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Paris Climate Agreement's Effect on Share Prices

Fatih KONAK[1] 0000-0002-6917-5082
Hitit University Department of Business Administration, fatihkonak@hitit.edu.tr , Türkiye

Sercan KIRIK 0000-0003-2528-2617
Hitit Üniversity Graduate Education Institute, sercankirik91@gmail.com, Türkiye

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Abstract

The main purpose of this study is to reveal the possible impact of the entry into force of the Paris Agreement on the stock prices of the companies in the BIST Sustainability Index (XUSRD) with the case study method. The BIST 100 Index was used as a benchmark index, and the daily returns of 66 businesses among 67 companies traded in XUSRD were used to compute Average Abnormal Returns (AAR) and Cumulative Average Abnormal Returns (CAAR). Within the scope of the applied methodology, while determining the event window of -20 days +20 days based on the date of the event, 10.11.2021, 250 was taken into account as the estimation period. The Paris Agreement's implementation has an impact on the stock returns of the firms in XUSRD, it has been found based on the findings gathered. The presence of a predicted trend, however, could not be classified as either positive or negative. These findings led to the conclusion that, under the parameters of the anomaly under consideration, the market is not efficient in semi-strong form.

Key Words: Paris Climate Agreement, Borsa İstanbul, Event Study

1. Introduction

Environmental destructions started happening as a result of the process that began with the Industrial Revolution, with the acceleration of industrialization, the growth in consumption, and the rise in productivity. The rapid consumption of resources in the equation of "limited resources and unlimited demands," which is the foundation of economics, is the part that is ignored in the cycle of more consumption and more production by triggering one another of consumption and production, and as a result, wastes are released to nature. Economic development that causes more environmental harm has a big impact on how our world will develop in the future. The Brundtland Report was the first to make reference to the idea of sustainable development, which arose with the intention of preserving resources and lessening ecological damage.

The United Nations published The Brundtland Report (also known as Our Common Future) in 1987 in honor of former Norwegian Prime Minister Gro Harlem Brundtland's role as Chairman of the World Commission on Environment and Development (WCED). The management of environmental resources, and with it, offered a new era of economic growth, a way to counteract rising poverty, and a way to conserve resources for future generations (WCED, 1987, p.18). In this research, sustainable development is defined as development that satisfies current demands without compromising the ability of future generations to satiate their own needs (WCED, 1987, p.54). The capacity of an ecosystem to adapt to stable states and recover from stresses and shocks is known as sustainability (Scoones, 2007, p.590).

Energy is now regarded as the foundation of manufacturing, technology, and all other necessities for the continuance of human life. The "greenhouse effect" happens when carbon dioxide and derivative gases that mix into the air absorb some of the infrared radiation and prevent it from leaving the atmosphere. These non-renewable energy sources include coal,

[1] Corresponding Author fatihkonak@hitit.edu.tr

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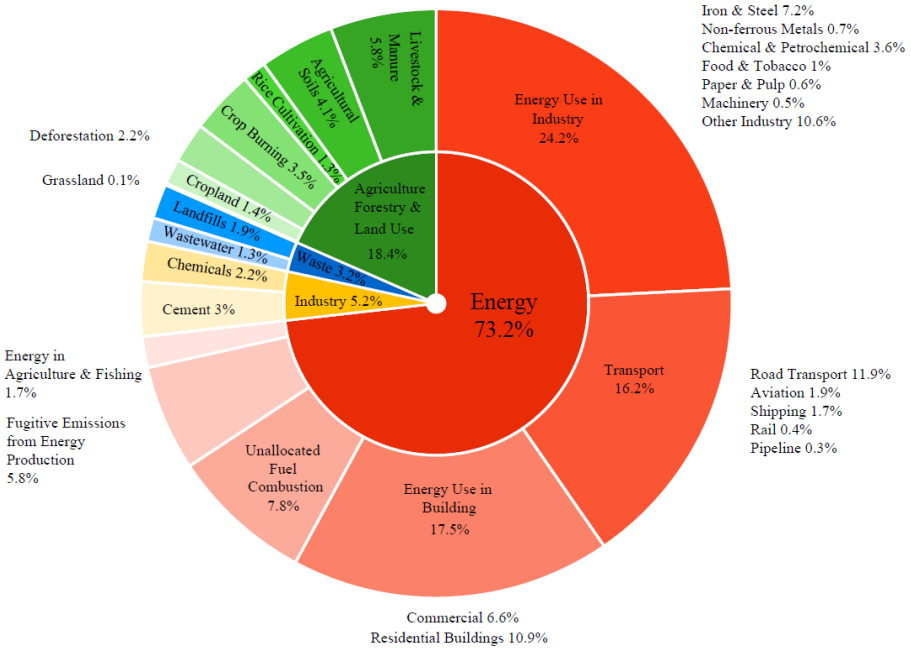
natural gas, and petroleum products, which humans use to meet their energy needs. It is well knowledge that the greenhouse effect causes temperatures to rise.

