

THE IMPACT OF SUSTAINABILITY INDEX ON FIRM PERFORMANCE: AN EVENT STUDY

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Abstract

The aim of this paper is to find out the impact of inclusion of companies in Sustainability Index of Borsa Istanbul on the stock returns. Borsa Istanbul Sustainability Index has launched on the 4th of November 2014. Since that date, each year Borsa Istanbul announces which companies to be listed in the Sustainability Index based on the criteria met. For the empirical analysis, event study has implemented. Within the context of seven day event window, the impact of inclusion in the index and the announcement of Borsa Istanbul regarding the companies has been analysed respectively. Findings of the study reveal that inclusion in the Sustainability Index as well as the announcement of Borsa Istanbul have positive impact on the firm performance. Companies have abnormal returns which contradict with the assumptions of Efficient Market Hypothesis.

Keywords: *Sustainability Index, abnormal return, event study, efficient market hypothesis*

JEL Classification Codes: *G14, G40, Q56*

Introduction

Researchers have tried to find out the relationship between corporate sustainability performance and financial performance for a long time. Previous studies support the benefits on environmental, social and governance (ESG) issues on the firm performance.

The main aim of a company is to maximize its value. Companies put so much effort to increase their values. In addition to the analysts or the researchers, maximizing value, which in turn result with higher dividends, is crucial for the investors.

Especially, for the investors who are more sensitive to sustainability issues, environmental and social activities might be the

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main indicators to invest in a company. Accordingly, the term socially responsible investing plays a big role on the decisions on these sensitive investors.

As Renneboog et al. (2008) defines, socially responsible investing (SRI) as the choice of financial instruments based on their environmental, social and governance perspectives. In order to inform investors and contribute to the ways they invest, Borsa Istanbul has launched Sustainability Index on the 4th of November, 2014 with the code XUSRD. The purpose of this index is increasing awareness of investors as well as providing a basis for companies that aim to reach high performance on corporate sustainability. Besides, with the help of this index, companies indicate their dedication to environmental, social and governance (ESG) issues (www.borsaistanbul.com).

According to Borsa Istanbul Sustainability Report, Sustainability Index gives the chance to the companies to compare their corporate sustainability performance on a local and global basis. Companies that are included in the Sustainability Index, benefits from increased publicity as well as the increased reputation.

To the best of author's knowledge, this is the first study that covers the whole period since the launch of Sustainability Index of Borsa Istanbul in 2014. This paper is organized as follows. Section 2 refers the previous studies and the hypotheses regarding the sustainability index while section 3 describes data and research methodology used for empirical analysis. Section 4 indicates the findings of the study and finally Section 5 provides conclusion of this paper.

Literature Review

Previous studies focus on the advantages of environmental and social activities on firm performance. For this reason, the study tests two hypothesis. Firstly, the impact of inclusion of companies in Sustainability Index of Borsa Istanbul on the stock returns is tested by adapting event study analysis. Secondly, in order to understand the impact of good news, which is the announcement of Borsa Istanbul regarding the companies to be included in Sustainability Index, event study is implemented.

Although the negative news have faster and easily observed consequences, positive news have impact on companies too (Oberndorfer et. al, 2013:499). Carbon emission, environmental pollution or having child labour can be assumed as bad news while having certification for ISO 14001 can be assumed as a good news. For instance Cañón-de-

Francia and Garcés-Ayerbe (2009) analyses whether ISO 14001 certification is valued by the market.

Another proxy which is referred as a good news and high corporate sustainability performance is linked with inclusion in the sustainability index. Some studies use variables like return on assets, return on equities to measure the corporate financial performance. For instance, Waddock and Graves (1997) uses ratios including return on asset and return on equity to find out the relationship between these ratios and corporate social performance. Russo and Fouts (1997) analyses the relationship between variables like firm size, firm growth rate, capital intensity and environmental rating. Konar and Cohen (2001) studies environmental performance and intangible asset, intangible liability items. King and Lenox (2001) finds out the link between emissions which is a proxy for pollution and Tobin's q. King and Lenox (2002) use statistical methods to test the direction and significance of the relationship amongst the pollution reduction and profitability. Telle (2006) analyses the relationship between economic performance and emissions as an indicator of environmental performance.

