THE TESTING OF EFFICIENT MARKET HYPOTHESIS IN BORSA ISTANBUL

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Abstract

The purpose of this study is to investigate the existence of the efficient market hypothesis in BIST 100, BIST Industry, BIST Service and BIST Financial indexes located in Stock Exchange Istanbul. The data related to the indices used in the study were taken as daily closing prices between 04.01.2010-02.11.2017 and the daily returns of the indices were calculated taking the closing prices into consideration. In the study, the volatility of the index returns will be tested with unit root tests and structural breaked unit root tests and the results will be evaluated in terms of the efficient market hypothesis.

Keywords: *BIST, Efficient Market Hypothesis, Structural Break, Unit Root*.

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1. INTRODUCTION

Stock exchanges, which have increased in importance in recent years due to funding especially for developing countries and which have financial resources in terms of companies, are considered as an alternative investment tool in terms of investors who want to evaluate their savings. Naturally, investors will want to get more returns from their investments. From this point of view, it is very important to determine the security prices correctly when calculating the gains. Stock exchanges, especially developed under the influence of globalization, brought the question of whether stock prices could be predicted in the future. The sharp increases in the capital movements that have flowed to the developing countries have brought about the discussions on the efficiency of these markets.

In the economic literature, until Samuelson (1965), no theory about the current price movements in capital markets has been developed. After Samuelson, in 1970, Fama's Efficient

Market Hypothesis states that one of the key influences affecting securities prices is the information factor. When new data or information reaches the market in the efficient markets, this information is analyzed and evaluated by the market actors and a new market price is formed for the securities. This new market equilibrium price continues to exist as a new information tradition to be interpreted into the market.

In an effective market, Fama assumes that a new information arriving at the market arrives at the same level as all investors, and claims that traders who take position in the market can not earn more than normal. In the same way, markets have called effective markets in which securities react instantly, precisely and accurately, securities prices change by chance, and professional investors can not afford to earn on their own, in groups or independently. The trend of capital flows to equity markets, where this is true, has questioned the hypothesis of efficient markets in developing countries. In particular, investors who are active in financial markets attach importance to information efficiency and believe that information and risky parties are at different levels, further increasing the importance of the effective market hypothesis. In addition, systematic anomalies (herd effect, over-reliance effect, day of the week effect, moon effect and weather effect etc.) do not occur in an active market, and the prices of securities are totally random in the market. For this reason, while investigating the validity of the effective market hypothesis, the studies in the literature focused more on the determination of anomalies and the fact that prices showed random walking characteristics. The systematic anomalies expected to emerge in the financial markets were excluded from the scope of this study and the focus on whether the prices of securities were showing random walk characteristics while investigating the validity of the effective market hypothesis. The most basic method of determining whether securities prices show random walk characteristics is to determine the degree of integration of the price series and it is revealed by means of this unit of integration unit root tests.

The most basic method for determining whether securities prices show random walk characteristics is to determine the degree of integration of the price series and it is revealed by means of this level of integration unit root tests.

Fama (1970) bases the efficient market hypothesis on the basis of random walk. The random walk theory is a theory that claims that the distribution of price movements is similar and independent of each other. Random walk can not be used to predict past price movements and trends in future markets. This approach was first mentioned by Kendall in 1953. Kendall (1953) concluded that, in his work using data sets of 22 commodity and stock prices, he moved randomly from one price series to another and there was a close relationship between price changes.

In an efficient market, all information can be obtained freely, and all traded securities can be bought and sold in the desired quantity and volume (Madura, 1998: 9). In efficient market tests, linearity is often tested. Theoretically, if the market can not predict the return of excessive securities, and all information is available to market participants, there is strong efficiency. In this context, it is argued that human behavior is linear. However, in real life the risk and return of investors is not linear (Champell et al., 1996; 22).

