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DETERMINANTS OF CORPORATE SUSTAINABILITY PERFORMANCE AND ITS IMPACT ON FIRM VALUE

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ABSTRACT

Corporate sustainability is the adaptation of the principals of corporate governance to firm operations and decision-making processes with economic, environmental and social factors in order to create long term value and to manage risks that might come to exist. Sustainability indices are generated in capital markets in order to help existing and potential investors for their evaluation of this process in their investment decisions. This study aims to determine the firm characteristics of the 77 firms listed in BIST 100 index (except financial firms and sport clubs) and in the meanwhile listed in BIST Sustainability Index for the period November 2014-October 2018. In addition, the impact of listing in BIST Sustainability Index on firm value is investigated. According to the results of logistic regression, firm size, return on equity, leverage, market to book ratio and asset turnover are positively and

significantly related with sustainability dummy variable. Hence, firms with bigger size have higher probability of listing in sustainability index. These firms are listed in sustainability index because of their high level of public scrutiny and therefore low level of reporting costs. The positive relation between return on assets and sustainability dummy variable might be explained by the idea that the managers of the high profitability firms' willingness to present information. They can show their ability to increase the shareholders' wealth by presenting information. Furthermore, the firms with higher leverage ratios prefer to present more information in order to decrease the agency costs. Therefore, the probability of to be listed in the sustainability index is higher for them. The positive relation between growth opportunities and sustainability dummy variable is a result of these firms' willingness to make innovation or the higher level of diversification strategies which include sustainability principles. A positive relation is found between sustainability dummy variable and asset turnover variable. Their active working and their higher turnover are resulted in higher earning potential. Thus, they will have higher probability to be listed in sustainability index. On the other hand, the factors that impact the firm value is tested with two stage least squares method. A positive relation is found between Tobin's Q and sustainability dummy variable. As a result, it is founded that the firms which shows sustainability improvement and report these improvements, might have higher values in financial markets and might be rewarded by investors.

Keywords: Firm Value, Corporate Sustainability, BIST, Sustainability Index

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INTRODUCTION

Corporate sustainability is basically an effort for firms to create long-term value beyond their short-term goals. There are three important pillars of this concept. These are economic, environmental and social factors. These three factors must also be adapted to all activities and decision-making mechanisms of the firms for a common purpose along with corporate governance principles for risk management (Aras and Crowther, 2009; Önce et al., 2015). The concept of economic sustainability includes non-fragile and profitable financial structure of the company. Environmental sustainability is to ensure that natural resources are transferred to future generations without harming the environment in the firm's production processes. Social sustainability, on the other hand, can be defined as improving the business and life conditions of the firms as a whole and improving the welfare of the internal and external customers of the firms (Önder and Ağca, 2018). The increase in the diversity of investment instruments offers new opportunities to savers and at the same time brings more risks. At this point, it has become a necessity for investors to follow corporate sustainability factors along with financial outputs and to take reference for investment strategies (Gönen and Solak, 2016). In short, corporate sustainability performance and reporting of this performance help investors to be better informed and make more accurate investment decisions.

According to the new set of values focused on corporate sustainability, it will be incomplete and inaccurate to evaluate firms only with their financial performance. Therefore, besides financial performance, reporting of economic, environmental and social factors is inevitable (Hahn and Hühnen, 2013). This is explained in the “Sustainability Guide for Firms” prepared by BIST (borsaistanbul.com, 2017). EIRIS (Ethical Investment Research Services Limited), is an independent research company based in London, serves under a contract signed with Borsa İstanbul, and its research methodology for the BIST Sustainability index is based on environment, biodiversity, climate change, health and safety, human rights, anti-bribery, banking criteria, supply chain and management of board structure.

