Journal of Social Sciences of Mus Alparslan University

anemon

Derginin ana sayfası: http://dergipark.gov.tr/anemon

Araştırma Makalesi ● Research Article

Testıng The January Effect Usıng The GARCH (p,q) Model In MIST Countrıes

MIST Ülkelerinde Ocak ayı Etkisinin GARCH (p,q) Modeli Kullanılarak Test Edilmesi

Mesut Aslan*

Abstract: Efficient markets hypothesis is essential for achieving desired goals in financial markets. The concept of efficiency enables market professionals and investors to follow markets consisting of these prices in a controlled manner and maintain their dominance. In this study, using the monthly closing data of the stock exchanges of MIST countries between 2005 and 2021, the effect of January on the returns of these stock markets was examined using the GARCH model. As a result of the analysis, the positive returns on a monthly basis were high across the countries. However, the stock market of the country with the most negative returns was determined to be BIST (Turkiye). When the variance distribution analysis results are examined, it is seen that the differentiation of returns is greater in BIST compared to other countries. The country with the highest entry was observed in the BIST stock market as the November return. As a result of the analysis, it has been determined that there is no January effect in MIST countries. Although a long-term relationship between countries has been determined within the framework of the GARCH model, this situation is not considered as a situation that eliminates the efficient market hypothesis.

Key Words: GARCH, MIST Country Exchanges, January Effect

Öz: Finansal piyasalarda istenilen amaçlara ulaşılabilmesi için etkin piyasalar hipotezinin göz önünde bulundurulması gerekmektedir. Etkinlik kavramı dikkate alındığında piyasa profesyonelleri ve yatırımcıları belirlenen fiyatlar ile bu fiyatlardan oluşan piyasaları kontrollü bir şekilde takip edebilir ve piyasada hakimiyetini devam ettirebilme imkanı sağlayabilir. Bu çalışmada MIST ülkeleri borsalarına ait 2005-2021 tarihleri arasındaki aylık kapanış verileri kullanılarak, bu borsaların elde ettiği getiriler üzerindeki Ocak ayı etkisi GARCH modeli kullanılarak incelenmiştir. Analizler sonucunda ülkeler genelinde aylık bazda pozitif getirilerin fazla olduğu tespit edilirken, en çok negatif getirinin olduğu ülke borsasının BIST olduğu belirlenmiştir. Varyans dağılım analizi sonuçlarına bakıldığında söz konusu getirilerin farklılaşması, diğer ülkelere kıyasla BIST'te daha fazla olduğu görülmektedir. En yüksek getirinin sağlandığı ülke kasım ayı getirisi olarak BIST borsasında gözlemlenmiştir.

*Assistant professor, Bingol University, Faculty of Economics and Administrative Sciences, Department of Business Administration, ORCID:0000-0003-2338-7474, mesutaslan@bingol.edu.tr

Cite as/ Atıf: Aslan, M. (2023). Testıng the january effect usıng the GARCH (p,q) model in MIST countrıes. *Anemon Muş Alparslan Üniversitesi Sosyal Bilimler Dergisi*, *11*(2), 329-341. *http://dx.doi.org/10.18506/anemon. 1224104*
Received/Geliş: 25 December/Aralık 2022
Accepted/Kabul: 16 August/Ağustos 2023
Published/Yayın: 30 August/Ağustos 2023

Analizler sonucunda MIST ülkelerinde ocak ayı etkisinin söz konusu olmadığı tespit edilmiştir. GARCH modeli çerçevesinde ülkeler arasında uzun dönemli bir ilişki tespit edilmesine rağmen, bu durum etkin piyasa hipotezini ortadan kaldıran bir durum olarak değerlendirilmemektedir.

Anahtar Kelimeler: GARCH, MIST Ülke Borsaları, Borsa, Ocak Etkisi

Introductıon

The globalisation effect has affected investor decision-making and decision-making behaviour, price movements in the markets and investors' expectations of high returns. This situation is based on the "Efficient Markets Hypothesis" and "Random Walk" put forward by Fama in 1970, and investor behaviour is considered rational by emphasizing market efficiency. In the efficient markets hypothesis, markets are accepted as the basic theory explaining price formation.

Financial markets are the name given to the markets where capital and savings are collected and used effectively and fund suppliers and fund demanders come face to face. The concept of effectiveness, on the other hand, is a concept that expresses the extent to which an activity, action, or behavior reaches the previously targeted goal, taking into account the current conditions (Yükçü and Atağan, 2009: 3; Karyağdı and Gökoğlan, 2023: 166). From the past to the present, the efficiency of financial markets has been a constant topic of discussion. The issue of market efficiency has gained importance day by day as it creates a risk phenomenon for investors.

