Testing the Weak–Form Market Efficiency on the Borsa Istanbul (BIST) Sustainability Index (XUSRD): Runs Test Application

Sinan Aytekin[1], Abdullah Ferit Erol[2]

[1]*Associate Professor, Faculty of Economics and Administrative Sciences, Balıkesir University, Balıkesir, Turkey*
[2] *Lecturer, Kozluk Vocational School, Batman University, Batman, Turkey*

Abstract: *An efficient market is a concept discussed and maintained in the financial literature. This concept expressed as the instant reflection of all the information concerning the stocks defends that there shouldn't be any stocks that are low or overvalued on the market. The purpose in this study is the weak-form efficiency of stock market in Turkey to be analyzed with the help of Runs Test. In the research, daily session closing prices of the stocks being currently traded in the Borsa Istanbul (Istanbul Stock Exchange) Sustainability Index within a 12–month period between the dates 01.12.2015 and 30.11.2016 have been employed and tested whether or not the consecutive price changes in said range of time were independent from each other. The fact that consecutive price changes were dependent on each other has revealed that the Random Walk Hypothesis was not applicable in terms of the index examined. The outcome acquired contains findings that BIST stock market is not a weak–form efficient market.*

Keywords: *BIST Sustainability Index, Efficient Market Hypothesis, Random Walk Hypothesis, Runs Test, Weak-Form Market Efficiency.*

I.   INTRODUCTION

The efficiency of financial markets is a subject which has been discussed among the finance academicians for long years. Post-globalization developed stock exchange markets have caused these discussions to become much more important. An efficient market theoretically defines a market which happens in a medium in which the rational investors are in competition and reflects the information of any securities arising from both the past events and also the events predicted to take place in future. The price generated in the efficient market does not show the actual price of a security, only the best estimation of its actual price (Fama, 1995, p. 76). The first findings related to the concept of an efficient market have emerged in the study Kendall (1953) has accomplished on the behavior of stock prices. Kendall has discovered that price movements acted independently from the previous day, contrary to what he had expected as a result of his study. One of the basic empirical studies on market efficiency has been carried out by Fama (1970). The Efficient Market Hypothesis brought in by Fama (1970) is based on the Random Walk Hypothesis (RMH). According to the theory, the stock prices change randomly and are unpredictable (Fama, 1970, p. 385).

In the study Fama has conducted (1970); he has divided the markets into three groups according to the differences in the information entered. These are weak-form efficiency, semi-strong form efficiency and strong-form efficiency markets. The weak-form efficiency market is the situation that reflects all information associated with past price movements of the current market prices of the stocks. The semi-strong form is the situation that reflects all publicly disclosed information of the efficient market stock prices in addition to the past prices. As for the strong-form of efficiency, it is the situation that reflects all the information which might be used in determining the actual prices of stock prices (Khan and Vieito, 2012, p. 174, Raquib and Alom, 2015, p. 1). Moving from here, the weak-form efficiency has been tested in BIST Sustainability Index with the data of 42 companies that will be traded during the period of November 2016 and October 2017. For this purpose, daily closing session price changes have been analyzed by the Runs Test during this 12–month period between 01.12.2015 and 30.11.2016.

II.   Literature Review

The efficiency of stock exchange markets is an ever-lasting discussion in the finance literature. Therefore, there is no consensus on the findings obtained in consequence of the Efficient Market Hypothesis (EMH) tested with the stock prices. As a result of initial studies carried out on this matter, Working (1960), Fama (1965) and Samuelson (1965) have defended presence of random walk in the markets. Despite this, the first study refusing the random walk in the markets has been accomplished by Niederhoffer and Osborne (1966). While some of the studies conducted in the capital markets of different countries offer evidences associated with the presence of Efficient Market Hypothesis, some studies defend that stock prices act contrary to Efficient Market Hypothesis. Some of these studies, in which particularly the weak-form efficiency was tested, are summarized in Table 1 below.

