolated that future research on market efficiency in this configuration and valuations of firm performance will add to the scientific literature.

AUTHORS' DECLARATION:

There is no need to obtain ethical permission for the current study as per the legislation. The "*Declaration Form Regarding No Ethics Permission Required*" was sent to the journal by the authors on this subject**.**

AUTHORS' CONTRIBUTIONS:

Conceptualization, writing-original draft, editing- FK and DT, data collection, methodology, formal analysis- FK, DT, Final Approval and Accountability -FK and DT.

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