Figure 1: Global Greenhouse Gas Emissions by Sector in 2016



Kaynak: Our World in Data (2020).[2]

The graph shows the sector-based 2016 greenhouse gas emissions. This states that the energy industry is responsible for 73.2% of the world's greenhouse gas emissions. Agriculture, forestry, and land use come in second with 18.4%, followed by industry with 5.2% and garbage with 3.2%. In 2021, 49.5 gigatons of greenhouse gases were detected globally. The world's thermal equilibrium is disrupted, climate change occurs, glaciers melt, water supplies are harmed, and agricultural areas are damaged as a result of greenhouse gases that are produced with the energy needed for production and demands (zil et al., 2013, p.334). Organizations and institutions have taken action in order to avert this catastrophe. The United Nations Framework Convention on Climate Change, enacted in 1994, is the first environmental pact between governments (Şen et. al.,2019 p.112). Agreement; strives to lessen the effects of greenhouse gases on the environment and lower their atmospheric concentration. The Conference of the Parties (COP) had its inaugural summit in Berlin in 1995 and the Kyoto Protocol was signed at COP 3 in Kyoto in 1997. It was determined that the COP would meet annually beginning in 1994. In accordance with the agreement, nations committed to reducing and limiting their greenhouse gas emissions by 5% from 1990 levels in the first commitment period, which spanned from 2008 to 2012. (United Nations Climate Change, 2022). During COP 18, which was convened in Doha in 2012, it was announced that nations will cut their emissions by

[2] This graph, which uses data from 2016, was selected due to offering the most transparent and in-depth information on sector-by-sector worldwide greenhouse gas emissions. In actuality, the World Bank made reference to this graphic in its publications for 2021. https://www.worldbank.org/en/news/feature/2021/12/16/2021-the-year-in-climate-in-5-numbers

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18% relative to 1990 during the second commitment period, which runs from 2013 to 2020. (Republic of Turkey Ministry of Foreign Affairs, 2022). On December 12, 2015, the COP-21 conference convened in Paris approved the Paris Accord.

The fundamental goal of the Paris Agreement, which serves as the foundation for the climate change regime, is to increase climate change resilience in the years after 2020. Keeping the increase in global temperature below 2°C is the long-term goal (Turkish Ministry of Foreign Affairs, 2022). On April 22, 2016, Turkey signed the Paris Accord alongside 175 other nations' delegates; however, no declaration was made. The Paris Agreement was adopted by Turkey's Grand National Assembly on October 6, 2021; it was published in the Official Gazette on October 7, 2021; and the UN Secretariat was informed of Turkey's acceptance on October 11, 2021. Turkey announced on October 11, 2021 that it would implement the Paris Agreement, the Agreement and its mechanisms without compromising the right to economic and social development. This declaration was made in consideration of the decisions made by the Paris Agreement and the Conference of the Parties to the Convention (United Nations Treaty Collection, 2022). The agreement became law on October 10, 2021, which was 30 days after the Secretariat was notified of the approval. Turkey has raised its reduction goal for 2030 to 41% (about a reduction of 500 million tons of emissions), proclaimed that the peak year for emissions will be 2038 at the latest, and established an objective of net zero emissions by 2053.