Table 1: Summary of The Weak-Form Market Efficiency Theory Literature

Year	Author(s)	Purpose	Method	Scope/Variables	Conclusion
2010	Ergül	The weak – form efficiencies of the indices in the Turkish and American Energy Markets have been tested.	Unit Root Tests	The indices in the US market are "CBEO Petroleum Index and NYE Energy Index" and the indices in Turkey are "XELEKT Electricity Index, XKMA Chemical, Petroleum, Plastic Index" have been reviewed.	Within the scope of RMH in the period examined, the weak-form efficiency finding has been reached in Turkish and American Energy Markets.
2015	Uyar and Uzuner	The weak-form efficiency of gold markets in Turkey has been investigated	Runs Test	Monthly gold prices of Central Bank of the Republic of Turkey pertaining to December 1997 – April 2014 period have been included in the analysis.	It has been concluded that the gold markets in Turkey were not in weak-form efficiency during the period scrutinized.
2007	Tunçel	The weak-form efficiency of the stock market in Turkey has been investigated.	Runs Test	Daily first and second session closing prices of stocks included in the ISE 100 index for the period of 03.01.2005-31.12.2005 have been examined.	It has been concluded that ISE 100 index were not efficient during weak-form efficiency period looked through.
2009	Çevik and Erdoğan	Post – 2001 crisis period weak–form efficiency of Turkish banking sector has been investigated.	Structural Breaks Long-Term Memory	Daily closing prices of 10 banks being traded in ISE between years 2003 – 2007 have been reviewed.	From the perspective of the examined period, it has been concluded that the stock market belonging to the banking sector was not efficient in the weak–form.
2012	Çevik	The weak–form efficiency return of 10 different sector index traded in ISE has been investigated in weak-form.	Long-Term Memory FIGARCH	The daily closing prices of 10 different sectors traded in ISE pertaining to January 1997 and May 2011 period have been examined.	In terms of the examined period and the indices analyzed, it has been concluded that the ISE was not a weak-form efficient market.
2003	Buguk and Brorsen	The RMH was tested with the returns of ISE composite, financial and industrial indices.	Unit Root Test Fractional Integration Variance-Ratio Tests	Weekly price data during the period covering 1992 and 1999 have been examined.	The ADF unit root, LOMAC variance ratio, and GPH fractional integration test mostly indicate that ISE composite, financial, and industrial indices are efficient and obey the RMH. On the other hand with the rank and sign-based variance ratio tests, the RMH was rejected.
2008	Eken and Adalı	The weak-form efficiency of BIST has been investigated.	Single Factor and Multi Factors Regression Analyses	The returns of 10 stocks included in ISE 30, ISE 100, ISE Financial, ISE Industrial and ISE 30 Index have been examined during August 1994 and July 2005 period.	With weekly and partly monthly findings, it has been concluded that ISE index and stocks were generally efficient in weak–form.
2009	Atan, Özdemir and Atan	The weak–form efficiency of securities market in Turkey has been investigated.	Unit Root Test Fractional Integration	15–minute and session–based data of the stocks included in ISE 100 index 15 minutes and session for January 2003 and December 2005 period have been used.	It has been concluded that ISE 100 index was weak–form efficient during the period examined.
2016	Altunöz	The weak-form efficiency of the banking shares traded in ISE 100 index has been tested.	Unit Root Tests	The data of 8 banks traded in ISE between 2006 and 2014 have been reviewed.	It has been concluded that the banking index and the selected ISE 100 index and stock movements were random walk within the period scrutinized and presence of weak–form market efficiency.