According to the efficient market hypothesis, the prices of the securities traded in the market are based on all available information and expectations about the related securities. Professionals and investors can follow the prices they have determined based on this information and the information on the markets based on these prices. Therefore, it may not be possible to consistently generate returns on the market. According to this hypothesis, it is not possible to predict market trends through technical analysis and fundamental analysis. This shows that it is impossible for the security price to stay below or above the real value for a long time (Bayraktar, 2012: 37).

In order for the market to reach efficiency, investors should be able to access all kinds of information, exchange information with their competitors, and be in a competitive environment. The efficiency of firms in financial markets can be measured using three different concepts of efficiency. The first of these efficiency concepts is the concept of operational efficiency and expresses the relationship between firm costs and profit at the end of the period (Al-Shamali, 1989: 25). Another is market information activity. This type of activity is the reflection of market information on financial asset prices. The third type of activity is the efficiency of distribution and allocation in markets. The basis of this type of activity is the efficient and effective use of resources by companies and investors (Karan, 2018: 278).

Considering the studies on financial markets, many results have been obtained that argue the opposite of the efficient markets hypothesis. These results, which contradict the theory, are referred to as financial anomalies. In this study, the existence of the January effect in MIST (Turkiye, Indonesıa, Mexıcan, South Korea) countries was tested.

Lıterature Revıew

When the national and international finance literature related to the January return is examined, it is possible to come across various studies. Some of the important ones from these studies are presented in Table 1.

Table 1. Literature Review

Author(s)	Research area/country	Method	Period	Conclusion
		WORKS DONE DOMESTIC		
Kendirli&Bulut (2020)	Monthly closing data of BRICS and BIST Index are taken into consideration	GARCH	1996-2016	As a result of their analyses, the authors concluded that the January effect in BRICS countries and BIST existence of a long-run relationship between countries within the framework of the GARCH model, it is not possible to talk about the existence of a long-run relationship between countries. the efficient market hypothesis is considered as a situation that eliminates the efficient market hypothesis.
Konak&Kendirli (2015)	Monthly closing data of BIST Index is taken into consideration	GARCH	01.01.2002-31.12.2007	According to the results of the analyses, the authors concluded that months, some trends that can be considered as anomalies have emerged, other On the other hand, the different negative and positive values arising in the main mass and subgroups they found that it was not continuous.
Aytekin & Sakarya (2014)	İstanbul Stock Exchange(ISE) data have been used	One-way analysis of variance	1999-2013	They found that the January anomaly was observed in the relevant indices during the period they examined.
Konak&Kendirli (2014)	Data for BIST 100 index	GARCH	January 2005-December 2012,	As a result of the analyses conducted by the authors, the main mass and sub Although different negative and positive values were obtained in the groups, only the values seen in the main mass negative Monday value is statistically significant at 10% significance level.
Dadenova (2012)	ISE data have been used	Regression analysis	04.01.2000–25.06.2012	For the ISE30 rating, it has been determined that Wednesday 0.0030 and Thursday 0.0016 are the days that provide the highest returns, while the lowest returns on Friday are -0.0037, and within this index, negative returns are provided on average on Monday and Tuesday. .
Kendirli&Karadeniz (2012)	ISE data were used.	ARCH-GARCH	02.01.2008-30.03.2012	As a result of their analyses, the authors conclude that taking variance breaks into account in the modeling of volatility makes a significant contribution to investors. high levels of volatility and high risks in capital markets would mean.
Küçüksille (2012)	ISE data have been used	Power Ratio Method	1988-2010	They found that while the January effect was observed in the ISE 100 and XUSIN indices, there was no January effect in the XGIDA, XHOLD and XUMAL indices. When the January effect is analyzed on a trend basis, they stated that the