Some studies focus on the corporate financial performance by using stock returns as a proxy. Filbeck and Gorman (2004) focus on electric utility industry to understand the link between financial performance and environmental performance. Ziegler et al. (2007) examines the impact of sustainability performance of European companies on stock performance, measured as the average monthly stock return from 1996 to 2001.

A group of studies try to find out the impact of inclusion in a sustainability index. For instance, Curran Moran (2007) studies whether corporate financial performance is related with social and environmental performance. For this reason, daily stock returns and FTSE4Good UK Index is used as a proxy measure for good corporate social responsibility to detect the inclusion in FTSE4Good UK Index. Doh et al. (2010) examine US companies regarding the inclusion in Calvert Social Index. Cheung (2011) analyses US companies' performance with respect to the inclusion in Dow Jones Sustainability World Index. Oberndorfer et al. (2013) implements event study on German firms that are included in Dow Jones Sustainability Index and Dow Jones Sustainability World Index. Daszynska-Zygadlo et al. (2014) analyze the reaction of investors for sustainability index inclusion. By doing so, researchers point to find out whether corporate social responsibility is good news. Findings prove that inclusion in Stoxx Europe Sustainability Index results with negative

returns whereas no significant abnormal return in inclusion in Respect Index. The studies regarding the sustainability index of Borsa Istanbul is limited. Most of the studies focus on the relationship between corporate social responsibility and firm performance (Fettahoğlu,2013; Başar, 2014; Alparslan and Aygün, 2013; Özçelik et al., 2014). Altın and Yazan (2016) focus on the abnormal return on the companies that are included in the Sustainability Index. Kurnaz and Kestane (2016) uses ratios of 11 firms that are included in the Sustainability Index to compare the companies' financial performance before and after inclusion. Yıldız et al. (2018) implements various ratios to understand the impact of inclusion of 9 companies in Sustainability Index. Çıtak and Ersoy (2016) investigates the reaction of investors regarding the inclusion in Borsa Istanbul Sustainability Index. Finding prove that, the first three days following the announcement, investors have significantly positive abnormal returns.

This paper empirically analyses the short term impact of inclusion of companies in Sustainability Index of Borsa Istanbul on the stock returns as well as the announcement of inclusion of companies to the Sustainability Index. Abnormal returns, which are the excess returns over the market return are used as a proxy for corporate financial performance.

- Hypothesis 1: The inclusion in the Sustainability Index results with abnormal returns in the short run.
- Hypothesis 2: The announcement of inclusion in the Sustainability Index results with abnormal returns.

Data and Methodology

For the empirical analysis, 54 firms that are included in the Borsa Istanbul Sustainability Index since 2014 are analysed.

Table 1: Number of Companies Included in Sustainability Index

Years	Number of Companies	Date of Announcement	Inclusion in Sustainability Index
2014	15	04/11/14	04/11/14
2015	14	03/11/14	03/11/14
2016	14	25/10/16	01/11/16
2017	5	27/10/17	01/11/17
2018	6	26/10/18	01/11/18

Table 1 indicates the number of companies included in the Sustainability Index based on the criteria set by Borsa Istanbul. In the first two years, the announcement and inclusion in the Index occurs on the same day while in the following years, announcement is a few days prior to the inclusion in the Index. As of November 2018, 50 companies that are listed in the Borsa Istanbul 50 Index are in the Sustainability Index. According to Table 1, the sum of number of companies are 54. The reason of the decrease in the number recently is the delisting of three companies in 2017. In addition, in 2017, due to the acquisition of a company in which the acquirer is not quoted to Borsa Istanbul, the company is delisted from Sustainability Index.