2010	Karan and Kapusuzoglu	RMH and overreact hypothesis have been tested in Istanbul Stock Exchange (ISE) National – 30 index.	Nonlinear Programming Model	The data of 21 companies traded in Istanbul Stock Exchange (ISE) National – 30 index between years of 2003 and 2007, have been looked through.	In terms of the period reviewed and the index analyzed, it has been concluded that ISE was a weak–form efficient market yet there was not any evidences for existence of an overreaction hypothesis.
2011	Aga and Kocaman	Weak–form efficiency of ISE – traded and returns of "return index – 20" of the markets–developed index have been tested.	Time Series Model	Monthly closing prices for January 1986 and November 2005 period have been reviewed.	From the aspect of the period reviewed and the index analyzed, it has been concluded that ISE was a weak–form efficient market.
2014	Gozbasi, Kucukkaplan and Nazlioglu	The returns of ISE composite, industrial, financial, and services sector indices have been tested with the efficient markets hypothesis.	Unit Root Tests	Daily closing prices for July 2002 and July 2012 period have been looked through.	From the perspective of period examined and the indices analyzed, it has been concluded that in general ISE was a weak–form efficient market.
2015	Büberkökü	Weak–form efficiency of ISE–traded and returns of "return index – 20" of the markets–developed index have been investigated.	Unit Root Tests	Monthly data pertaining to January 1997 - April 2014 period has been reviewed.	From the aspect of period examined and the indices analyzed, it has been concluded that in general ISE was a weak–form efficient market.
2016	Yücel	The weak–form efficiency of ISE has been investigated.	Unit Root Tests	The price data for 22 indices calculated in ISE between the years of 2000 and 2015 have been scrutinized.	From the perspective of period examined and the indices analyzed, it has been concluded that in general ISE was a weak–form efficient market.
2016	Tuna and Öztürk	The validity of efficient market hypothesis has been tested in ISE 100, ISE Industrial and ISE Financial and ISE Services Indices have been tested.	Structural Break Unit Root Test	Monthly data belonging to January 2003 – September 2015 period has been examined.	From the perspective of period examined and the indices analyzed, it has been concluded that the efficiency market hypothesis is valid in ISE.
2005	Robinson	The weak–form efficiency of Jamaica Stock Exchange (ISE) has been tested.	Autocorrelation Tests Runs Test	Daily closing prices for January 1992 and December 2001 period have been looked through.	From the perspective of scrutinized period, it has been concluded that Jamaica Stock Exchange was not a weak–form efficient market.
2006	Omran and Farrar	The stock exchange activities of 5 separate developing Middle Eastern countries consisting of Egypt, Israel, Jordan, Morocco and Turkey have been investigated.	Variance-Ratio Tests	Daily and weekly closing prices pertaining to January 1996 and April 2000 period have been examined.	While it was brought in that Israel Stock Exchange Tel100 index was efficient in weak-form efficiency, access to adequate finding which might justify efficiency of other developing Middle Eastern countries consisting of Egypt, Israel, Jordan, Morocco and Turkey has failed.
2009	Awad and Daraghma	The weak–form efficiency of Palestine Stock Exchange (PSE) has been investigated.	Unit Root Tests Runs Test	Daily closing prices for January 1998 and October 2008 period have been looked through.	From the perspective of scrutinized period, it has been concluded that Palestine Stock Exchange was not a weak–form efficient market.
2010	Siddiqui and Gupta	The weak–form efficiency of India Stock Exchange (NSE) has been investigated in the S&P CNX Nifty and CNX Nifty Junior indices.	Runs Test ARIMA	Daily stock price indices belonging to January 2000 and October 2000 period have been looked through.	From the perspective of period examined and the indices analyzed, it has been concluded that in general NSE was a weak–form efficient market.
2011	Ntim et al.	The weak–form efficiency of 24 separate security indices of African countries the national indices of 8 African countries, totally 32 stock price indices have been investigated.	Variance-Ratio Tests	Despite varying according to the reviewed stock price index, price data between years of 1984 and 2008 have been looked through.	According to the price indices, it have been concluded that 24 separate stock price indices of Africa continent had possessed much better weak–form efficiency in comparison to the national price indices.

2011	Alexeev and Tapon	The weak–form efficiency has been investigated with the returns of 1083 each stocks traded at Toronto Stock Exchange of Canada (TSX).	EGARCH	Daily closing prices pertaining to August 1980 and August 2010 period have been examined.	From the perspective of period examined and the indices analyzed, it has been concluded that in general TSX was a weak–form efficient market yet some sub-sectors were less efficient than others.
2012	Khan and Vieito	The effects of merger of Portuguese Stock Exchange and Euronext on the market efficiency have been tested.	Unit Root Tests Runs Test	Daily closing prices belonging to October 1998 and May 2008 period of Portuguese Stock Exchange PSU-20 index have been scrutinized.	It has been concluded that Portuguese stock exchange market was not a weak–form efficient market prior to merger yet by contrast, it had emerged an efficient market following merger.
2014	Shiller and Radikoko	The weak–form efficiency has been tested in the indices of 7 separate indices of Canada Toronto Stock Exchange (TSX).	Runs Test	Daily closing prices comprising January 1980 and March 2008 period have been scrutinized.	From the perspective of period examined and the indices analyzed, it has been concluded that TSX was not a weak–form efficient market.
2015	Asif, Khwaja and Wali	The weak–form efficiency has been investigated in KSE 100 index of Pakistan Stock Exchange (PSE).	Runs Test	Monthly price data comprising years 2000 and 2010 period have been looked through.	From the perspective of scrutinized period, it has been concluded that Pakistan Karachi Stock Exchange KSE 100 index was not a weak–form efficient market.
2015	Hasan	The weak–form efficiency has been tested in (Dhaka Stock Exchange) DSI, DGEN ve DSE-20 indices of Bangladesh Dhaka Stock Exchange.	Runs Test	Daily closing prices comprising January 1993 and January 2013 period have been reviewed.	From the perspective of period examined and the indices analyzed, it has been concluded that Dhaka stock exchange was not a weak–form efficient market.
2015	Raquib and Alom	The weak–form efficiency has been tested in DGEN index of Bangladesh Dhaka Stock Exchange.	ACF Test	Daily price data comprising years 2001 and 2013 period have been reviewed.	From the perspective of period examined and the indices analyzed, it has been concluded that Dhaka stock exchange was not a weak–form efficient market.
2017	Parulekar	The weak–form efficiency has been investigated with the returns of 5 separate companies traded at Indian Stock Exchange (NSE) Nifty index.	Runs Test	Monthly data pertaining to April 2004 and March 2016 period have been reviewed.	From the perspective of period examined and the indices analyzed, it has been concluded that NSE was not a weak–form efficient market however, it might become an efficient market in periods longer that 1 month.