				January effect is weakening in the ISE 100, XUGIDA, XUSIN and XUMALI indices, while the market efficiency has not changed in the XUHOLD index under the January effect.
Erdoğan & Elmas (2010)	They applied a survey to a total of 410 stock investors in the provinces of Istanbul, Ankara, Izmir, Bursa, Antalya and Erzurum.	Portfolio Analysis	September 10, 2009 - November 5, 2009	As a result of the analyzes they have made for the ISE stock investor, which consists of a sample group of 410 people, they have determined that a higher return is obtained in January compared to other months.
Çinko (2008)	ISE data have been used	Regression analysis	January 1989 - December 2006	As a result of the analysis, the January effect was not detected in the ISE.
Özer & Özcan (2002)	ISE data have been used	Regression analysis	1988-1997	In terms of the examined period, they revealed that the January effect is seen in the ISE, but this effect is not continuous and is independent of the size of the firm.
Karan & Uygur (2001)	ISE data have been used	Portfolio Analysis	1991-1998	While revealing the existence of January return in the ISE in terms of portfolios created and the period examined, they determined that this effect depends on the size of the firm.
Dağlı (1996)	Data from Argentina, Philippines, Colombia and Turkiye stock markets were used.	ARCH-GARCH	1976-1992	He determined that the highest return was obtained in Turkiye after Argentina, Philippines and Colombia. The researcher, who deals with the risks on a monthly basis, found the highest standard deviation of the return series in Argentina during the analysis period. This result supports the fact that high return brings high risk. On the other hand, while the second highest risk was observed in Turkiye, it was concluded that this risk in the ISE could not be compensated with returns.
Balaban (1995)	İMKB Bileşik endeksi günlük verilerini kullanmıştır.	ARCH-GARCH	1988-1993	It has been determined that in terms of the index and the period examined, besides the January effect, the effects of June and September are also seen in the ISE.
		STUDIES MADE ABROAD		
Lim, David & Chong (2010)	Data from Asian countries were used.	KPSS Test	1990-2009	While the December effect was detected in countries other than Hong Kong, Japan, Korea and China, they found that January, April and May effects were observed on stock returns in some countries.
Al-Rjoub & Alwaked (2010)	Data from DJIA, S&P 500 and NASDAQ organizations were used.	Least Squares Method	1971-2009	They found that the return losses in January were lower than the other months of the year, but there was no January effect when the average positive returns were taken into account.
Hsu (2005)	Data from Taiwan, Hong Kong, China stock indices and stock indices of America, Japan, Brazil and England were used.	ARCH-GARCH	1982-2003	While the January effect was detected in the Taiwan and Hong Kong indices, the January effect could not be detected in the USA, England, Japan and China indices.

Athanassakos (2002)	Kanada Borsasına ait veriler kullanılmıştır.	Pooled time series	1980-1998	It has been determined that the January returns are low, so the January effect is not widespread.
Cheung & Coutts (1999)	Data belonging to the Hong Kong Stock Exchange were used.	Regression analysis	January 1985 - June 1997	t statistic for some months Although it was significant, the January effect was not detected.
Raj & Thurston (1994)	Data from the New Zealand stock market was used.	Regression analysis	July 1983 - June 1993	They set up a regression model in the first model with January as a dummy variable and the second model with months other than January as a dummy variable. They found that there was a positive significant January effect in the first model. In the second model, they found that the presence of negative significant coefficients had a January effect.

According to the literature review, different studies have reported different results. For this reason, it is very significant for the originality of the study to examine the study in a different period by considering a different analysis technique.

Dataset and Method

In the study, the existence of the January effect in MIST countries is tested with the GARCH (p,q) model using monthly closing data of index return rates for the period 2005-2021. The existence of the January effect in the stock market indices of MIST countries and the effect of the January effect on the market efficiency were investigated. Data are taken from Borsaistanbul.com, www.thomsonone, Finans.yahoo.com, web addresses and MIST countries index data. A number of statistical and econometric tests were used in the study and the January anomaly was tested using the GARCH model.

In the study, firstly descriptive statistics were calculated and then the Augmented Dickey-Fuller (ADF) test was used to test the stationarity of the series. The White test was used to test whether there was a variable variance problem. Data obtained using the GARCH (p,q) test were interpreted.

GARCH models were introduced by Tim Bollerslev (1986). In this model, the conditional variance in the t period (h_t) depends not only on the square of the past values of the error terms, but also on the past conditional variance values. That is, the variance of the error terms is affected by their own values and all of the conditional variance values. In general, a GARCH (p,q) process, when the lag length of the squares of the error terms is expressed as q and the lag length of the autoregressive part is expressed as p

$$\omega > 0;\ a_i \geq 0;\ \beta_j \geq 0;\ \sum_{i=1}^{q} a_i + \sum_{j=1}^{p} \beta_j < 1 \text{ to be}$$

$$h_t = \omega + \sum_{j=1}^{p} \beta_j\, h_{t-j} + \sum_{i=1}^{q} a_i\, u^2{}_{t-i}$$

It is expressed as (Hansen and Lunde, 2005, 873). GARCH models must meet certain criteria. One of these criteria is that the coefficients are not negative. The conditions a_i ≥ 0, β_j ≥ 0 must be satisfied. When these conditions are not met, the model is meaningless. The second criterion is that the sum of the coefficients is less than 1. When a_i + β_j < 1 condition is not met, the model is meaningless (Kula and Baykut, 2017: 97). Since the GARCH model can give more precise and reliable results compared to other tests, this test was used for analysis.

