
Does the Sustainability Index Make a Difference in Returns?*

Submitted 21/02/19, 1st revision 16/06/19, 2nd revision 25/10/19, accepted 26/11/19

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Abstract:

Purpose: The purpose of this study is to examine if the sustainability index influences returns differently than other indices. It compares sustainability index with other indices in the case of the Turkish state.

Design/Methodology/Approach: The article uses the Sharpe, Jensen, and Treynor's criteria for the empirical analysis comparing stock market indices data in the period of 2014-2016 with the sustainability index.

Findings: According to the findings, it was determined that the Bist 100, Bist 50, Bist 30, Bist whole, and sustainability index could not provide a return above the investors' risk-free interest rate in the related period. When evaluated in terms of beta coefficients, it can be said that the sustainability index is similar to the beta value of the other indices. When we look at the coefficients of the determinants, it is seen that diversity is best in Bist 100 and sustainability index. Similar results were obtained according to Sharpe, Treynor, and Jensen's performance criteria used as well. The highest performance achieved is the Bist 30 index, while the sustainability index ranked second behind the Bist 30 index.

Practical Implications: As can be seen from the literature review, studies generally investigated the effect of being included in the sustainability index on financial performance however they have not yet covered the issue extensively. The present study is a case for Turkey where similar studies have been published with controversial results.

Originality/Value: Since there are not enough studies comparing the sustainability index with other indices in terms of risk and return this study aims to fill this gap.

Keywords: Corporate sustainability, sustainability index, portfolio performance indices.

JEL Code: G10, G34.

Article type: Research case study.

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*An earlier version of this article has been presented at the 1st International Applied Social Sciences Congress, held in Uşak in 21-23 September 2017.

1. Introduction

Rapidly increasing competition leads companies to look for advantages that will distinguish them from other businesses. For that reason, businesses aim to increase their value creation capacities in the long term. These targets are associated with the behavior of responsible investment. The increasing interest in these issues has led to the emergence of sustainability indices.

Many empirical studies have been conducted to investigate the main determinants of stock market indices. However, previous studies have focused on the indices that ignore the companies monitoring responsible investment behavior. For that reason, the BIST sustainability index has been included in this study. The study aims to ascertain whether the performance of the BIST sustainability index makes a difference as compared to other indices or not.

2. Concept of Sustainability and Sustainability Index

Sustainability is a comprehensive term, including the themes of economic and social development and environmental protection. It also means the adaptation of economic, environmental, and social factors to the company's activities and decision-making mechanisms along with the corporate management principles as well as the management of risks arising from these issues to create long-term value in companies. It is concentrated in three points, returns, liquidity and assurance in the classical investment concept. However, responsible investments add a fourth complex parameter which is related to environmental, social, and corporate management, to the classical investment concept as well as the monetary and financial purposes.

Sustainability indices use three factors (environmental, social, and corporate management) to assess an organization (Cunha and Samanez, 2013). The assessment criteria derived from these three factors more accurately define the social responsibility issues on which indices are based. Finally, these assessment criteria are divided into the indicators which measure the performance of a company and determines whether to participate in the index or not (Cunha and Samanez, 2013)

The fact that businesses adopt sustainable investment practices has led these issues to be included in financial markets (Lopez *et al.* 2007). Almost all major stock exchanges have a sustainability index to offer options to investors who are interested in sustainability. The first sustainability index introduced in 1999 was Dow Jones Sustainability Index (DJSI), which was a new issue offered by the New York Stock Exchange. DJSI has emerged by evaluating the shares from the most important companies in the world in terms of economic, environmental and social criteria (DJSI, 2014). London Stock Exchange prepared its sustainability index in 2001 (Financial Times Stock Exchange Group for ESG Index Series, 2016). The index was designed to objectively measure the companies' performance, which provides

world-wide known corporate responsibility standards within the context of environmental, social and corporate governance criteria (FTSE Index Series, 2014).

In 2004 Johannesburg Stock Exchange started the first sustainability index (Cunha and Samanez, 2013) for developing countries by launching the JSE SRI index (Johannesburg Stock Exchange Social Responsible Investment Index) that considers social responsibilities, governance and environmental issues. In Turkey sustainability index began to be issued in November 2014 with the name of the BIST Sustainability Index.