The first sustainability index created on the world market scale is the Domini 400 Social Index calculated in 1990 by KLD Research & Analytics, a firm that creates indices by doing research for corporate investors. These studies gained an institutional structure with the Dow Jones Sustainability

World Index (DJSI), which began to be calculated in 1999, which allows savings owners to evaluate the firms they will invest in considering their sustainability performance (robecosam.com, 2019). Sustainability Index for the Turkey's capital markets was calculated for the first time on November 4, 2014 within the scope of Borsa İstanbul. The valuation period of the index is in annual periods. Therefore, the firms that will be included in the index are published every year for November-October period. BIST also publishes list of the firms' subject to valuation for the following period in December each year.

Taking part in the sustainability index shows that the company's corporate sustainability performance is high. Therefore, various studies have been carried out in the related literature about the effects of the inclusion of firms in the sustainability index on the financial performance, the relation between the sustainability index and firm value, and the determinants of the sustainability index. In Turkey, the index has been calculated since 2014. Although the number of the studies made in Turkish market is less than the international research, important findings have been reached in these local studies.

Kocamış and Yıldırım (2016) conceptually examine sustainability reporting and its benefits for the enterprises. Kartal (2017) analyses the sustainability reports of the banks included in BIST Sustainability and BIST 100 Indices by content analysis method. It is determined that the banks applied the Corporate Governance Sustainability Reporting and the reporting rules published by Global Reporting Initiative (GRI). Similarly, Gümrah and Tanç (2018) examine the sustainability reports published by the 10 firms included in the BIST Sustainability Index in 2014 and 2015. Gök and Özdemir (2017) compare the BIST Sustainability Index financial performance with BIST 100 index financial performance. Aytekin and Erol (2018) investigate whether financial performance is a fundamental determinant to be included in the BIST Sustainability Index. Aydın (2017) examines the impact of financial performance of the 14 manufacturing firms included in the BIST Sustainability Index in 2015 on the basis of the data between 2010 and 2015. He finds that there is no statistically significant difference in company performances before and after the index. Altınay et al. (2017), who conduct a similar study on banks, interpret statistically the stock values of 4 banks listed in BIST Sustainability Index before entering the index and the change in stock values after entering the index. Çıtak and Ersoy

(2016) examine the effect of being listed in the index on the investor and examine the firms included in the BIST Sustainability Index based on stock return rates and M/B ratio. Ergüden and Çatlıoğlu (2016), examine the contribution of energy firms in BIST Sustainability Index with TOPSIS method. In a similar study, Yıldırım and Kocamış (2017) analyse the sustainability reports of firms operating in the automotive sector in the BIST Sustainability Index with TOPSIS method.

In the studies investigating the effect of being traded in the Sustainability Index on the firm value, it has been concluded that making sustainability reporting increases the stock value of the firms, increases the Tobin's Q rate and thus has a significant and positive effects on the firm value (Bachoo et al., 201; Ioannou and Serafeim, 2017; Kuzey and Uyar, 2017).

In the studies which investigate the characteristics of the Sustainability Index, significant and positive coefficients are found for firm size, leverage ratio, profitability variables (Branco and Delgado, 2014; Ahmed and Courtis, 1999). Nobanee and Ellili (2016) report that sustainability statements significantly and positively affect the performance of traditional banks in the United Arab Emirates, but the same results can not be achieved for Islamic banks.

The impact of environmental awareness and social events have increasing importance in society. For this reason, firms cannot simply express themselves with classical financial outputs. At this point, Sustainability Indices become important for both the current and potential investors and for the company as a whole. In this study, the effect of being traded in BIST Sustainability Index on firm value is examined. In addition, the characteristics of the firms included in the BIST Sustainability Index are determined for the period 2014-2018. In this way, it is aimed to determine the firm-specific determinants of the index. Although there are studies examining the relation between being included in the index and firm value in the international literature and the characteristics of the firms in the index, these studies are very limited in terms of BIST Sustainability Index. The way in which the index is handled, and the variables used are considered to contribute to the relevant literature in terms of their results while forming the original aspect of the study.