After determination of the companies, abnormal return for each day is calculated. Equation 1 indicates the formula of the abnormal return or the excess return.

$$AR = R_i - R_m \quad (1)$$

AR= Abnormal Return

R_i= Return of stock i on day t

R_m= Return of the market on day t

Abnormal return is the return which is above the market return for a specific day. Return of Borsa Istanbul 100 Index is taken as a benchmark for market return. With the help of these abnormal returns, two hypothesis are tested by event-study analysis. Event studies try to measure the impact of a specific event on firm performance, which is stock return in this paper.

For the first hypothesis, t represents the day of inclusion in the Sustainability Index. According to Oberndorfer et al. (2013), short term event studies are preferred due to being more reliable. Seven day event window is chosen to measure short term performance. Three days before the inclusion and three days after the inclusion in the index.

For the second hypothesis, in order to have a deeper understanding of the impact of news on the stock returns, t is assumed to be the announcement day. Three days before and three days after the announcement comprises the event window.

Findings

This section of the study shows the findings of the event study. For the years 2014 and 2015, the announcement day and the inclusion day are not given separately. Based on this information, day that the

companies included in the Sustainability Index and the announcement days are assumed to be the same day.

Table 2: Abnormal Return of Companies That are Included in Sustainability Index in 2014

	t-3	t-2	t-1	t	t+1	t+2	t+3
AKBANK	-1,67%	0,96%	-1,60%	0,22%	-0,18%	-1,06%	0,37%
ARÇELİK	0,31%	0,30%	1,06%	-2,11%	-0,29%	0,34%	0,62%
ASELSAN	0,02%	2,79%	1,07%	-2,24%	-1,14%	2,85%	0,44%
GARANTİ							
BANKASI	-1,09%	-0,14%	-0,73%	-0,06%	0,21%	-1,42%	0,66%
KOC							
HOLDING	-1,65%	-0,46%	-0,20%	0,59%	0,36%	0,94%	1,22%
MIGROS	-0,14%	1,13%	0,44%	4,07%	-0,70%	3,50%	-0,35%
PETKİM	0,16%	-0,85%	3,77%	1,34%	-2,66%	-0,16%	4,29%
SABANCI							
HOLDING	-0,79%	-0,35%	-0,32%	-0,80%	0,62%	-0,11%	1,92%
TAV	2,94%	-0,85%	-0,10%	-0,58%	0,00%	2,34%	1,64%
TOFAS	-0,01%	-0,48%	-1,09%	0,75%	0,60%	5,44%	0,15%
TURKCELL	1,54%	-0,04%	-0,48%	0,51%	1,63%	1,38%	-1,30%
TUPRAS	0,35%	0,73%	1,41%	-1,95%	-1,09%	2,15%	2,64%
TURK							
TELEKOM	1,05%	0,57%	1,21%	-0,30%	-0,29%	2,72%	-0,76%
VAKIFBANK	0,04%	-0,21%	-0,38%	-0,73%	-0,92%	-2,30%	1,69%
YAPI KREDİ							
BANKASI	1,31%	-0,24%	-0,96%	-0,51%	0,17%	-0,52%	0,51%

Table 2 indicates the findings of the 15 companies that are included to Sustainability Index for the first time. Findings reveal that eight, six and three companies had negative abnormal returns on t+1, t+2 and t+3 days after the inclusion respectively.

Table 3: Abnormal Return of Companies That are Included in Sustainability Index in 2015