BIST Sustainability Index presents companies' approach to the problems related to sustainability, which is essential for Turkey and the World, such as global warming, depletion of natural resources, health, safety, employment and provides their activities and decisions to be independently assessed and in a sense to be registered. The index also enables companies to locally and globally compare their corporate sustainability performances. The index also provides a performance assessment tool to improve and set new targets and enables to develop corporate transparency and accountability as well as risk management skills related to sustainability issues. It is expected that this will create a competitive opportunity for the companies and increase the public awareness and reputation of the indexed companies (BIST, 2017).

3. Literature Review

Socially responsible investments (SRI) have grown rapidly in recent years and have reached 59% in Europe, 18% in the USA, 31% in Canada and 17% in Australia. This indicates that responsible investments represent a significant part of the assets professionally managed in the world (Global Sustainable Investment Alliance, 2014). Increasingly, investors are leaning to companies meeting high sustainability standards to generate risk-adjusted returns parallel with the market (International Finance Corporation, 2011). It is also observed that investors are willing to pay more for the shares of companies that adopt responsible investment practices (Orsato *et al.*, 2015).

Indices indicate the performance of capital markets. It can also be seen as an indicator representing the behavior of stock prices in a certain period in a certain market, including the measurement of general economic trends in the markets (Malacrida and Yamamoto, 2006). Robinson *et al.* (2011), Patari *et al.* (2012), Ortas and Meneva (2011), Ortas *et al.* (2013), Chelawat and Trivedi (2013), Lourenco and Branco (2013), Achim and Barlea (2014), Fettahoğlu (2014), Charlo (2015), Wallis and Klein (2015), Lean *et al.* (2015) Auer and Schuhmacher (2016), Lesser *et al.* (2016) and Ozdemir (2017) are the studies analyzing the responsible investments by associating with financial performance.

According to Robinson *et al.* (2011), the number of stocks of Northern American and Canadian companies included in DJSI World has increased. However, it was observed that the stock prices had temporarily decreased in the first ten days after these stocks were extracted from the index. A positive relationship between responsible investment practices and financial performance was determined.

Pateri *et al.* (2012) indicated that energy companies in the DJSI sustainability index in the US performed better than the sector-leading companies. These companies also catch the sustainability-oriented companies in terms of financial performance. This study also found a positive relationship between financial performance and sustainability index.

According to Ortas and Maneva (2011), there is a negative relationship between companies' financial performance and being or not being included in sustainability index. Although the speculations about the fact that a company is included in the index have positive effects, the speculations about being excluded have negative effects, none of these effects was found statistically significant. Ortas *et al.* (2013), in their study conducted by using Multivariate Generalized Autoregressive Conditionally Changing Heteroskedasticity Analysis (MGARCH) in Spain in Financial Times Stock Exchange Group Responsible Investment index (FTSE4 Good-Ibex) which is one of the essential responsible investment indices in Europe determined that investors easily adapted to the shocks in stock markets. As a result, they presented that investors maintained their investment strategies by following their views and beliefs and managed to adapt their financial conditions to social welfare and environment issues, although the study was restricted with only one country. Chelawat and Trivedi (2013), in India analyzed the portfolio, which was created based on these criteria, considering that traditional investment theories focus on risk and return and that social and environmental performance of the investment is not emphasized. As a result, ethical investments made by considering environmental and social criteria are more efficient.

Laurenco and Branco (2013) found in their studies on the Brazilian sustainability index, which is one of the developing markets, that the companies in the sustainability index had a higher return on equity. The study also indicates that the effect of being included in the sustainability index is higher for developing countries.

Achim and Barlea (2014) found that for Romanian companies listed on the Bucharest Stock Exchange, while good sustainability performance had a negative relationship with the return of assets (ROA), it was positively correlated with the market capitalization rate. Fettahoğlu (2014) analyzes the companies listed on the Istanbul Stock Exchange, which published a sustainability report between 2009-2011. In the analysis, a significant relationship was found between financial performance and some sustainability indicators.