In the efficient market hypothesis, asset prices, which are defined as a function of information flow to the market, accept three assumptions. Primarily, investors are rational, have full knowledge about the markets and expect to maximize their benefits (Baal, 2009; 5 and Barone, 2003;1). According to the theory, the behavior of stock prices and returns is taken as the

main indicator, for measuring the effectiveness of securities and stock exchanges. In this respect, the markets in which the current stock prices fully reflect the current information are considered effective. Investors are rational, and prices reflect the news, information and expectations on the market. Market participants determine a price by examining all data, so market prices contain available information and anticipations (Fama, 1970; 383). In general, a stock market is effectively defined if the prices of the stocks bought and sold on the market reflect all available information and prices react quickly or nearly without bias (Deckman and Dale, 1986;5). In this respect, the effective market hypothesis predicts two basic principles for estimating stock price movements. First of all, asset prices reflect the rational or real value of securities. So stock prices are true. The second one is unpredictability. Based on this principle, it is not possible to estimate future price movements on the basis of available information (Thaler and Mullainathan, 2000, 7-8).

In the efficient market hypothesis, market efficiency occurs in three forms. These are weak market efficiency, semi-strong market efficiency and strong market efficiency.

In weak market efficiency, all price movements in the past are reflected in the price of the securities. At the weakest form of the market efficiency, which is the lowest level of the hypothesis, it is assumed that investors will not be able to earn above normal returns using past price movements. According to this, technical analysis, time series and similar analyzes and strategies do not work in the long run and there is no advantage (Karan, 2013, 280 and Maymin, 2011; 2). All information on stock prices is fully reflected in current prices. At such markets, investors can not reach new information at the same time. In addition, some information not disclosed to the public is known in advance by certain market participants (Fama, 1970; 383-384).

The Random Walk Theory suggests that price changes are random and unpredictable. The struggle of intelligent investors to reach new information on an ongoing basis and intense market competition is the starting point of this theory. If the prices on the market are based on rational reason, the new information will change prices. Therefore, prices will always be based on that moment's information. Thus, combined with the intense market competition, where information is open and free of charge, prices will be impossible to predict in advance. According to the random walk hypothesis, stock price changes are not related to past price changes. Random walk is used in testing weak market hypothesis (Karan, 2013; 281).

In a semi-strong form of market efficiency, the market price reflects all publicly disclosed information. It is the question of investors, who are described as insiders in such markets, primarily to have knowledge. Therefore, some market participants who acquire insider information may be able to earn a gain on the average market return using this information that the public does not know (Fama, 1970, 383-384).

In order to be able to say that a market is efficient in a semi-strong form, current prices need to reflect not only the course of past period prices, but also the information input which can be reached by all the public with the company at the same time. This implies an impartial reflection of the available information available to the public through stock market prices, newspaper articles, company forecasts and annual reports. Market efficiency in a semi-strong form is also related to balance sheet. Because the information on the balance sheet is generally open to the public, information that everyone can easily access. This information plays an important role in stock analysis. If a market is efficient in semi-strong form, no stock analysis

should permanently yield a supernormal return. In order for the market to be effective in this sense, it is necessary for each individual to evaluate his knowledge in order to increase his profits in a competitive environment. In order to test the semi-strong market efficiency, information presented to the public and stock certificates are followed. If investors consistently provide excessive returns, this market is ineffective relative to the information advertised to the public. For example, if a stock on a market provides excessive returns after the announcement of dividend distribution, then the market is not efficient in a semi-strong form based on the announcement of dividend distribution (Karan, 2013, 283-284).

According to *market efficiency in a strong form*, it is defined as the situation that reflects all the information that can be used to determine the real value of prices. In this case, the prices are not only publicly disclosed information but also all the information belonging to the economy. In addition, the information that the learners have is reaching all investors simultaneously. In such a market, no investor can predict the stock price more accurately than the other. Therefore, it is not possible to obtain excessive returns by performing technical and fundamental analyzes on such effective markets (Fama, 1970; 383-384). Similarly, in competitive asset markets, investors have rational expectations and prices reflect all the specific information about the value of the asset. For this reason, it is not possible for investors with rational expectations to be exploited by insiders (Laffont and Maskin, 1990; 85-87).

Strong form market efficiency is the most developed market efficiency. There are mechanisms that enable strong market efficiency. Competition between specially informed investors can ensure that prices reflect information input. In addition, other sources of information may substitute for private information. In addition, some features of the stock may make the privately funded information publicized. An example of this is the fact that investors who are not specifically informed use the stock price as a source of information. If uninformed investors realize that prices have risen, they can invest in that stock by understanding that good news about the rising stock price of the investor is being informed (Karan, 2013; 285).