	t-3	t-2	t-1	t	t+1	t+2	t+3
AKSA ENERJİ	-0,98%	-0,73%	1,09%	3,08%	-0,23%	-0,18%	1,59%
ANADOLU							
EFES	-1,51%	-3,25%	-3,44%	-0,56%	-0,71%	3,22%	-1,70%
BRİSA	0,29%	0,18%	0,08%	-0,40%	-0,32%	-0,96%	-0,87%
COCA COLA	-0,66%	0,41%	-0,13%	-2,03%	-1,20%	4,06%	1,24%
DOĞUŞ							
OTOMOTIV	-0,37%	-0,58%	0,19%	0,53%	1,28%	3,13%	0,76%
EREĞLİ							
DEMİR ÇELİK	1,42%	0,36%	-4,93%	1,40%	1,25%	-3,12%	-3,40%
FORD							
OTOMOTIV	0,90%	-1,11%	-3,80%	-0,92%	-0,48%	2,75%	1,24%
OTOKAR	2,37%	-1,62%	-1,69%	1,06%	-0,13%	0,81%	1,66%
SAF GYO	0,16%	-1,76%	-2,14%	0,93%	-0,93%	0,87%	-0,87%
TSKB	0,16%	-1,76%	1,13%	0,32%	0,92%	-0,34%	-0,60%
THY	0,16%	2,62%	1,45%	-0,48%	0,50%	1,63%	0,48%
İŞ BANKASI	-1,05%	1,79%	2,43%	-1,30%	-0,17%	-1,03%	0,07%
ÜLKER	0,42%	-1,63%	-1,29%	-2,52%	-2,17%	-0,91%	-0,36%
VESTEL							
ELEKTRONİK	-6,15%	-0,29%	15,45%	-0,08%	-1,44%	-1,17%	-0,84%

Table 3 shows the findings of the 14 companies that are included to Sustainability Index in 2015. Findings indicate that nine, six and six companies had negative abnormal returns on t+1, t+2 and t+3 days after the inclusion respectively. On contrary, six, eight and seven companies had negative abnormal returns on t -3, t-2 and t-1.

Table 4: Abnormal Return of Companies That are Included in Sustainability Index in 2016 (t=Day of Inclusion in Index)

	t-3	t-2	t-1	t	t+1	t+2	t+3
ADEL	-	0,10%	0,16%	-	-	0,02%	-0,62%
KALEMCİLİK	0,01%			1,24%	0,54%		
DOĞAN HOLDİNG	0,83%	0,52%	3,64%	-	0,33%	0,64%	-2,18%
GLOBAL YATIRIM HOLDİNG	0,83%	-	0,37%	-	-	0,64%	2,50%
İŞ GMYO		0,73%		1,11%	0,32%		
KORDSA GLOBAL	1,46%	-	-0,26%	2,05%	-	0,00%	-0,71%
NETAŞ TELEKOM.		0,74%			0,30%		
PEGASUS	-	-	-1,66%	0,47%	-	-	-2,00%
ŞİŞE CAM	0,39%	0,25%			0,30%	6,39%	
HALK BANKASI	0,73%	-	-2,23%	-	1,92%	-	-0,12%
TAT GIDA		0,55%		4,01%		0,40%	
TEKFEN	-	-	0,36%	1,49%	1,56%	-	-0,91%
TÜRK TRAKTÖR	1,04%	0,55%				0,72%	
VESTEL	-	-	0,05%	-	0,97%	-	0,64%
BEYAZ EŞYA	0,09%	0,41%		0,43%		0,31%	
ZORLU	-	-	1,61%	0,44%	0,55%	1,29%	-0,64%
	0,14%	0,46%					
	0,49%	-	-3,32%	0,71%	-	1,17%	0,14%
		1,63%			0,74%		
	-	-	-1,56%	-	-	-	0,32%
	0,68%	1,27%		1,89%	0,49%	2,11%	
	0,01%	2,81%	-0,13%	-	-	1,02%	0,59%
				0,70%	0,88%		
	0,59%	-	0,37%	-	0,73%	-	-1,55%
		0,25%		2,02%		0,16%	
	1,42%	-	-0,26%	-	0,94%	1,33%	-1,16%
		0,66%		1,06%			

Table 4 shows the abnormal returns of 14 companies that are included in the Sustainability Index of Borsa Istanbul in 2016. t represents the 1st November which is the day that 14 companies are listed in the Sustainability Index. On the day of inclusion, it is observed that majority of the companies had negative abnormal returns.