According to Charlo *et al.* (2015), the companies in Financial Times Stock Exchange Group Responsible Investment index (FTSE4Good-Ibex) can get higher returns than market risk and they are more sensitive against the changes in the market. They also have higher tendency to take financial risks as compared to other companies (IBEX Stock Exchange Index) in the Spanish market. Wallis and Klein (2015) conducted a study using meta-analysis covering 1986-2012 on two key critical issues as the performance of the investments made with responsible investment criteria compared to traditional criteria and the effects of responsible investment behaviors on companies' financial results. Unlike previous studies, they identified that there was no difference between the performance of responsible investments and traditional investments.

Lean *et al.* (2015) compared the performance of responsible investment funds in Europe and Northern America using the data of 500 European and 248 Northern American companies in January 2001 and December 2001 period. They identified that the responsible investment funds in Northern Europe had better performance than the responsible investment funds in Europe, but the performances in both regions were not permanent.

Auer and Schuhmacher (2016) analyzed the performance of corporate governance company ratings and responsible investments in the Asian Pacific, America, and Europe. In this study they found that:

- geographical region, type of industry or responsible investment criteria did not affect the selection of shares;
- responsible investment based portfolios could get similar performances in Asian Pacific and America, however the investors in Asian Pacific and America avoided to pay the price for responsible investments, but the investors in Europe were willing to pay the price to include responsible investment to their portfolios;
- their study was trustworthy in also the dimensions such as transition costs of the portfolio and time framework.

Lesser *et al.* (2016) analyzed more than 200 international sustainable funds and considered different approaches, such as responsible investment, Islamic, and faith-based investments. They concluded that faith-based funds had similar performance to the market, especially the Islamic funds had the lowest performance among the responsible investment funds, while socially responsible funds were below the market performance of Islamic funds.

Özdemir (2017) compared the productivity of manufacturing businesses in the sustainability index before and after being included in the index using Data Envelopment Analysis. It was observed that the companies that were effective before entering the sustainability index lost their effectiveness after being included in the sustainability index.

Studies in literature have generally focused on the effect of being included in the sustainability index on the company's financial performance. This study aims to present that whether investing in the sustainability index in Turkey makes no difference in investing in other indices in terms of risk and return.

4. Methodology

As can be seen in the literature review, studies generally investigate the effect of being included in the sustainability index on financial performance. There are no studies that compare the sustainability index with other indices in terms of risk and return. This study aims to fill the gap in this issue.

This study aims to assess the sustainability index in Turkey in November 2014 to June 2016 period by comparing it with other indices in terms of risk and return. Performance measurement models were used as the research method in the study. These models are Sharpe ratio in which risk is stated with standard deviation and Treynor and Jensen ratios as well as systematic risk as the beta coefficient.

4.1 Sharpe Ratio

Sharpe ratio is one of the most common criteria of portfolio performance. As a tool for the assessment and estimation of the performance of investment fund managers, in 1966, William Sharpe developed a criterion, which is multiplied with the residual return to get this return and bases on the comparison of the risk measured with the standard deviation. Sharpe used the following equation to measure portfolio performance (Sharpe, 1975; 1998):

$$S_i = \frac{r_i - r_f}{\sigma_i} \quad (1)$$

In this equation, S represents the Sharpe index concerning i portfolio, r_i represents the average return ratio of i portfolio, r_f represents the risk-free interest rate, σ_i represents the standard deviation of the average return of i portfolio. The numerator of the equation $(R_i - r_f)$ is called the risk premium of the portfolio. In any risky asset or the portfolio of an asset, the Sharpe ratio is defined as the ratio of excessive profit to the standard deviation of the return. The excessive profit here is called the risk premium. Risk premium means an additional return paid to the investor in return for the risk taken above the risk-free interest rate. It is expected that risk premium has a positive value. In the denominator of the equation, there is the sum of the risk of the portfolio consisting of non-systematical and systematic risks.