Resource: This table is prepared by means of above-mentioned resources.

In one of the above–summarized studies carried out for the capital markets in Turkey, while it was reached at a finding that the gold markets were not efficient, the existence of market activity has been brought in a study conducted for the energy markets. In 3 of the studies accomplished for different indices of Borsa Istanbul at different time slices, it was concluded that the stock exchange was not efficient in weak–form efficiency, as for 10 thereof, it has been concluded that they were efficient in weak–form efficiency. Also in the studies carried out on capital markets of different countries in the international arena, it has been found that in general stock markets were not weak-form efficient.

III. Methodology

The Runs test is a test following consecutive change of downward and upwards movements of a share in the price movements which is nonparametric. Runs test examines these changes only from the aspect of indications not size. Therefore, while not examining the changes in the time ranges creates the weak aspect of the method, not necessitating probability distribution assumption makes it to be an easy-to-use method (Parulekar, 2017, p. 78). 3 Different price movements may occur in a stock's price from one trading day to the next. The price of stock may increase (positive), decrease (negative) or remain unchanged (no change). The same successive signs in a series of indications generated by these movements are called a run. The condition required to enable the stock market price movements to be random is that the number of runs is high and they do not follow each other within an order (Karan, 2013, p. 281). If the price movements indicate a range of indication in this way, the weak–form efficiency shall fail to be rejected. To test statistically significance of a difference between the number of actual runs and the expected number of runs, Z value is checked. Positive Z value indicates too many runs have happened in the range and negative Z value less number of runs than

expected one (Hasan, 2015, p. 86). Therefore, if the number of actual runs obtained in a given set of indications was higher or lower than the expected number of runs is statistically significant, it is concluded that the series are not random (Shiller and Radikoko, 2014, p. 652).

In this study, whether or not difference between the number of expected and actual runs was statistically significant has been tested within 95% confidence interval. The hypotheses developed for this purpose are as follows;

H_0: Daily stock returns follow a random walk (R-m = 0)
H_1: Daily stock returns do not follow a random walk (R-m $\neq$ 0)

Expected number of runs has been calculated with the equation numbered (1) (Fama, 1965, p. 75).

$$m = \frac{\left[N(N+1) - \sum_{i=1}^{8} n_i^2\right]}{N} \qquad (1)$$

And the standard error of expected number of runs has been calculated with the following equation numbered (2) (Fama, 1965, p. 75).

$$\sigma_m = \left(\frac{\sum_{i=1}^{8} n_i^2 \left[\sum_{i=1}^{8} n_i^2 + N(N+1)\right] - 2N \sum_{i=1}^{8} n_i^3 - N^3}{N^2 (N-1)}\right)^{\frac{1}{2}} \qquad (2)$$

The standard variable used to test the statistical significance of difference between expected and actual runs has been calculated by the equation numbered (3). When the sign of ½ in the equation is R ≤ m shall be "+" and "-" when it is R> m (Fama, 1965, p.76).

$$K = \frac{\left(R + \frac{1}{2}\right) - m}{\sigma_m} \qquad (3)$$

In large samples, since "K" average is (0) zero shows compliance to normal distribution with normal distribution with variance of (1), "Z" standard variable can be used as a standard Z statistic.

IV.   Data

The basic data set used in the study consists of 252 observations obtained from the daily closing session price changes of companies which were continuously traded in BIST for a 12–month period between 01.12.2015 and 30.11.2016 and will be traded in BIST Sustainability Index in November 2016 – October 2017 period. Corporate sustainability is the adaptation of economic, environmental and social factors to the corporate activities and decision mechanisms together with the corporate governance issues in order to create the long – term value in the companies and to management of the risks which might arise from these issues. The sustainability index has been particularly examined in the study due to lack of a measurement based on solely financial data.