Table 2. Countries Used in the Analysis Stock Exchange Abbreviations

COUNTRY	EXCHANGE NAME
TURKIYE	BIST
INDONESIA	JKSE
MEXICAN	MEXBOL
SOUTH KOREA	KRX

Monthly data of MIST countries' stock exchanges between 2005 and 2021 were used as data set in the analyses. The countries used in the analysis and the stock market names of these countries are presented in Table 2.

Analysis and Findings

Table 3. Descriptive Statistics of BIST Exchange

	Mean	Median	Maximum	Minimum	Standard Deviation	Jarque-Bera	Probability
January	0.0087	-0.0115	0.3788	-0.2351	0.1401	2.9841	0.1515
February	0.0101	0.0099	0.1843	-0.1542	0.0766	0.0123	0.8412
March	0.0421	0.0519	0.1844	-0.0549	0.0741	0.9745	0.4878
April	0.0022	0.0154	0.1846	-0.1547	0.0874	2.7549	0.1456
May	0.0241	0.0018	0.0674	-0.1845	0.0679	1.7413	0.2419
June	0.0241	0.0255	0.1809	-0.1113	0.0692	0.0951	0.7519
July	0.0151	0.0068	0.1453	-0.1846	0.0715	0.6417	0.5547
August	-0.0105	-0.0176	0.1940	-0.3749	0.1320	0.4981	0.4651
September	-0.0321	-0.0457	0.2411	-0.2599	0.1141	2.7017	0.1355
October	0.0122	0.0157	0.1871	-0.3745	0.1333	9.5743	0.0041
November	0.0555	0.0219	0.3871	-0.2311	0.1257	3.5100	0.1212
December	0.0277	0.0412	0.2599	-0.1008	0.1022	0.6646	0.5413

In Table 3, descriptive statistics values of Borsa Istanbul 100 index are presented. Considering the monthly average returns, it is seen that a negative return was obtained in 2 months (August and September) and a positive return in 9 months. Looking at the monthly returns, it is seen that the highest return is in November (Average: 0.0555). According to the Jargue-Bera test statistics used to determine whether the series show a normal distribution, it is seen that the series do not show a normal distribution.

Table 4. Descriptive Statistics of JSKE Exchange

	Mean	**Median**	**Maximum**	**Minimum**	**Standard Deviation**	**Jarque-Bera**	**Probability**
January	0.0057	0.0049	0.1021	-0.0465	0.0414	1.2511	0.3741
February	0.0065	0.0022	0.1151	-0.1437	0.06120	0.7544	0.5981
March	0.0121	0.0247	0.0854	-0.1005	0.0473	0.8541	0.5518
April	0.0184	0.0133	0.1951	-0.0853	0.0543	6.3749	0.0545
May	0.0017	0.0109	0.1104	-0.1175	0.0652	0.3741	0.7557
June	0.0114	0.0125	0.1143	-0.0113	0.0549	0.2908	0.7546
July	-0.0079	0.0024	0.1155	-0.1451	0.0746	0.7544	0.5742
August	0.0154	0.0192	0.1322	-0.1041	0.0549	0.6512	0.6255
September	0.0201	0.0107	0.1973	-0.1407	0.0544	4.5871	0.4058
October	-0.0357	0.0145	0.0682	-0.0695	0.1541	11.5411	0.0013
November	0.0125	0.0177	0.1028	-0.0879	0.0582	0.8553	0.5744
December	0.0142	0.0101	0.1255	-0.1322	0.0654	0.4788	0.6543

When the values of the descriptive statistics given in Table 4 are examined, it is seen that there is a negative effect on JSKE in July and October. It is seen that the highest return in JSKE was in September (0.0201). According to Jargue-Bera statistics, the series do not show a normal distribution.