DATA AND METHODOLOGY

Firstly, the firm characteristics of the firms listed in BİST100 index and in the meanwhile listed in BIST Sustainability Index for the period November 2014-October 2018 are examined in this study. Secondly, the effect of to be listed in sustainability index on firm value is investigated. The data of 77 firms listed in BIST100 index (except financial firms and sport clubs) between 2014 and 2018 is used. Finnet database is used in order to collect the data. The firms listed in sustainability index is taken from Borsa Istanbul website. 385 firm-year observations are used in the analyses.

Following models are used in this study:

$$P(SDummy_f = 1) = E\left(SDummy_f = 1 \middle| X_{1f}, X_{2f}, .. X_{8,f}\right) = \frac{1}{1+e^{-(\alpha+\beta_1 X_{1f}+\cdots+\beta_8 X_{8f})}} \quad (1)$$

$$TobinsQ_{f,t} = a_0 + a_1 SDummy_{f,t} + Size_{f,t} + Lev_{f,t} + ROA_{f,t} + CR_{f,t} + Sales_{f,t} + \varepsilon \quad (2)$$

SDummy variable in model 1 is a dummy variable. If a firm listed in both BIST100 and BIST Sustainability Index, SDummy is equal to 1. If the firm listed in BIST100 index is not listed in BIST Sustainability Index, Sdummy is equal to 0. The variables used in this study are as follows: X_{1f} = firm size (Size), X_{2f} = return on assets (ROA), X_{3f} = leverage ratio (Lev), X_{4f} = market-to-book ratio (MB), X_{5f} = current ratio (CR), X_{6f} = asset turnover (AT), X_{7f} = price-to-cash flow ratio (PC), X_{8f} = investment ratio (Inv) and Sales is growth rate of sales. The definitions of these variables are shown in Table 1.

Table 1. The Definition of the Variables

	Variable	Definition
Dependent Variables	SDummy	If a firm listed in BIST100 index is also listed in Sustainability Index, SDummy is equal to 1, otherwise it is equal to 0.
	Tobin's Q	(Total Liabilities- Shareholder's Equity + Market Value)/ Total Assets
Independent Variables	Size	Natural Logarithm of total assets
	ROA	Return on Assets = Net Profit/ Total Assets
	Lev	Leverage Ratio = Total Liabilities/ Total Assets
	MB	Market Value/ Book Value
	CR	Current Ratio = Current Assets/ Current Liabilities
	AT	Asset Turnover = Net Sales/ Total Assets
	PC	Price/ Cash Flow
	Sales	Growth Rate of Net Sales (%)
	Inv	Investment Ratio = Tangible Assets/Shareholder's Equity

Logistic regression is used in the first model. The dependent variable is Sdummy and it takes 0 and 1 value. The impact of independent variables on the probability of the firms listing in the sustainability index is measured by logistic regression. The coefficients obtained with the regressions are the probability ratios. In the second model the impact of listing in sustainability index on firm value is analysed by using Two Stage Least Squares regression. Sdummy variable is endogenously predicted in the first stage regression. Furthermore, equation (1) and equation (2) are used as simultaneous equations. The independent variables used in equation 1 are used as instrumental variables in equation 2.

EMPIRICAL RESULTS

The descriptive statistics of the dependent and independent variables used in this study is shown in Table 2. According to Table 2, the firms listed in BIST100 index between 2014 and 2018 have average size of 21.82 and average ROA of 5.87. Average firm has a leverage value of 0.53 and its market value is 2.17 times its book value. The current ratio of BIST100 firms is 2.14 and this shows that these firms have higher liquidity. The average

investment ratio is found as 1. This result shows that the sample firms can finance their tangible assets with their shareholder's equity. Moreover, average asset turnover with 0.79 shows that the asset turnover is lower for the sample firms and BIST100 firms have unutilized capacity. Average price-to-cash flow ratio is 10.67, average firm value is 1.37 and sales growth rate is 23.87. ROA, leverage ratio, market-to-book ratio, investment ratio, price-to-cash flow ratio and sales growth are winsorised at 1% level.