Sharpe ratio measures the portfolio performance by correcting the portfolio performance according to the risk. An increase in return and a decrease in standard deviation is the desired situation, and it increases Sharpe ratio. An increase in standard deviation or a decrease in return decreases the Sharpe ratio (Korkmaz and

Uygurtürk, 2008). The calculated Sharpe ratio alone does not make sense for the portfolio. For an accurate assessment, this calculated ratio needs to be compared with either other portfolios or market portfolios. The ranking for the performance is carried out from the highest value to the lowest one (Dağlı, 1995). The higher the value of this ratio, the higher the performance of the portfolio.

4.2 Treynor Ratio

Sharpe ratio is based on the total investment risk. It is best to use it when an investor plans to invest all (or almost all) of his/her wealth in a single security or portfolio. When an investor plans to add an investment to a well-diversified portfolio, the Treynor ratio is better to use because it is only based on systematic risk. Treynor divides the investment risk of a diversifiable portfolio into two parts: General fluctuations concerning the market and the fluctuations for the securities in the portfolio. Treynor stated that wide fluctuations affected all of the securities, and they could not be eliminated. However, the risks concerning securities could be eliminated through diversification in a portfolio.

Unlike the Sharpe ratio, Treynor considered the systematic risk that reflected market risk and could not be eliminated by the diversification of the portfolio exposed. In this case, first of all, Treynor is related to the expected return of the portfolio with an appropriate market return rate in order to obtain the performance ratio (Yıldız, 2005). The studies on security returns hypothesize that the source of systematic risk is the market portfolio, so Treynor ratio is generally defined as the risk premium divided by beta (Pilotte and Sterbenz, 2006). Treynor used the beta coefficient as a risk indicator. Treynor ratio is stated as the following equation (Treynor, 1965):

$$T = \frac{r_i - r_f}{\beta_i} \quad (2)$$

In the formula i represents the return of i portfolio, r_f represents the risk-free interest rate and β_i represents the beta of the portfolio. A high Treynor index means that the fund provides more additional returns in return for one unit of risk.

4.3 Jensen Ratio

Jensen developed his theory in 1968 based on the Capital Asset Pricing Model. Jensen ratio measures the portfolio performance through alpha value. The Alpha coefficient is a fixed term of the regression equation established between the returns and market returns. The positive alpha coefficient indicates that the portfolio manager is successful; the negative alpha coefficient indicates that the portfolio manager is unsuccessful. In other words, while the negative alpha coefficient is considered as a risk-adjusted low performance, the positive alpha coefficient is an indicator of risk-adjusted high performance (Korkmaz and Uygurtürk, 2007). Jensen ratio is calculated as the following equation (Jensen, 1968):

$$\alpha = R_i - R_f - \beta_i (R_m - R_f) \quad (3)$$

In this equation α represents the Jensen performance ratio of i portfolio, R_i represents the generated return ratio of i portfolio, R_f represents the risk-free interest rate, β_i represents the systematic risk of i portfolio, and R_m represents the expected return ratio of the market portfolio. Alpha coefficient indicates the success of the timing of the transactions by the portfolio manager in the market.

5. Analysis and Findings

The data were collected on a monthly basis in the assessment. Share returns were obtained from the official website of Borsa Istanbul, and the data about interest rates were obtained from the electronic data distribution system of the Central Bank of the Turkish Republic.

Sharpe, Treynor, and Jensen's performance ratios were used in the assessment. In the study, the indices were subjected to performance ranking among themselves according to the performance criteria calculated for each of the BIST Sustainability indices, BIST National-100 index, BIST National-50 index, BIST National-30 index. The daily average interest rate of 6-month treasury bills was used in this study as the risk-free interest rate. National Stock Exchange Index was accepted as for the market portfolio. Daily return rates of the indices were obtained by dividing the difference of the related index with the closing value of the previous day.

In Table 1 the statistical data about the indices analyzed in the research period are presented. Risk premiums ($R_i - R_f$) have negative values in all of these indices, including the market portfolio. This indicates that not only each index does not provide an additional return for the investors, but also the experience a potential profit loss since they would have come out better off if they had purchased government bonds or treasury bills upon the risk-free interest rate instead of investing on shares.

Considering the direct positive relationship between risk and return, the risk premium of poorly managed portfolios is negative. When we look at beta (β_i) coefficients presenting the correlation of each index with the market portfolio, it is seen that the beta of the BIST 100 Index, BIST 50 Index ve BIST 30 Index is lower than 1,0.