The Efficient Markets Hypothesis postulated by Fama (1970) comes to our awareness while we examine the theoretical background on which this research is built. According to the theory of efficient markets, the prices of the securities are considered to mirror all dimensions of the available information simultaneously. Price fluctuations cannot be forecast since they occur randomly and have a random distribution in the market (Bayraktar, 2012, p.38). The market is not efficient, as evidenced by the predictability of stock prices (Mandacı, 2018, p. 85). It is categorized into three categories: weak, semi-strong, and strong efficient markets. Investors cannot create abnormal return by analyzing previous market data since stock prices in a market with low activity reflect all market data, including prior price, volume, and short-term interest rates (Mandacı, 2018, p.88). Security prices completely reflect all information that is readily accessible to the public in semi-strong form (Reilly and Brown, 2011, p.152). Prices in strong-form efficient markets take into account internal information, historical price information, and all publicly released information (Sümer and Aybar, 2016, p.77). -78).

According to the Efficient Markets Hypothesis, investors are rational, fully informed, and motivated to maximize their utility. Behavioral finance is one area where this idea has faced challenged. According to behavioral finance, people might not always make rational decisions or think logically in general (Tufan & Sarıçiçek, 2013, p. 163). Estrada (2001, p. 6) stated that when making investment decisions, investors consider a variety of factors, such as their personal opinions and ideas, and that all information is processed imperfectly, leading to distorted conclusions. Subsequently, understanding financial markets requires disclosing the cognitive and emotional characteristics of people (Aytekin & Aygün, 2016, p.155). Further investigations, however, uncovered instances that defied the notion. It has been discovered through study that stock returns vary from the average at times (Kylar and Akkaya, 2020, p.168). The anomaly is a phenomena that occurs when there is a discrepancy between the results of the theory and atypical behavior (Sümer & Aybar, 2016, p.78). According to the literature, seasonal, firm, and price anomalies can be used to generate abnormal returns (Kylar and Akkaya, 2020, p.168; Mandac, 2018, p.98).

2. Literature Review

Many scholarly studies on companies that conduct their operations with a focus on sustainability are provided in this part of the research.

Using the event study technique, Kuang et al. (2021) examined the dates of compliance with the Paris Agreement, the signing ceremony, its admission into force, and the USA's departure from the agreement for six firms chosen from the S&P Global Clean Energy Index. They concluded that while the Paris Agreement's approval had a positive impact for renewable energy stocks, its admission into force had a negative one. Also, t here was no effect from the signing ceremony or the US decision to leave the Paris Agreement. Keele and DeHart (2011) examined stock price fluctuations before and after the announcement of the collaboration between the US Environmental Protection Agency's (USEPA) Climate Leaders Program and publicly traded corporations in the USA by using event study methodology. They observed that a statistically significant and negative return was found in both of the examination windows, and that a statistically

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insignificant and positive return was attained on the day of the announcement. They were unable to determine if a trend existed, though.

Murguia and Lence (2015) used the event study approach to examine how changes in Newsweek magazine's Global 100 ranking affected the returns of companies and a portfolio with equal weights. They determined that while there had been changes in the relative prices of the stocks, there had been no changes in the portfolio's overall worth. In their investigation on how being a part of the BIST Sustainability Index affects stock returns, Parlakkaya et al. (2019) focused at 43 firms that were part of the BIST Sustainability Index in 2014, 2015, and 2016. They revealed that being an index member has no impact on stock returns in their analysis using the event study methodology.

Duranay and Göçmen Yağcılar (2020) investigated the reactions of investors to be included in the BIST Sustainability Index or not. In the research, which they divided into two groups as those who entered the index in 2018 and 2019 and those who did not, the event study method was used. According to the outcomes, it was seen that being included in the index did not necessarily cause a positive or negative reaction, but not being included in the index elicited a negative response. Becchetti et al. (2012) analyzed the period 1990-2004 for 263 firms in the Domini 400 Social Index. In the research, although a positive reaction was not observed in the entries to the index, a negative abnormal response was observed in the exits from the index.

Based on the stock return rates and PD/DD ratios of the companies included in the BIST Sustainability Index, Çıtak and Ersoy (2016) conducted a study of those firms. In the research, two alternative analytical techniques were applied. In the first, the fifteen companies that were both included and excluded from the BIST Sustainability Index during the January–March 2014 period were split into two groups, and the return rates and PD/DD ratios of the two groups were analyzed using the proper parametric and non-parametric statistical average tests. No distinction between the return rates of the firms that are included in the index and those that are not could be made using this technique. The PD/BV ratios of the index-businesses, however, were greater than those of the non-index companies. In the second, a event study analysis of the BIST Sustainability Index firms was conducted. In the event window that covered 10 days, they were unable to identify a significant value, according to the event study's findings. The average cumulative abnormal return rate, however, was statistically significant and positive for the period 0 + 3.