Table 5: Abnormal Return of Companies That are Included in Sustainability Index in 2016 (t=Day of Announcement)

	t-3	t-2	t-1	t	t+1	t+2	t+3
ADEL	-	1,79%	-0,06%	0,03%	-	-	0,10%
KALEMCİLİK	0,29%				0,67%	0,01%	
DOĞAN	-	-	-0,11%	-1,88%	-	0,83%	0,52%
HOLDİNG	0,05%	0,73%			1,24%		
GLOBAL							
YATIRIM	-	1,14%	-0,76%	0,00%	-	0,83%	-
HOLDİNG	1,89%				0,58%		0,73%
İŞ GMYO	-	-	-1,38%	1,25%	-	1,46%	-
	0,05%	0,11%			0,59%		0,74%
KORDSA	-	-	2,19%	-0,73%	0,04%	-	-
GLOBAL	1,42%	0,25%				0,39%	0,25%
NETAŞ	-	0,22%	-0,68%	-0,28%	3,77%	0,73%	-
TELEKOM.	0,15%						0,55%
PEGASUS	-	0,52%	-0,49%	0,69%	-	-	-
	2,01%				1,80%	1,04%	0,55%
ŞİŞE CAM	-	0,83%	0,74%	-0,58%	-	-	-
	0,05%				0,84%	0,09%	0,41%
HALK	0,06%	-	0,82%	0,19%	0,04%	-	-
BANKASI		0,03%				0,14%	0,46%
TAT GIDA	-	-	0,47%	0,94%	-	0,49%	-
	1,50%	2,41%			0,77%		1,63%
TEKFEN	-	0,14%	1,17%	-0,38%	-	-	-
	0,05%				0,21%	0,68%	1,27%
TÜRK	-	-	-1,75%	-0,38%	-	0,01%	2,81%
TRAKTÖR	0,77%	1,25%			0,77%		
VESTEL	-	-	0,86%	-2,09%	-	0,59%	-
BEYAZ EŞYA	0,50%	1,74%			0,19%		0,25%
ZORLU	-	0,52%	-0,20%	-0,55%	-	1,42%	-
	0,64%				0,55%		0,66%

Table 5 indicates the abnormal returns of 14 companies that are included in the Sustainability Index of Borsa Istanbul in 2016. t represents the 25th October which is the day that 14 companies are announced by the Borsa Istanbul that they are chosen for the Sustainability Index. On the day of announcement, it is observed that majority of the companies had negative abnormal returns.

Table 6: Abnormal Return of Companies That are Included in Sustainability Index in 2017
(t=Day of Inclusion in Index)

	t-3	t-2	t-1	t	t+1	t+2	t+3
AK	-0,51%	-0,54%	-0,45%	-1,53%	0,03%	-3,20%	-2,58%
ENERJİ							
CIMSA	-0,29%	-0,10%	-0,30%	-2,40%	0,39%	-1,63%	-2,21%
LOGO	-0,77%	1,03%	1,19%	-3,62%	-1,49%	-0,82%	-1,72%
YAZILIM							
POLISAN	-3,26%	1,91%	-1,77%	0,37%	3,32%	-2,36%	0,68%
SODA	-0,51%	-1,86%	-1,35%	-1,86%	-1,10%	-0,17%	-1,41%
SANAYII							

Table 6 shows the abnormal returns of 5 companies that are involved in the Sustainability Index of Borsa Istanbul in 2017. t represents the 1st November which is the day that 5 companies are listed in the Sustainability Index. On the day of inclusion, it is observed that four out of five companies had negative abnormal returns.