The data used within the extent of application have been acquired from BIST Historical and Reference Data Platform (https://datastore.borsaistanbul.com) for academic study purposes. 28 of 42 companies indicated in Table 2 have been traded in BIST Sustainability Index during the period of November 2015–October 2016. The first sustainability index applied on a global scale is Dow Jones Sustainability Index (DJSI), which began operations in 1999. In Turkey, BIST Sustainability Index was first launched on November 4th, 2014 with the code XUSRD. There is one index period for BIST Sustainability Index as November-October. EIRIS (Ethical Investment Research Services Limited) assessed BIST 30 constituent companies in 2014 and BIST 50 constituent companies in 2015. Starting from 2016, volunteer companies from BIST 100 are added to the list of companies to be assessed "The assessment list" is revised annually and announced by BIST in December (http://www.borsaistanbul.com/en/indices/bist-stock-indices/bist-sustainability-index).

Tablo 2: BIST XUSRD Companies in the Analysis

Code	Company Name	Code	Company Name
ADEL	ADEL	OTKAR	OTOKAR AUTOMOTIVE
AEFES	ANADOLU EFES	PETKM	PETKIM
AKBNK	AKBANK	PGSUS	PEGASUS

AKSEN	AKSA ENERGY	SAHOL	HACI OMER SABANCI HOLDING
ARCLK	ARCELIK	SISE	SISECAM GROUP
ASELS	ASELSAN ELECTRONICS	TATGD	TAT FOOD
BRISA	BRİSA BRIDGESTONE	TAVHL	TAV AIRPORTS HOLDING
CCOLA	COCA-COLA	TCELL	TURKCELL
DOAS	DOGUS AUTOMOTIVE	THYAO	TURKISH AIRLINES
DOHOL	DOGAN COMPANIES GROUP HOLDING	TKFEN	TEKFEN HOLDING
EREGL	EREGLI IRON AND STEEL	TOASO	TOFAS TURKISH AUTOMOBILE FACTORY
FROTO	FORD AUTOMOTIVE	TSKB	INDUSTRIAL DEVELOPMENT BANK OF TURKEY
GARAN	GARANTI BANK	TTKOM	TURK TELECOMMUNICATION
GLYHO	GLOBAL INVESTMENT HOLDING	TTRAK	TURKISH TRACTOR
HALKB	HALKBANK	TUPRS	TUPRAS-TURKISH PETROLEUM REFINERIES
ISCTR	ISBANK	ULKER	ULKER
ISGYO	IS REIT	VAKBN	VAKIFBANK
KCHOL	KOC HOLDING	VESBE	VESTEL WHITE GOODS
KORDS	KORDSA GLOBAL INDUSTRIAL YARN	VESTL	VESTEL ELECTRONICS
MGROS	MIGROS	YKBNK	YAPIKREDI BANK
NETAS	NETAS TELECOMMUNICATION	ZOREN	ZORLU ENERGY

V.   Analysis And Empirical Results

The results of the Runs test are shown in Table 3. The actual runs (R) for all of 42 companies reviewed in the study are smaller than expected (m). The average of actual runs has been calculated as 30.48 and the average of expected runs as 251.67. According to the results obtained, the greatest difference between the actual run and the expected run tests belongs to ADEL with – 225.98 and the smallest difference belongs to DOHOL with – 215.29. When the expected runs are examined, it is seen that DOHOL, GLYHO, ISGYO and TSKB have the lowest expected run test values with 251.29 and ADEL has the highest expected run test rate of 251.98. When the actual runs are looked through, it is seen that the lowest actual run test values with value of 26 has realized in ADEL, CCOLA and VESBE and the highest actual run test values with the value of 36 in DOHOL, GLYHO, ISGYO and TSKB.

Due to the differences between the expected and actual runs are too high, also all of the standard variables calculated for 42 companies covered by the study comprise quite a high values. When the standard variables were mutually tested separately as per share within the 95% confidence interval, it has been seen that all values were statistically significant (Sig. (2-tailed), $p = 0.00 < 0.05$). Therefore, according to these outcomes, H_0 hypothesis has been rejected and H_1 alternative hypothesis has been accepted.