The Toronto Stock Exchange S&P/TSX Combined Index for 2007 included 146 businesses that issued sustainability reports, which Berthelot et al. (2012) examined at. Investors take sustainability reports into consideration when evaluating reporting firms, according to research that used the weighted least squares approach to assess the variables of market value, book value, and profits before exceptional items.

Using the event study technique, Consoladi et al. (2009) examined companies included in the Dow Jones Sustainability Stoxx Index from 2002 to 2006. Their findings showed that firms included in the index saw positive excess returns, whereas those excluded experienced negative abnormal return. Adaiem and Dayı (2022) showed that financial risk ratio, capital structure, financing costs, and debt repayment ability affected alternative energy companies' performance.

Altinay et al. (2017) employed statistical techniques to compare the performance of banks before and after they entered the index during the 2014–2016 time period. They found that there was no change that was statistically significant, according to their findings.

Sak and Dalgar (2020) applied panel data analysis and the Driscoll-Kraay resistive estimator to assess the data of 35 non-bank corporations that were included in the BIST Corporate Sustainability Index between 2013 and 2016. Corporate sustainability strategies have a positive and considerable impact on financial performance, according to the researchers looked into the implications on financial performance. In the research comparing the profitability of the firms included in the BIST 100 Index with and without the BIST Sustainability Index employing 2016 data, Önder (2017) implemented the multiple linear regression model. The analysis's results indicated that being a part of the index had no impact on a company's ability to generate profit. In their investigation into whether being included in the index will result in abnormal returns, Yetgin and Ersoy (2021) had used event study approach to assess the firms in the BIST Corporate Governance Index for the period of 2007–2018. They obtained significant results for average abnormal returns and cumulative average abnormal returns, according to their findings. Also, in a event study, Sakarya (2011) found a positive correlation between

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the announcement of the rating grade and the stock returns in the companies that were part of the BIST Corporate Governance Index in 2009.

In a different research, Eyübolu (2011) used a paired t-test to examine 24 firms from the time they were added to the BIST Corporate Governance Index until December 2010. The result demonstrates that there was no discernible change in monthly TL-based returns before and after joining the index. Temiz and Acar (2018) used the event study approach to investigate the effects of the firms included in the BIST Sustainability Index between the years of 2014 and 2017 on the stock returns of the index-companies. They observed that on the day of the event, the company's stocks experienced a negative abnormal return. Moreover, the STOXX Index from the years 2005 to 2010 and the RESPECT Index from the years 2009 to 2012 were both examined by conducting the event study approach by Daszynska-Zygadlo et al. (2014). They reported that being a part of the STOXX Index had adverse consequences in their research, which evaluated at how investors reacted to corporate social responsibility. In their research examining the effects of the inclusion of German companies in the Dow Jones STOXX Sustainability Index and the Dow Jones Sustainability World Index on stock performance in the 1999-2002 period, Oberndorfer et al. (2013) used the event study method, the Fama and French three-factor model, and the t-GARCH model. Their findings led them to the conclusion that being a part of the sustainability index had negative effect.

Using a case study approach, Van Stekelenburg at al. (2015) investigated at the connection between corporate sustainability performance and financial success for the years 2009 to 2013. In the research, they examined a sample of European equities regarded as an industry group and a sample of European stocks included or removed from the Dow Jones Sustainability Europe Index. Their results suggest that the inclusion or exclusion announcement had no impact on the stock return for the first analysis group. On the day of the event, they detected a substantial and temporary boost in yield for the included company and a significant and temporary reduction for the excluded firm. They came to the conclusion that market participants reward companies with strong corporate sustainability performance for the second analysis group. Wang and Chen (2017) focused at the founder companies of the Dow Jones Sustainability Index (DJSI) for the years 1991 to 2012 in an effort to gauge how the US capital markets view corporate social responsibility. Also, the study contrasts how much investors in the USA and Taiwan recognize corporate social responsibility (2007-2012 period was examined for Taiwan firms). The investors came to the conclusion that while Taiwanese investors are aware of corporate social responsibility, they do not know enough about the American firms included in DJSI. Another finding indicates that practices related to corporate social responsibility boost reputation while also improving financial performance.