Table 7: Abnormal Return of Companies That are Included in
Sustainability Index in 2017 (t=Day of Announcement)

	t-3	t-2	t-1	t	t+1	t+2	t+3
AK							
ENERJİ	-1,00%	0,03%	-0,15%	-0,51%	-0,54%	-0,45%	-1,53%
CIMSA	-0,72%	-0,48%	0,43%	-0,29%	-0,10%	-0,30%	-2,40%
LOGO							
YAZILIM	0,35%	-1,68%	1,99%	-0,77%	1,03%	1,19%	-3,62%
POLISAN	4,30%	0,78%	1,54%	-3,26%	1,91%	-1,77%	0,37%
SODA							
SANAYII	1,64%	-0,13%	1,90%	-0,51%	-1,86%	-1,35%	-1,86%

Table 7 shows the abnormal returns of 5 companies that are involved in the Sustainability Index of Borsa Istanbul in 2017. t represents the 27th October which is the day that 5 companies are listed in the Sustainability Index. On the day of announcement, all of the companies had negative abnormal returns.

Table 8: Abnormal Return of Companies That are Included in Sustainability Index in 2018 (t=Day of Inclusion in Index)

	t-3	t-2	t-1	t	t+1	t+2	t+3
AKSA	3,64%	-0,18%	1,12%	-1,87%	-0,45%	-3,13%	0,61%
ANADOLU CAM	5,80%	-0,40%	1,12%	0,23%	-2,53%	-0,97%	-1,30%
ANEL ELEKTRIK	-1,42%	-1,64%	-1,95%	1,68%	0,36%	0,84%	1,79%
AYGAZ GLOBAL YATIRIM HOLDING	0,59%	0,43%	1,28%	-3,00%	-0,80%	0,51%	3,11%
SEKERBANK	-3,62%	-0,60%	-0,22%	0,81%	0,85%	2,24%	-0,55%
	0,30%	1,68%	-2,35%	0,84%	-1,88%	1,22%	0,25%

Table 8 indicates the abnormal returns of 6 companies that are launched in the Sustainability Index of Borsa Istanbul in 2018. t represents the 1st November which is the day that 6 companies are listed in the Sustainability Index. On the day of inclusion, majority of the companies had positive abnormal returns.

Table 9: Abnormal Return of Companies That are Included in Sustainability Index in 2018 (t=Day of Announcement)

	t-3	t-2	t-1	t	t+1	t+2	t+3
AKSA	-0,88%	-2,33%	-3,53%	3,64%	-0,18%	1,12%	-1,87%
ANADOLU CAM	2,64%	0,16%	-1,82%	5,80%	-0,40%	1,12%	0,23%
ANEL ELEKTRIK	-1,30%	-0,75%	-1,66%	-1,42%	-1,64%	-1,95%	1,68%
AYGAZ GLOBAL YATIRIM HOLDING	3,69%	2,08%	-5,55%	0,59%	0,43%	1,28%	-3,00%
SEKERBANK	-0,54%	0,09%	-0,39%	-3,62%	-0,60%	-0,22%	0,81%
	-0,76%	-0,21%	-0,09%	0,30%	1,68%	-2,35%	0,84%

Table 9 illustrates the abnormal returns of 6 companies that are included in the Sustainability Index of Borsa Istanbul in 2018. t represents the 26th October which is the day that 6 companies are

announced to be in the Sustainability Index. On the day of announcement, two out of six companies had positive abnormal returns.

Conclusion

This paper empirically analyses the impact of inclusion of companies in Borsa Istanbul Sustainability Index. Within this framework, 54 companies that are listed in Sustainability Index are investigated with event study analysis. Short term abnormal stock returns are used for a seven days event window. Two hypothesis are tested to figure out the impact of inclusion in Sustainability Index as well as the impact of announcements regarding the inclusion in the Sustainability Index.

The findings of the study contradict with Malkiel and Fama (1970) which states the efficiency of markets and absence of abnormal returns. The empirical findings show that during the analysed period, either the market is not efficient or these companies are expected to be chosen for the index, based on the criteria set by Borsa Istanbul as an entry requirement to the index. Thus, the companies are assumed to have higher returns regarding the expectations of the investors prior to the inclusion in the Sustainability Index. Based on these findings, it can be deduced that investors behave emotionally rather than behaving rationally.

It would be interesting to widen the event window so as to understand whether the stocks are already overpriced with the expectations of the investors.

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