Table 5. Descriptive Statistics of MEXBOL Stock Exchange

	Mean	**Median**	**Maxsimum**	**Minimum**	**Standard Deviation**	**Jarque-Bera**	**Probability**
January	0.0275	0.0157	0.2451	-0.1106	0.1010	0.8546	0.5419
February	0.0347	0.0121	0.2419	-0.1141	0.1043	1.3411	0.3718
March	0.0274	0.0385	0.2413	-0.1004	0.0845	0.4740	0.6555
April	-0.0101	-0.0275	0.1983	-0.2411	0.1236	0.8845	0.5544
May	-0.0457	0.0344	0.3125	-0.1735	0.1176	0.6843	0.5882
June	0.0123	0.0185	0.1544	-0.1012	0.0659	0.4873	0.6419
July	0.0351	0.0133	0.1257	-0.7419	0.1550	38.8882	0.0000
August	0.0247	0.0011	0.1875	-0.3749	0.1852	9.5743	0.0013
September	0.0119	0.0352	0.1544	-0.4717	0.1422	0.5746	0.7544
October	-0.0127	0.0115	0.1744	-0.2544	0.1022	1.2339	0.1246
November	-0.0113	0.0026	0.1358	-0.2844	0.1054	2.4117	0.2333
December	0.0148	0.0253	0.3845	-0.2216	0.1347	5.4713	0.0316

Looking at Table 5, where descriptive statistics for Mexbol are given, it is seen that there is a negative effect in April, May, October and November. It is seen that the highest monthly return is in July (Average: 0.0351). Looking at the Jarqu-Bera test statistics, it is seen that the series do not show a normal distribution except for the month of July.

Table 6. Descriptive Statistics of KRX Exchange

	Mean	Median	Maxsimum	Minimum	Standard Deviation	Jarque-Bera	Probability
January	0.0184	0.0271	0.1121	-0.1155	0.0547	0.9874	0.4777
February	0.0113	0.0144	0.1227	-0.1588	0.05419	3.1072	0.1235
March	0.0177	0.0345	0.1552	-0.1852	0.0741	2.3122	0.2544
April	0.0028	-0.0158	0.1450	-0.1255	0.0664	0.5419	0.5412
May	-0.0085	-0.0154	0.1055	-0.1744	0.0543	1.8740	0.2553
June	0.0038	0.0059	0.1143	-0.1055	0.0453	0.3952	0.6519
July	-0.0155	-0.0246	0.1744	-0.1022	0.0655	1.8543	0.2845
August	0.0002	-0.0027	0.2135	-0.1426	0.0745	5.4553	0.0578
September	0.0022	0.0107	0.1223	-0.1247	0.0549	0.1405	0.7544
October	0.0254	0.0175	0.1122	-0.0623	0.0411	0.3744	0.7542
November	0.0076	0.0163	0.1544	-0.1545	0.0605	1.3322	0.3740
December	-0.0055	-0.0127	0.1745	-0.1141	0.0658	7.5327	0.0123

Looking at Table 6, where the descriptive statistics of KRX are given, it is seen that there is a negative return in 3 months and a positive return in 9 months. It is seen that the highest return on a monthly basis is in October. Looking at the results of Jarque-Bera test statistics, it is seen that all series do not show a normal distribution.

Table 7. Stability Test of MIST Countries Data

Exchange	T Statistics	Probability
BIST (Turkiye)	-11.574	0.0000
JSKE (Indonesia)	-8.401	0.0000
MEXBOL(Mexıcan)	-9.915	0.0000
KRX (South Korea)	-12.347	0.0000
NOTE: The lag length is taken as 2.		

Augmented Dickey-Fuller (ADF) test was performed to perform the stationarity test and the results are presented in Table 7. Looking at the table where the lag length is taken as 2, it has been determined that none of the variables contain a unit root.

In the study, the variance analysis was performed and the variation in the monthly returns of each data belonging to the countries was tried to be determined. In order to avoid multicollinearity problems while performing the analyses, December was not included in the regression analysis in the analyzes and was indicated as A in the tables.