In his research, Kılıç (2011) employed the CAPM model to evaluate if the stock prices of the firms included in the BIST Corporate Governance Index changed before and after they made the public aware that they had obtained the grade necessary to be included in the index. Significant findings were achieved for the index firms as a consequence of the research made for 28 companies. In their research, Büyükşalvarcı and Abdioğlu (2012) examined the impact of firms traded on Borsa Istanbul on stock returns in five-year periods before and after 2005, when corporate governance procedures were required. They accomplished this by using the paired T-test and Wilcoxon Sign Test methodologies. Their observations indicate that the impact on stock return varies depending on the sector. Also, Yenice and Dölen (2013) investigated at how the corporate governance rating influenced the stock market value of firms included in the BIST Corporate Governance Index between 2007 and 2011. They employed the Wilcoxon Signed Ordinal Numbers Test and dependent sample T-test. The observations have led them to the conclusion that there was a considerable and favorable correlation between the corporate governance rating and the stock market values following the announcement of the ratings.

In their analysis for the years 2007–2010, Marti et al. (2015) used the ordinary least squares approach to assess the STOXX Europe 600 and STOXX Europe Sustainability indexes. The analysis' findings contribute them to the view that the firms represented in the sustainability index had higher financial performance. Using the event study approach, Nakai et al. (2013) analyzed the consequences of being included or removed in the Japanese Morningstar Social Responsibility Investing Index for the years 2003–2010. They revealed that although inclusion in the index had a positive impact, exclusion from the index had no impact. In addition, Reddy and Gordon (2010) used the event study method to examine the effects of sustainability reports on financial performance. They focused on the time periods 2003–2009 for companies traded on the New Zealand Stock Exchange and 2002–2009 for those traded on the Australian Stock Exchange. Their research indicates that trading in the sustainability index offers profitable abnormal returns.

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3. Dataset and Methodology

This study's objective is to ascertain if the BIST Sustainability Index (XUSRD) firms affected their stock prices on 10.11.2021, the day the Paris Agreement came into force. The data of 67 index firms as well as the data of the BIST 100 Index, which was used in the analysis as an benchmark index, were evaluated for this purpose by following the Event Study. A firm in XUSRD was disqualified because its findings did not follow the approach. The study took into consideration the estimation period, 250 days while selecting the event window of -20 days + 20 days. Event studies show the effects of a specific event on a company's worth (Serra, 2004). Method; It is presumpted that financial markets are capable of interpreting the impact of recent developments or information on the anticipated future returns of firms (Dasgupta, Laplante, & Mamingi, 1998, p.12). Defining the event and event window, choosing the data set to be analyzed, estimating the expected return, calculating the abnormal return, and determining if the abnormal return is statistically different from zero are all steps in the event study process (Dasgupta et al., 1998, p.12).

The stages of the event study methodology are as follows:

- The returns of stock and benchmark indices are calculated. By taking the natural logarithms, it is approximated to the normal distribution (Konak and Türkoğlu, 2022, p.822):

$$R_t = l_n\left(\frac{P_t}{P_{t-1}}\right) x\ 100 \qquad (1)$$

R_t = logarithm of stock return in period t,
P_t = stock price in period t,
P_{t-1}= is expressed as the stock price in the period t-1

- The expected returns of the companies included in the data set are calculated using the market model (Koç, Çelik, & Çelikkol, 2019, p.849).

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

E_{it} = expected return of each firm in period t,
α_i = average market unexplained return for stock i,
β_i = sensitivity of stock i to market movements,
R_{mt} = daily return of the market index,
ε_t= is expressed as a zero-mean error term.

- Abnormal return is calculated (Sakarya, 2011, p.154):

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

R_{it} = return of the stock on day t,
$E_{(r)it}$= is expressed as the expected return of the stock on day t.

- After calculating the abnormal return (AR), the average abnormal return (AAR) and the cumulative average abnormal return (CAAR) can be calculated. The AAR value is found by dividing the obtained AR by the number of companies, while the calculated AAR values can be found by summing them with each other respectively (Sakarya, 2011, p.155):

$$AAR_{it} = \sum_{i=1}^{N}\left(\frac{1}{N}\right) AR_{it} \qquad (4)$$

$$CAAR_{it} = \sum_{i=1}^{N} AAR_{it} \qquad (5)$$

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It may be inferred that the aforementioned event has an impact on stock returns and that the event represents investors' reactions if the findings obtained statistically differ from zero (Tuominen, 2005:50). If it is equal to or almost equal to zero, the market is efficient in a semi-strong form and the previously mentioned occurrence has no impact on the stocks (Kaderli, 2007, p.148).