Tablo 3: Runs Test Results

Stock Code	Session Number	Positive	Negative	No Change	Actual (R)	Expected (m)	Std. Error	z Value	Actual-Expected (R-m)
ADEL	252	11	11	4	26	251.98	1.40	-161.30	-225.98
AEFES	252	12	12	5	29	251.76	1.47	-151.62	-222.76
AKBNK	252	12	12	7	31	251.66	1.50	-147.14	-220.66
AKSEN	252	12	12	11	35	251.38	1.58	-136.56	-216.38
ARCLK	252	12	12	8	32	251.60	1.51	-144.65	-219.60
ASELS	252	12	11	6	29	251.81	1.45	-153.04	-222.81
BRISA	252	12	12	7	31	251.66	1.50	-147.14	-220.66
CCOLA	252	12	12	2	26	251.84	1.44	-156.71	-225.84
DOAS	252	12	12	4	28	251.79	1.45	-153.56	-223.79

DOHOL	252	12	12	12	36	251.29	1.61	-133.73	-215.29
EREGL	252	12	12	6	30	251.71	1.48	-149.47	-221.71
FROTO	252	12	12	7	31	251.66	1.50	-147.14	-220.66
GARAN	252	12	12	6	30	251.71	1.48	-149.47	-221.71
GLYHO	252	12	12	12	36	251.29	1.61	-133.73	-215.29
HALKB	252	12	12	5	29	251.76	1.47	-151.62	-222.76
ISCTR	252	12	12	7	31	251.66	1.50	-147.14	-220.66
ISGYO	252	12	12	12	36	251.29	1.61	-133.73	-215.29
KCHOL	252	12	12	4	28	251.79	1.45	-153.56	-223.79
KORDS	252	12	12	6	30	251.71	1.48	-149.47	-221.71
MGROS	252	12	12	3	27	251.82	1.44	-155.26	-224.82
NETAS	252	12	12	5	29	251.76	1.47	-151.62	-222.76
OTKAR	252	12	12	5	29	251.76	1.47	-151.62	-222.76
PETKM	252	12	12	7	31	251.66	1.50	-147.14	-220.66
PGSUS	252	12	12	5	29	251.76	1.47	-151.62	-222.76
SAHOL	252	12	12	8	32	251.60	1.51	-144.65	-219.60
SISE	252	12	12	11	35	251.38	1.58	-136.56	-216.38
TATGD	252	12	12	8	32	251.60	1.51	-144.65	-219.60
TAVHL	252	12	12	6	30	251.71	1.48	-149.47	-221.71
TCELL	252	11	11	6	28	251.90	1.42	-156.80	-223.90
THYAO	252	12	12	8	32	251.60	1.51	-144.65	-219.60
TKFEN	252	12	12	3	27	251.82	1.44	-155.26	-224.82
TOASO	252	12	12	5	29	251.76	1.47	-151.62	-222.76
TSKB	252	12	12	12	36	251.29	1.61	-133.73	-215.29
TTKOM	252	12	12	5	29	251.76	1.47	-151.62	-222.76
TTRAK	252	12	12	6	30	251.71	1.48	-149.47	-221.71
TUPRS	252	12	12	7	31	251.66	1.50	-147.14	-220.66
ULKER	252	12	12	4	28	251.79	1.45	-153.56	-223.79
VAKBN	252	12	12	8	32	251.60	1.51	-144.65	-219.60
VESBE	252	12	12	2	26	251.84	1.44	-156.71	-225.84
VESTL	252	12	12	3	27	251.82	1.44	-155.26	-224.82
YKBNK	252	12	12	8	32	251.60	1.51	-144.65	-219.60
ZOREN	252	12	12	11	35	251.38	1.58	-136.56	-216.38

The findings obtained from the runs test show that the stock price changes in the index examined have not realized randomly.

VI.   Conclusion

In consequence of Runs test conducted with the closing price changes of 252 days for 42 companies traded between the dates 01.12.2015-30.11.2016 in BIST Sustainability Index scrutinized within the scope of study, it has been concluded that the differences between the expected and actual runs was statistically significant. Therefore, it was brought in that the values contained in the inter-sessions series of stock price differences did not move randomly and followed a trend. This finding can be interpreted as the fact that the BIST investor generally has taken the positive or negative aspects of index into account and the Random Walk Hypothesis in the price movements of index was not valid. As a result, in terms of the examined period and index, BIST is an inefficient stock market in weak–form. This result exhibits similarity to the results of studies carried out by Tunçel (2007), Çevik and Erdogan (2009) and Çevik (2012) for the Turkish stock exchange market in previous years.

Due to the fact that BIST Sustainability Index is a new index for Turkey, it is clear that the study would be developed by repeating different methods for the same index and/or different indices which would be expanded in next years.

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