Effective markets in weak, semi-strong and strong forms are not independent of each other. In order for the market to be effective in a semi-strong form, it must also be effective in its weak form, because all price movements must be predictable so that a cautious investor can benefit. Similarly, in order for the market to be efficient in its strong form, it needs to be efficient in both weak and semi-strong form. Otherwise, the price does not include all relevant information (Karan, 2013; 287).

2. LITERATURE REVİEW

There is a wide literature on efficient market hypothesis. These studies, which use different methods and different stock markets, can not produce a clear result. The effective market hypothesis is primarily determined for weak market efficiency by testing whether equity incomes exhibit random walk. For example, Poterba and Summers (1988), Grieb and Reyes (1999) and Shively (2003), are not found unit root in stock market index series unlikely, Liu et al. (1997) and Narayan and Smyth (2004) are the studies that reached the findings about the unit root existence. Vaidyanathan and Gali (1994) analyzed the daily closing prices of 10 stocks traded on the Bombay Stock Exchange for India using correlation methods. Findings obtained in the study of the weak form efficiency and the random walking process are the result of weak form efficiency. Choudhry (1994) analyzed individual stock indexes in Canada, France,

Germany, Japan and Italy using the Augmented Dickey-Fuller (ADF) and Kwiatkowski-Phillips-Schmidt-Shin (KPSS) unit root tests and Johansen cointegration tests. Findings obtained indicate that the markets are effective. Zhang et al. (2012) analyzed the prices of stocks in Egypt, Kenya, South Africa, Tunisia and Morocco for the period January 2000-April 2011. As a result of the study, evidence supporting weak efficiency in Kenya, South Africa and Tunisia has been reached.

The first study to test the random walking model belongs to Roberts (1959). Roberts (1959) found that the new information that caused changes in stock prices was rational and that changes in price level were in accordance with the random walk hypothesis.

Fama (1965) found that the consecutive price changes in the US stock price movements followed a random walk, resulting in the market being weakly efficient, in a study of serially correlated, run and filter run tests. Fama's study in 1970 gave similar results again.

Cerchi and Havenner (1988) have come to the conclusion that the stock price series is the unit root in the weakly efficient markets.

In the Panas (1990) study for the Greek stock market and Boumahdi and Thomas (1991) confirmed the weak market activity for the French stock market. Jeon et al. (1991) have proven the unit root for New York, London, Tokyo and Frankfurt stock exchanges.

In Fama (1991) study, he redefined market efficiency and enriched semi-strong form efficiency and strong form efficiency tests. Cham et al. (1997) found that these markets have weak form of efficiency as a result of unit root tests on stock prices in Hong Kong, South Korea, Singapore, Taiwan, Japan and the USA. Leigh (1997) concluded that the Singapore stock market was efficient in weak form. Ojah and Karamera (1999) have achieved parallel results in the Argentine, Brazilian, Chilean and Mexican markets.

Blasco and Santamaria (1996) used daily data to determine whether the stock and sub-sector index values of Spain had long memory characteristics between 1980 and 1993. In the case of stocks, the existence of long memories was explored using semi-parametric methods and the analysis did not reveal that the introduction of the Spanish stock market showed long memory.

Mobarek and Keasey (2000) found that the Dakar stock exchange, Ma and Bernes (2001) Chinese stock exchange, Kvedaras and Basdevant (2002) Estonia, Lithuania and Latvia stock markets, Gabriel (2002) Bucharest stock exchange, Abrosimova et al. (2005) have shown that the Russian stock market is not effective even in weak form. Al-Khazali et al. (2007) achieved results in parallel with weak form of efficiency in their work in eight Middle Eastern and North African countries.

Barkoulas, et al. (2000) investigated the validity of the weak market efficiency in the Greek stock market, using weekly data between 1981 and 1990. In the study of semi-parametric methods, they found that the Greek stock market was not effective in weak form. They also used the predicted integration parameter values in the ARFIMA models and determined that the ARFIMA model gave better results in the long-term forecast.

Weekly data were used by Resende and Teixeira (2002) between 1986 and 1999 in the study of the Brazilian stock market. The sample period in the study is divided into two sub-periods according to 1994, when the stabilization policies were implemented in Brazil. According to the results of the ARFIMA model, there was no evidence of the existence of long memory for both periods. The results shows us that the market is efficient.