Table 8. BIST Variance Distribution

	Coefficient	**Standard Error**	**t-Statistics**	**Probability**
January	-0.0451	0.0378	-1.4512	0.1137
February	-0.0377	0.0378	-1.2543	0.1322
March	-0.0784	0.0378	-0.1169	0.6923
April	-0.0145	0.0378	-0.4219	0.4716
May	-0.0463	0.0378	-1.2515	0.1328
June	-0.0178	0.0378	-0.6541	0.3577
July	-0.0254	0.0378	-0.6544	0.3772
August	-0.0489	0.0378	-1.4719	0.0516***
September	-0.0143	0.0378	-0.4790	0.4798
October	-0.0351	0.0378	-1.1007	0.1743
November	-0.0745	0.0378	-1.8543	0.0185**
A	0.0555	0.0225	1.9587	0.0237

Looking at Table 8, where the variance distribution of BIST data is given, it is seen that the returns for August and November are negative. It was determined that the negative value of August on the whole series was significant at the 1% level and the value of November was significant at the 5% significance level.

Table 9. JSKE Variance Distribution

	Coefficient	**Standard Error**	**t-Statistics**	**Probability**
January	-0.0105	0.0267	-0.3541	0.5744
February	0.0038	0.0267	0.1508	0.7542
March	-0.0599	0.0267	-1.7852	0.0154**
April	-0.0010	0.0267	-0.3755	0.5922
May	-0.0142	0.0267	-0.5971	0.4783
June	-0.0037	0.0267	-0.1855	0.7420
July	-0.0057	0.0267	-0.1788	0.7411
August	-0.0016	0.0267	-0.0543	0.8547
September	-0.0101	0.0267	-0.3744	0.5745
October	0.0025	0.0267	0.1052	0.8707
November	-0.0013	0.0267	-0.0549	0.8329
A	0.0178	0.0157	1.0127	0.2451

In Table 9, the variance distribution analysis of the Indonesian JSKE stock market is given. Looking at the table, it was determined that the value of March was significant at the 5% significance level and this value was negative.

Table 10. MEXBOL Variance Distribution

	Coefficient	**Standard Error**	**t-Statistics**	**Probability**
January	-0.0121	0.0375	-0.2953	0.6517
February	-0.1006	0.0375	-1.7201	0.0233**
March	-0.1123	0.0375	-0.2451	0.6444
April	-0.0744	0.0375	-1.4735	0.0419**
May	-0.0298	0.0375	-0.7419	0.3215
June	-0.0322	0.0375	-0.6588	0.3512
July	-0.0355	0.0375	-0.8808	0.2850
August	-0.0100	0.0375	-0.1952	0.7511
September	-0.0347	0.0375	-0.6142	0.3508
October	-0.0570	0.0375	-1.3511	0.1022
November	-0.0411	0.0375	-1.1055	0.1516
A	0.0499	0.0276	1.3410	0.0852***

Considering the difference in monthly returns of Mexbol, the Mexican stock market, in Table 10, it has been determined that the values of February and April are significant at the 5% significance level and these values are negative values.

Table 11. KRX Variance Distribution

	Coefficient	Standard Error	t-Statistics	Probability
January	0.0123	0.0195	0.5541	0.4511
February	0.0025	0.0195	0.1221	0.7546
March	0.0214	0.0195	1.0419	0.1953
April	-0.0037	0.0195	-0.1528	0.6202
May	-0.0078	0.0195	-0.2417	0.5844
June	-0.0034	0.0195	-0.1422	0.7513
July	-0.0341	0.0195	-1.0543	0.2149
August	-0.0156	0.0195	-1.1025	0.3716
September	-0.0044	0.0195	-0.1844	0.6328
October	0.0062	0.0195	0.2753	0.6955
November	-0.0140	0.0195	-0.6516	0.3417
A	0.0086	0.0145	0.4628	0.4710

In Table 11, monthly variance distribution analysis of the South Korean stock market KRX is presented. When the values in the table are examined, it has been determined that the monthly returns of the year do not show any difference.

Table 12. MIST Countries and BIST Returns Series GARCH (1,1)

		C	REID(-1)^2	GARCH (-1)
BIST	**Coefficient**	0.0001251	0.1154	0.6512
	Standard error	0.0001983	0.0371	0.0341
	z-Statistics	0.7155	2.5416	15.4713
	Possibility	0.2554	0.0045	0.0000
JSKE	**Coefficient**	0.002741	0.4877	-0.0105
	Standard error	0.0004101	0.1135	0.0268
	z-Statistics	5.7982	3.1999	-0.3716
	Possibility	0.0000	0.0000	0.0000
MEXBOL	**Coefficient**	0.000287	0.1551	0.6942
	Standard error	0.000175	0.0638	0.0514
	z-Statistics	1.2841	2.7104	11.5553
	Possibility	0.1237	0.0011	0.0000
KRX	**Coefficient**	0.00054	0.0741	0.6505
	Standard error	0.00059	0.0513	0.1746
	z-Statistics	0.8715	1.0325	3.5467
	Possibility	0.2416	0.1463	0.0000

By using the GARCH (1,1) model, the direction of the long-term predictable market movement of MIST countries and BIST is estimated and the results are presented in Table 12. When the results obtained from the analyzes are examined, it can be stated that the long-term returns will continue in BIST and MIST countries. In addition, when the January return, which is the focus of the study, is evaluated, it is not possible to talk about an effect of January on the basis of months of the year. It is seen that the January returns do not differ in both MIST and BIST returns.