Pearson correlation coefficients among the used variables are examined and it is seen that there is not a multicollinearity issue among these variables. Sdummy has positive relations with firm size (R^2 = 0.6192) and leverage ratio (R^2 = 0.3000) at 1% significance ratio. Sdummy has also a significantly negative relation with current ratio (R^2 = -0.2036). On the other hand, Tobin's Q has a negative relation with firm size (R^2 = -0.2298) and it has a positive relation with ROA (R^2 = 0.3744).

Table 2. Descriptive Statistics

Variable	N	Mean	Sd.	p25	p50	p75
SDummy	385	0.32	0.47	0.00	0.00	1.00
Size	385	21.82	1.57	20.58	21.76	22.91
ROA	385	5.87	8.57	0.90	5.11	9.61
Lev	385	0.53	0.23	0.35	0.56	0.71
MB	385	2.17	2.27	0.85	1.46	2.58
CR	385	2.14	2.25	1.02	1.47	2.33
Inv	385	1.00	1.12	0.37	0.75	1.12
AT	385	0.79	0.60	0.42	0.67	0.95
PC	385	10.67	16.77	3.91	6.84	11.60
Tobinsq	385	1.37	0.76	0.94	1.17	1.54
Sales	385	23.87	48.46	3.58	16.70	32.06

Table 3 presents the logistic regression results which uses Sdummy as a dependent variable. The impact of firm specific characteristics on the probability of to be listed in sustainability index is tested in this regression. Firm size, ROA, leverage ratio, market-to-book ratio and asset turnover are found to have positive and significant relations with Sdummy.

Table 3. Logistic Regression Results

					%95 Conf. Interval	
SDummy	Odds Ratio	Std.err.	Z	P>z	Lower	Upper
Size	4.288971	0.686929	9.09	0	3.133453	5.870607
ROA	1.05784	0.028962	2.05	0.04	1.002572	1.116156
Lev	48.84049	61.5062	3.09	0.002	4.138453	576.3974
MB	1.225042	0.101971	2.44	0.015	1.040635	1.442128
CR	0.893569	0.14253	-0.71	0.48	0.653665	1.22152
Inv	0.816455	0.121235	-1.37	0.172	0.610292	1.09226
AT	0.566089	0.166989	-1.93	0.054	0.317535	1.009202
PC	0.993611	0.011026	-0.58	0.564	0.972234	1.015458

LR chi2(8) = 218.14
McFadden R Square = 0.45
N = 385

The probability of to be listed in sustainability index is higher for firm with large size. Large firms have 4.28 times probability of to be listed in sustainability index. This ratio is 1.05 for ROA. Firms with growth opportunities have 1.22 times and firms with higher asset turnover have 0.57 times probability of being listed in sustainability index. Therefore, it can be concluded that firms listed in sustainability index are large firms, have higher profitability, have higher growth opportunities and have higher asset turnover. The relation between firm size and sustainability reporting is explained in literature with different reasons. Legitimacy theory is one of them (Kolk and Perego, 2010). According to this theory, large firms have higher public scrutiny and as a result they need higher funds (Liu and Anbumozhi, 2009; Lourenço and Branco, 2013; Kansal et al., 2014) and they are exposed to lower reporting costs (Jennifer Ho and Taylor, 2007; Kuzey and Uyar, 2017). According to Singhyi and Desai (1971), the positive relation between ROA and sustainability reporting is explained by the behaviour of the managers of higher profitability firms. These firms willing to give more information in order to show that they can increase the shareholders' wealth. As a result, it is expected that firms with higher profitability should have sustainability reportings. In addition, Alsaeed (2006) also shows that higher profitability firms disclose more information in order to give positive signal to the public.

The relation between leverage ratio and sustainability reporting is explained by agency theory in the literature. According to Jensen and Meckling (1976), the firms with higher debt ratio have higher monitoring and scrutiny costs. Managers disclose more information in order to show to the debt holders that the firms have the capability of paying debt. As a result, the firms with higher debt ratios disclose more information in order to reduce agency costs. In line with this, it is expected that firms with higher debt ratios should have more sustainability reporting (Jennifer Ho and Taylor, 2007). Moreover, the positive relation between growth opportunities and sustainability reporting is line with the results of Artiach et. al (2010) and Ameer and Othman (2012). The firms, which invest more in fixed assets, are less willing to innovate or have less product diversification strategies which includes sustainability principles. Sunk cost investments in existing product technologies is the reason of this. However, in contrast firms with higher growth opportunities can practice sustainability principles (Artiach et al., 2010).