Caporale and Gil-Alana (2004) used daily data from 1928 to 1991 in their studies of the S & P 500 index. Both the entire sample and the S & P 500 index return series are integrated in a piecewise fashion, according to the results obtained for the 1000 observed sub-samples.

Vougas (2004) investigated the existence of long-term dependence in the Athens stock market index using daily data between 1990 and 2000. According to the results of the ARFIMA and ARFIMA-GARCH models, no evidence of the existence of strong memories in the Athens stock market was found. Market was efficient.

Gil-Alana (2006) used daily data from 1986 to 1997 in his work on Amsterdam, Frankfurt, Hong Kong, London, New York, Paris Singapore and Japan stock exchanges. In the study using parametric and semi-parametric methods, the stock market index values of countries were found to be non-stationary.

Christodoulou-Volos and Siokis (2006) used daily data in their study of Turkey and 33 countries on the stock market. Semi-parametric methods found long-term dependence on stocks for 65% of all countries. However, according to the results they obtained for the ISE, they obtained very little information about the existence of long memory. It means that the market is weak form efficient.

Cajueiro and Tabak (2006) found that there is a long-term dependence on the index return series in the Chinese stock market.

Elder and Serletis (2007) used daily data from 1928 to 2006 in their studies on the Dow Jones index. By using the semi-parametric method and wavelet estimation method, they found that the degree of fragmented integration of the index is no different from zero.

Assaf (2007) used daily data between 1997 and 2002 when he worked on stock markets in Egypt, Jordan, Morocco and Turkey. In his work he used semi-parametric methods to determine the existence of fragmented construction in the return series of stock markets in these countries and accordingly indicated that these markets were ineffective.

Disario et al. (2008) used daily data between 1988 and 2004 in their studies on the ISE 100 index. In their studies using the wavelet method, they found the existence of long memory in the return series of the ISE 100 index and stated that the effective market hypothesis did not occur.

There are many studies on ISE (BIST) in the literature. These studies aim to test the effectiveness of weak form and semi-strong form using different methods for different sampling periods. Some of these studies are as follows.

In the study of Bekçioğlu and Ada (1985), autocorrelation analysis and run test were used and random walk hypothesis was rejected in Istanbul Stock Exchange. Moreover, it has been reached that the changes in stock prices in ISE did not change independently according to the time.

Cankurtaran (1989) tested the effectiveness in weak form and semi-strong form by using 1986.04-1988.06 data of nineteen stocks traded in the ISE.

In the Köse (1993) study, filter tests were conducted for forty- five firms traded in the ISE using daily stock closing prices in the 1990 - 1991 period. This has led to the conclusion that the weak form of the effective market hypothesis is not valid.

In Muradoğlu and Oktay (1993) study, ISE's weak form efficiency and calendar anomalies were tested.

Muradoğlu and Ünal (1994) studied the characteristics of distribution functions of return series of ISE stocks between 1988.01-1991.12 periods and concluded that return movements are separated from random walking model and ISE is not efficient in weak form.

In Balaban (1995) study, random walk hypothesis with weak form and semi-strong form efficiency of ISE was tested by using composite index between 1988.01 and 1994.08. As a result of the study, it is concluded that the ISE composite index is not active in weak form and semi-strong form.

Metin, Muradoğlu and Yazıcı (1997) and the daily closing prices between 04.01.1988-27.12.1996 were tested using ISE's weak form of efficiency, random walking hypothesis and weekly days effect.

In Özün (1999) study, the weak form of the ISE 100 was examined using the ISE 100 index daily data in the period 1987-1998.

In the study of Bakırtaş and Karpuz (2000), the econometric factors that may affect the value of the ISE index have been examined and the ISE has been found to be in weak form.

Cevik and Yalçın (2003) conducted a weak form efficiency test for the ISE with a stochastic unit root and steer filter approach. As a result, in any period except 1987, ISE was not found effective in weak form.

In the study of Zengin and Kurt (2004), the weak and semi-strong form of the ISE has been tested using the relations between the macroeconomic variables and the ISE 100 index between 1987.01-2002.09. Unit root tests were used in the study. It is reached that the ISE is in weak form and ineffective in semi-strong form.

Kahraman and Erkan (2005) tested random walk for ISE. In the study covering the period of 1996-2004, no random walk was observed for the ISE 100 at any time.

Atan, Ozdemir et al., (2006) found that Lo (1991) using the adapted R / S and GPH method has a weak form of the ISE 100 index.