Dıscussıon and Conclusıon

In this study, which analyses the impact of January on the capital markets of MIST countries using the GARCH model, data between 2005-2021 are used. Negative returns are observed in all stock exchanges for the 17-year period.

The country stock market with the highest monthly negative return was MEXICO (MEXBOL). A negative return was obtained in 4 months in MEXBOL. When we look at the stock markets of other countries, a negative return is seen in the South Korea (KRX) stock market in 3 months, while a negative return in Turkiye (BIST) and Indonesia (JSKE) in 2 months.

Considering the positive returns, it is seen that the highest positive return average between the years 2005-2021 among the examined stock markets was in November in BIST. In this month, an average return of 0.0555 was obtained in BIST. After BIST, the country with the highest positive return was the Mexican stock market. In MEXBOL, an average of 0.0351 positive returns was obtained in July. When the maximum positive returns of other countries are examined, an average of 0.0201 in September in the Indonesian stock exchange JSKE, and an average of 0.0254 in October in the South Korean stock exchange KRX.

When the results of the variance analysis made for the differences of the countries examined in the analyzes are examined, it is seen that the biggest difference is in BIST. It is seen that the negative returns in March and November in BIST between 2005-2021 differ statistically significantly compared to other months. This shows that the efficient market hypothesis can be rejected at the highest level in BIST.

The country where the returns differed after BIST was Mexico. The negative returns of the Mexican stock market MEXBOL in February and March differed statistically significantly. Other countries with statistically different returns after these countries were the negative return of JSKE, the Indonesian stock market, in March and the negative return of KRX, the South Korean stock market, in July.

Looking at the results of the GARCH model, it is possible to talk about the existence of a long-term relationship between the countries between the years 2005-2021. However, it is not possible to talk about the January relationship in this relationship. When considered in terms of the efficient market hypothesis, it is possible to say that there is a market efficiency in general, although the returns obtained from the country data show some differences.

While these results are in parallel with the studies of the authors of Aytekin and Sakarya (2014), Al-Rjoub&Alwaked (2010), Zinc (2008), Cheung&Coutts (1999), who obtained similar results in the literature, Lim, David&Chong (2010), Özer&Özcan (2002), Karan&Uygur (2001), Balaban (1995), Raj & Thurston (1994) coincide with the results obtained by the authors.

Investors can be advised not to invest in the BIST, which displays an unstable outlook, and to pay attention to the months that bring negative returns and not invest in these months, and turn to the months that bring positive returns. In future studies, researchers can examine this relationship by considering different time periods and using data from different country groups.

References

Al-Rjoub, S. A. M., & Alwaked, A. (2010). January effect during financial crises: Evidence from the U.S. *European Journal of Economics, Finance and Administrative Sciences,* 24, 29-35.

Al-Shamali, M. (1989). Weak form efficiency and factors leading to market efficiency in the Kuwait stock market. (unpublished doctoral thesis), Loughborough University of Technology, Loughboroug.

Athanassakos, G. (2002). The scrutinized-firm effect, portfolio rebalancing, stock return seasonality, and the pervasiveness of the january effect in Canada. *Multinational Finance Journal*, 6(1), 1-27.

Aytekin, S., & Sakarya, Ş. (2014). Ocak ayı anomalisi: Borsa İstanbul endeksleri üzerine bir uygulama. *International Journal of Management Economics and Business*, 10(23), 137-155.

Balaban, E. (1995). İstanbul menkul kıymetler borsası'nda ocak ayı etkisi, Ömer Hayyam etkisi, Ümit Yasar etkisi. *Central Bank of the Republic of Turkiye, General Directorate of Research, Discussion Paper*, No:9511, 231-252.

Bayraktar, A. (2012). Etkin piyasalar hipotezi. *Aksaray University Journal of Faculty of Economics and Administrative Sciences*, *4*(1), 37-47.