This indicates that the investment in the companies within these indices is less risky because one unit of change in the IMKB National – Whole Index leads to less than one unit of change in returns of these indices. In this respect, with 0,164, BIST 30 Index has the highest and BIST 100, and BIST sustainability indices have the lowest beta coefficient.

Table 1. Statistical Data of Indices for November 2014 to June 2016 Period

Indices	Σi	β	R_i		$R_i - R_f$	R^2
BIST 100	0.05	0.049	0.008		-0.087	0,8518
BIST 50	0,180	0,089	0,0005		-0,945	0,1975
BIST 30	0,210	0,164	0,0106		-0,0844	0,3138
Sustainability Index	0,0578	0,052	0,0503		-0,0447	0,8068
Market portfolio	0,0494	1	-0.03		-0,098	1

Source: Author's calculation.

It is observed that the determinant coefficients (R^2), which are decisive indicators for the diversification levels of the funds, are very high for some indices and low for some others. Low determinant coefficients mean that funds are not well diversified. As can be seen in Table 1 with 0,8515 value BIST 100 index has the highest and with 0,1975 value BIST 50 index has the lowest determinant coefficient.

Performance values and rankings calculated according to Sharpe, Treynor, and Jensen's performance ratios are presented in Table 2. The most successful index was determined as the BIST 30 index according to every three performances from the obtained results. The sustainability index follows the BIST 30 index. The rankings of the BIST 30 index and sustainability indices are close to each other. This is because most of the companies in the BIST 30 index are also included in the sustainability index. The obtained results indicate that the performance of the sustainability index risk is lower than the market portfolio.

Table 2. Performance Analysis Results of Indices for November 2014 to June 2016 Period

Indices	Sharpe	Ranking	Treynor	Ranking	Jensen	Ranking
BIST 100	-1,74	4	-1,775	4	-0,00777	4
BIST 50	-0,773	3	-1,061	3	-0,0765	3
BIST 30	-0,401	1	-0,514	1	-0,0373	1
Sustainability Index	-0,524	2	-0,859	2	-0,0656	2

Source: Author's calculation.

6. Concluding remarks

As a result of the assessment performed in order to assess the performance of Sustainability Index in Turkey in November 2014 to June 2016 period along with the indices within the scope of the study in terms of risk and return, it can be concluded that the businesses in indices not only do not provide additional returns but also lead to potential profit losses since investors will come out better off if they invest on risk-free financial tools instead of taking a risk.

Considering that there is a direct positive correlation between risk and return, this indicates that the related portfolios are not well managed and do not provide an exact diversification. When we look at the determinant coefficients (R^2), the figures for them have been between 0,85 and 0,19. This indicates that an exact diversification could not be ensured in indices.

When we look at beta (β) coefficients indicating the correlation of indices with market portfolio, it can be said that one unit of change in market portfolio in which the coefficients for all indices are lower than 1 leads to a change less than one unit in indices i.e., they are less risky as compared to market portfolio. The most successful index was BIST 30 in the assessments of the indices performed according to Sharpe, Treynor and Jensen ratios, and the sustainability index followed this index.

The results that we have obtained are different from Charlo *et al.* (2015) and Chelawat and Trivedi's (2013) studies, which found that the investors investing on the companies in the sustainability index obtained more returns. It was concluded in our study that an investor who made investments in the sustainability index did not obtain more returns in the Turkish market. This result obtained in our study supports Wallis and Klein's (2015) views that investing in the sustainability index is not different from investing in other indices.

Istanbul Stock Exchange in Turkey is among the emerging stock markets. While performing an assessment, it should be considered that BIST does not have sufficient processors and market depth. Not only the sustainability index but also even the BIST Whole National Index, which is used as a market portfolio, cannot be an alternative for the investors by being below the risk-free interest rate in terms of return. BIST tries to create a structure similar to developed markets with the amendment in Capital Market Law in 2012. The stock exchange will also attract the attention of more investors as the Turkish economy grows. The concept of sustainability has just begun to be understood in the country. It is expected that the performance of the sustainability index will increase as more companies are included in the index in the next years.

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