Furthermore, according to the empirical results, the firms with higher asset turnover have higher probability to be listed in sustainability index. These firms with higher asset turnover work more efficiently and as a result their profit potential and revenues will increase with increased turnover. This situation contributes to the consideration of corporate sustainability in order to create long term value in the operations and decision-making process of the firms with economic, environmental, social factors and corporate governance principles (borsaistanbul.com, 2014). Therefore, it is possible for a high asset turnover firm to be listed in sustainability index.

In Table 4, the factors affect firm value are tested with Two Stage Least Squares regressions. Robust standard errors are used in the regressions. According to the regression results, there is a positive relation between SDummy and Tobin's Q. Therefore, the firms which are listed in sustainability index have higher firm values. This result is also consistent with Kuzey and Uyar (2017), Lo and Sheu (2007), Guidry and Patten (2010). It can be concluded that firms with sustainability reportings have higher values in financial markets and they are rewarded by the investors (Lo and Sheu, 2007). In terms of other independent variables firm size and current ratio also have positive relations with firm value. Therefore, the firms with more assets and the firms with higher liquidity have higher firm values.

Table 4. Two Stage Least Squares Regression Results

					%95 Conf. Interval	
Tobinsq	Coefficient	Std. Err	z	P>z	Lower	Upper
SDummy	6.312794	2.107412	3	0.003	2.182343	10.44325
Size	-1.21391	0.373999	-3.25	0.001	-1.94693	-0.48088
Lev	-1.17194	0.867191	-1.35	0.177	-2.8716	0.527725
ROA	-0.00858	0.017378	-0.49	0.621	-0.04264	0.025477
CR	0.101186	0.046991	2.15	0.031	0.009085	0.193286
Sales	-0.00093	0.00165	-0.57	0.572	-0.00417	0.0023
Constant	26.29815	7.845811	3.35	0.001	10.92064	41.67565

CONCLUSIONS

Corporate sustainability is the implication of economic, environmental, social factors and corporate governance principles in the firm operations and in decision processes in order to create long term value and to manage potential risks. In this regard the sustainability index, which can be used as a reference by the investors in their investment processes, has started to be calculated in 2014 in Turkey by Borsa Istanbul. In this study, the firm characteristics of the firms listed in BİST100 index and in the meanwhile listed in BIST Sustainability Index for the period November 2014-October 2018 are examined. Furthermore, the impact of to be listed in the sustainability index on firm value is examined.

According to the regression results, firms with larger size have higher probabilities to be listed in sustainability index. These firms have higher public scrutiny and lower reporting costs. As a result, their probability of to be listed in sustainability index will be higher. In addition, the firms with higher return on equity will more likely be listed in the sustainability index. Because the managers of these firms are willing to disclose more to show they have the ability to increase the shareholders' wealth.

High leveraged firms, those are known with higher monitoring and scrutiny costs, disclose more information in order to decrease agency costs. As a result, high leveraged firms have higher probability to be listed in sustainability index. Moreover, firms with high growth opportunities are found to have higher probabilities to be listed in the sustainability index. These firms' higher willingness to innovate or willingness to have more product diversification strategies can explain this result. Furthermore, the

firms which works efficiently and those have higher asset turnover have higher probabilities to be listed in the sustainability index. Finally, it is reported that the firms which are listed in the sustainability index have higher firm values. Since these firms have higher values in financial markets, they will attract more investment and it is possible to have higher values for these firms. According to the reported results of this study, the investors who invest in capital markets should take into account the BIST Sustainability firms which have higher firm value, higher return on equity, higher growth opportunities and higher asset turnover ratio firms.

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