Bollerslev, T. (1986). Generalized autoregressive conditional heteroskedasticity. *Journal of Econometrics,* 31(3), 307-327.

Cheung, K.C., & Coutts, J.A. (1999). The january effect and monthly seasonality in the hang seng index: 1985-97. *Applied Economics Letters*, 6, 121-123.

Çinko, M. (2008). Istanbul menkul kiymetler borsasinda ocak ayi etkisi. *Journal of Dogus University*, *9*(1), 47-54.

Dadenova, K. (2012). Finansal anomalilerin test edilmesi: İMKB'de bir uygulama (Unpublished master's thesis). Dokuz Eylul University Institute of Social Sciences, İzmir.

Dağlı, H., 1996, Türkiye'nin risk ve getiri açısından gelişen hisse senedi piyasaları arasındaki yeri, İMKB, *Economics, Business Administration and Finance, Studies on Capital Markets and ISE*, 19-38.

Erdoğan, M., & Elmas, B. (2010). Hisse senedi piyasalarında görülen anomaliler ve bireysel yatırımcı üzerine bir araştırma. *Journal of Atatürk University Graduate School of Social Sciences*, 14 (2), 1-22.

Hansen, P., &Lunde, A. (2005). A forecast comparison of volatility models: Does anything beat a GARCH (1,1)?. *Journal of Applied Econometrics,* 20(7), 873–889.

Hsu, C. (2005). Is there a january effect in the greater China area?. Simon Fraser University (Business Administration Master Thesis). Taiwan.

Karan, M. (2018). *Yatırım Analizi ve Portföy Yönetimi*, Ankara: Gazi Bookstore, 22. 277-287.

Karan, M. B., & Uygur, A. (2001). İstanbul menkul kıymetler borsası'nda haftanın günleri ve ocak ayı etkilerinin firma büyüklüğü açısından değerlendirilmesi. *Journal of Ankara University Faculty of Political Sciences*, 56, 103-115.

Karyağdı, N.G. & Gökoğlan, K. (2023). Muhasebe Meslek Etiği Alanında Yapılmış Çalışmalara Yönelik Bibliyometrik Analiz. *Journal of Finance, Economics and Social Research,* 8(1), 165-175.

Kendirli, S., & Bulut, B. (2020). BRICS ülkeleri ve türkiye'de ocak ayı etkisinin GARCH (p, q) modeli ile test edilmesi. *Journal of Finance, Economics and Social Research*, 5(3), 571-585.

Kendirli, S., Karadeniz, G. (2012). 2008 Kriz sonrası İMKB 30 endeksi volatilitesinin genelleştirilmiş ARCH modeli ile tahmini. *Journal of Kahramanmaraş Sütçü İmam University Faculty of Economics and Administrative Sciences*, 2(2), 95-104.

Konak, F., Kendirli, S. (2014). Küresel finansal kriz sürecinde BIST 100 Endeksi'nde haftanin günleri etkisinin analizi. *Journal of Süleyman Demirel University Faculty of Economics and Administrative Sciences,* 19(2), 275-286.

Konak, F., & Selçuk, K. (2015). Yılın ayları etkisi'nin Borsa İstanbul 100 endeksi'nde GARCH (1, 1) modeli ile test edilmesi. *Journal of Kahramanmaraş Sütçü İmam University Faculty of Economics and Administrative Sciences,* 4(2), 137-146

Kula, V., & Baykut, E. (2017). BIST banka endeksi'nin (XBANK) volatilite yapısının markov rejim değişimi GARCH modeli (MSGARCH) ile analizi, *Bankers Magazine*, 102, 89-110.

Küçüksille, E. (2012). İMKB endekslerinde ocak ayı etkisinin test edilmesi. *Journal of Accounting and Finance*, (53), 129-138.

Lim, B. K., David, N. C. Y., & Chong, H. L. (2010). Month-of-the-year effects in Asian countries: A 20-year study (1990-2009). *African Journal of Business Management*, *4*(7), 1351-1362.

Özer, G., & Özcan, M. (2002). İMKB'da ocak etkisi, etkinin sürekliliği, firma büyüklüğü ve portföy denkleştirmesi üzerine deneysel bir araştırma. *Journal of Süleyman Demirel University I.İ.B.F.*, 2(3), 133-158.

Yükçü, S., & Atağan, G. (2009). Etkinlik, etkililik ve verimlilik kavramlarının yarattığı karışıklık. *Atatürk University Journal of Economics and Administrative Sciences,* 23(4), 1-13.