Çelik and Taş (2007) investigated the weak form of efficiency in the developing countries in their study. In the study of 12 developing countries using weekly data for April 1998-April 2007 period in stock market, they tested sequence, unit root and variance ratio tests and weak form efficiency. Findings have been supporting poor activity in most countries.

Özdemir (2008) also found that the ISE is in weak form. In Özdemir study, he used LPF two broken unit root test, ADF unit root test, variance ratio test and running tests by taking the ISE 100 Index in January 1990 and June 2005 period.

Cevik (2012) tested parametric and semi-parametric methods to determine whether the effective market hypothesis is valid in the ISE. Semi-parametric and parametric long-memory model results show that the volatility of the sector's index returns has reached a long memory nature and it is understood that the effective market hypothesis does not work.

Zeren, Kara and Arı (2013) tested the weak form of the ISE 100 index with the structured breakdown unit root test in November 1987 and November 2012 period and found that the stock market was efficient.

Altunöz (2016) concluded that BIST Bank Index and BIST's study involving 8 banks had an effective market in weak form with another expression that price movements were rational.

Yucel (2016) investigated the weak form of efficiency for 22 indices selected from the indices calculated within the scope of Istanbul Stock Exchange between 2000 and 2015 and determined that the index was efficient in weak form.

Cloud (2016) analyzed whether the weak form of the effective market hypothesis is valid for the BIST index using the monthly breakdown of the period of 2003: 1-2015: 9 by structural breakdown unit root tests. According to the findings obtained, it is understood that the weak form efficiency is valid in BIST 100.

The studies conducted in our country in the literature are also more numerous studies proving the validity of the weak form of efficiency even if there are findings that the Stock Exchange Istanbul is not effective in weak form. In these studies, the random walk hypothesis was generally tested by means of unit root, variance ratio tests and Markov chains method, thus determining whether Stock Exchange Istanbul and the indices studied were weakly effective for selected periods.

3. DATA

In this study, the efficiency of the Turkish stock market was examined separately considering BIST 100, BIST Services, BIST Financial and BIST Industry indices. For this purpose, the daily closing prices of the indices are T.C. The Central Bank was provided by the Electronic Data Distribution System (EVDS), and the data used were taken daily observations (1970) of the indices between 04.01.2010-02.11.2017.

The indices used in the study and the number of companies are given in Table 1.

Table 1: Indices and Number of Companies Used in Work

Index Code	Index	Number of companies
XU100	BIST 100	100
XUHİZ	BIST Services	55
XUMAL	BIST Financial	88
XUSIN	BIST Industry	150

For each index, the return series is calculated by formula $r_t = 100x\ln\left(p_t / p_{t-1}\right)$. In the formula, r_t the return of the index at time t represents, p_t the closing price of the index at time t and p_{t-1} the closing price of the index at time t-1. The descriptive statistics for the indices are given in Table 2.

Table 2: Descriptive Statistics of Index Returns

Descriptive Statistics	lnbist	lnxuhiz	lnxumal	lnxusin
Mean	0.028433	0.023353	0.021676	0.050065
Standart Dev.	1.465186	1.244618	1.719827	1.241039
Skewness	-0.546410	-0.691679	-0.368898	-1.104297
Kurtosis	6.917654	7.611143	5.686821	11.92480
Jarque-Bera	1235.156	1730.498	579.6633	6311.575
	(0.000000)	(0.000000)	(0.000000)	(0.000000)

According to the results in Table 2, it was determined that the daily returns of all indices used in the study within the period covered are positive. The highest average daily return is seen in the BIST Industrial index. According to standard deviation values, BIST Financial Index volatility is determined as the highest index. It was determined that all the return series differ from the normal distribution according to the skewness and kurtosis values. Likewise, the Jarque-Bera test statistic supports the fact that the series are not normally distributed. Also, if the kurtosis value of the return series is greater than three, it means that the series are more steeply distributed than normal, which means that the distribution of the return series is thick-tailed.

The fact that the return series belonging to the indices are not distributed normally can intuitively indicate that the series can exhibit random walk. Traditional and structural break tests were carried out to examine whether the series exhibited random walk characteristics.