The following hypotheses were developed within the parameters of the study to determine how the Paris Agreement's implementation will affect XUSRD:

H_0: In the 20-day period with the entry into force of the Paris Agreement, the average abnormal return level of the companies included in the index is zero.

H_1: In the 20-day period with the entry into force of the Paris Agreement, the average abnormal return level of the companies included in the index is different from zero.

According to these hypotheses, the H0 hypothesis will be disproved if the results of the analyses and the implementation of the Paris Agreement are proven to have a statistically significant impact on XUSRD.

4. Analysis and Evaluation

66 firms included in the index were assessed using the case study approach in order to gauge the impact of the Paris Agreement, which went into effect on 10.11.2021, on the returns of equities in the BIST Sustainability Index (XUSRD). The BIST 100 Index was used as a benchmark index together with data obtained from Datastream that belonged to companies. The Average Abnormal Return and Cumulative Average Abnormal Return formulas were used to evaluate the research's findings.

Table 1: AAR Results for Selected Shares at the Time Paris Agreement Entered into Force

Days	AAR	Std. Dev.	P-Value	Neg. AARs (%)
-20	0,00032	0,01570	0,0159**	47,0%
-19	-0,00148	0,01568	0,0749*	62,1%
-18	0,00060	0,01361	0,0352**	56,1%
-17	0,00152	0,01391	0,0867*	47,0%
-16	-0,00242	0,01501	0,1278	59,1%
-15	-0,00173	0,01917	0,0715*	54,5%
-14	-0,00132	0,01346	0,0779*	56,1%
-13	-0,00185	0,01674	0,0876*	68,2%
-12	-0,00138	0,01461	0,0748*	51,5%
-11	-0,00242	0,01514	0,1264	54,5%
-10	-0,00170	0,01399	0,0963*	56,1%
-9	0,00005	0,00155	0,0241**	47,0%
-8	-0,00188	0,01902	0,0784*	59,1%
-7	-0,00095	0,01659	0,0455**	47,0%
-6	-0,00009	0,02448	0,0029***	51,5%
-5	0,00167	0,02190	0,0604*	47,0%
-4	-0,00140	0,01689	0,0659*	56,1%
-3	-0,00322	0,01595	0,1593	60,6%
-2	-0,00298	0,01596	0,1476	59,1%
-1	0,00177	0,02163	0,0648*	56,1%

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0	*0,00233*	*0,02002*	*0,0923**	*51,5%*
1	0,00189	0,01609	0,0932*	53,0%
2	-0,00019	0,03109	0,0048***	56,1%
3	-0,00303	0,02645	0,0907*	59,1%
4	-0,00070	0,01567	0,0352**	54,5%
5	-0,00469	0,02187	0,1691	65,2%
6	0,00749	0,02671	0,2198	39,4%
7	0,00553	0,01938	0,2236	47,0%
8	-0,00496	0,03385	0,1160	62,1%
9	0,00234	0,02713	0,0684*	45,5%
10	-0,00091	0,02267	0,0319**	59,1%
11	0,00018	0,03015	0,0047***	48,5%
12	-0,00288	0,02242	0,1017	66,7%
13	0,00234	0,02683	0,0691*	47,0%
14	-0,00025	0,02130	0,0092***	53,0%
15	-0,00237	0,01705	0,1099	65,2%
16	0,00338	0,02065	0,1294	51,5%
17	0,00143	0,02501	0,0454**	45,5%
18	-0,00742	0,02467	0,2353	66,7%
19	-0,00151	0,02124	0,0563*	57,6%
20	-0,00087	0,02040	0,0338**	62,1%

*,** and *** denote significance at the 10%, 5% and 1% levels, respectively.