4. EMPIRICAL RESULTS

In our study, traditional unit root tests will be used first to test the effectiveness of indices in weak form. If there are unit roots in the series, it is said that the series show random walk, in other words, the indexes of the series provide weak form efficiency. In the case of structural breaks in the series, conventional unit root tests can give erroneous results on unit root existence (Perron, 1989, Zivot and Andrews, 1992, Kasman and Kirkulak, 2007, Buberkökü, 2015). For this reason, Zivot-Andrews unit root test, in which the structural breaks are determined internally in our study, has been investigated and the unit root existence has been investigated by removing the errors that might arise about unit root existence.

Table 3 gives the results of conventional unit root tests. Since our series are the return series, the unit root tests of the related units were made with non-trending and non-intercept tests. Also we used the Akaike Info Criterion for the lag length criteria.

Table 3: Traditional Unit Root Results (ADF, PP, KPSS)

	lnbist		lnxuhiz	
	Level	1st difference	Level	1st difference
ADF	-43.1350	-15.929	-42.7413	-15.375
	(0.0001)	(0.0000)	(0.0001)	(0.0000)
PP	-43.1587	-585.92	-42.7483	-717.94
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
KPSS	0.03130	0.04946	0.05093	0.11193
	lnxumal		lnxusin	
	Level	1st difference	Level	1st difference
ADF	-43.5791	-16.155	-13.9731	-15.833

	(0.0001)	(0.0000)	(0.0000)	(0.0000)
PP	-43.6276	-625.26	-41.4679	-474.37
	(0.0001)	(0.0001)	(0.0000)	(0.0001)
KPSS	0.03214	0.05488	0.04020	0.03336

Traditional unit root results support each other. From the results, the unit root hypothesis in the return series for ADF and PP tests was rejected at the 1% significance level. In the KPSS test, the unit root-free hypothesis was accepted at the 1% significance level. These results show that the series are stationary based on the traditional unit root results.

In Table 4 Zivot-Andrews test results are given. The Zivot-Andrews test is the structural break unit root tests. The unit was made in order to remove the mistakes that might arise in the case of root existence.

Table 4: Ziwot-Andrews Structural Break Unit Root Results

		lnbist			lnxuhiz		
		t statistics	critical value	Chosen break point	t statistics	critical value	Chosen break point
Ziwot-Andrews	Intercept	-43.19	-5.34 -4.93 -4.58	11.07.2013	-42.80	-5.34 -4.93 -4.58	27.01.2012
	Trend	-43.13	-4.80 -4.42 -4.11	18.12.2015	-42.73	-4.80 -4.42 -4.11	17.01.2013
	Intercept and Trend	-43.20	-5.57 -5.08 -4.82	21.10.2011	-42.81	-5.57 -5.08 -4.82	27.01.2012
		lnxumal			lnxusin		
		t statistics	critical value	Chosen break point	t statistics	critical value	Chosen break point
Ziwot-Andrews	Intercept	-43.64	-5.34 -4.93 -4.58	11.07.2013	-19.91	-5.34 -4.93 -4.58	14.07.2011
	Trend	-43.56	-4.80 -4.42 -4.11	14.12.2015	-19.85	-4.80 -4.42 -4.11	18.12.2015
	Intercept and Trend	-43.63	-5.57 -5.08 -4.82	21.10.2011	-19.93	-5.57 -5.08 -4.82	21.10.2011

The Ziwot-Andrews test results do not include unit root at the 1% significance level in all series, as t statistics are smaller than critical values for all indices.

For each series, break dates are given in the table for the both intercept, trend and intercept-trend.

5. CONCLUSION

According to the Efficient Market Hypothesis proposed by Fama (1970), while the stock price is formed in the capital markets, all the information related to the securities is reflected in the price formation and there is a price change in the market in line with this information. In addition to this, Fama (1970) defined three different activities as weak form, semi-strong form and strong form, and outlines knowledge while classifying the efficiency.

Indices used to study traditional unit root results are achieved as a result of not having a unit root. In this case, it can be said that there is no weak form of efficiency for each index used in the study. According to the results obtained, the analysis made with the return indices shows that the volatility in the Borsa Istanbul is affected from past values and accordingly it is predictable. As a result of the findings, Borsa Istanbul is a weak form of inefficient market in terms of BIST 100, BIST Services, BIST Financial and BIST Industrial indices. In terms of investors, it can be said that Borsa Istanbul stocks are structured to be able to direct their investments by using past values.

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