AAR results regarding the effects on firms in XUSRD at the time the Paris Agreement entered into force are shown in Table 1. In the 41-day event window; positive AAR was observed for 15 days and negative AAR for 26 days. Excluding positive AAR on the day of the event, positive AAR was observed on day 6 before the event day, while positive AAR was figured out on day 8 after the event day. Also, within this event window, 29 days gave statistically significant results. Excluding the event day, 16 of the statistically significant results were found before the event, while 12 were determined to occur in the days after the event. While the event day was significant at the 10% level, days -6, 2, 11 and 14 were significant at the 1% level within the event window, and negative AAR was observed on all days except the 11th day. According to the results obtained, it can be claimed that the market is not efficient in semi-strong form within the framework of this anomaly. On the other hand, the existence of a predictable trend could not be determined as positive or negative.

Table 2: CAAR Results for Selected Shares at the Time Paris Agreement Entered into Force

Periods	**CAAR**	**Std. Drv.**	**P-Values**	**Neg. CAARs (%)**
[-20,20]	-0,0218	0,1321	0,1303	56,1%
[-15,15]	-0,0153	0,1140	0,1064	54,5%
[-10,10]	-0,0036	0,0903	0,032**	53,0%
[-5,5]	-0,0085	0,0717	0,0945*	57,6%
[-1,1]	0,0060	0,0438	0,1085	51,5%
[-20,0]	-0,0189	0,0871	0,1710	60,6%
[-15,0]	-0,0151	0,0808	0,1476	53,0%
[-10,0]	-0,0064	0,0714	0,0712*	47,0%
[-5,0]	-0,0018	0,0522	0,0279**	54,5%
[0,2]	0,0040	0,0353	0,0906*	51,5%
[0,5]	-0,0044	0,0426	0,0815*	54,5%
[0,10]	0,0051	0,0768	0,0527*	45,5%
[0,15]	0,0021	0,1053	0,016**	45,5%
[0,20]	-0,0029	0,1082	0,021**	50,0%

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*,** and *** denote significance at the 10%, 5% and 1% levels, respectively.

The CAAR results regarding the effects on companies in XUSRD at the time the Paris Agreement entered into force are demostrated in Table 2. 14 different event windows have been determined on the selected shares. While positive CAAR was observed in 4 of the event windows, negative CAAR was observed in 10 event windows. 9 of these event windows are statistically significant. While the [-5.0] event window covering the event day is significant at the 5% level, the [0.2] event window is significant at the 10% level. Profit realization between these two windows shows a transition from positive to negative. No statistically significant finding was found at the 1% level, but significant results were obtained at the 5% level within 4 different event windows.

5. Conclusion

This study uses the event study approach to examine if the stock prices of the firms in the BIST Sustainability Index (XUSRD) shift on 10.11.2021, the day the Paris Agreement goes into effect. The primary research question of the study is the likelihood of an abnormal return by investors within the given time frame. The Efficient Markets Hypothesis states that because the markets represent all available information, price changes cannot be forecast. Contrarily, behavioral finance shows that when making investment decisions, investors do not prioritize risk and return but rather consider their own beliefs and opinions. Numerous studies in the literature have demonstrated that anomalies and abnormal returns, which are a focus of behavioral finance, are possible. For this reason, it is possible to provide abnormal returns with any event experienced in the index or company-specific.

In the light of this information, a data set was created with the daily returns of 66 companies in XUSRD to test the existence of abnormal returns. With the data set created, 20 days before and 20 days after the evet period from 10.11.2021 in the -20 -250 period were determined as the estimation period. According to the findings, it was determined that the average abnormal return (AAR) took positive and negative values within the 41-day event window and gave statistically significant results in 29 days. While the event day was 10% significant, the -6th, 2nd, 11th and 14th days within the event window were significant at the 1% level. Positive and negative values were determined on 14 separate testing periods for the cumulative average return (CAAR). At the 1% level, statistically significant findings for CAAR could not be found, however they were found at the 5% level. When compared to the [-5.0] review window, which covered the event day, the [0.2] assessment window produced statistically significant outcomes at the 10% level.

It has been found that the market is not efficient in semi-strong form within the context of this anomaly based on the observation of statistically significant data. The H0 hypothesis is disproved by the data, although a predicted trend could not be identified as either positive or negative. This makes it difficult to argue that the abnormal return in the market can be explained in terms of a trend. Moreover, according to the findings obtained in the study, the results show similarities with the results of Keele and DeHart (2011); Murguia and Lence (2015) and Kuang et al. (2021). As a final point, it should be noted that future study may use more data sets or different analytic methods in order to broaden the scope of this research.

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