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INVESTIGATION OF CAUSAL OF RELATIONS BETWEEN THE PARTICIPATION 30 INDEX AND BORSA ISTANBUL100 INDEX IN TERMS OF BANKING MANAGEMENT

Osman KURTER[1]

Cansu ARSLAN[2]

ABSTRACT

Money management is a difficult task, and it has detrimental ramifications if the decisions are not made accurately. The aim of this study is to examine the short and long-term relationships between the participation index operating in the capital markets and the Borsa Istanbul00 index. The relationship between the BIST100 index, which gives information about the general situation of the capital markets, and the logarithmic values of the Participation30 Index, which operates in accordance with Islamic principles in Turkiye, were analyzed by considering the weekly data covering the working days between 2011-2020. Data obtained from the independent online source called, investing.com, was used in the analysis of the study, a cointegration test, causality test, and unit root test were applied, and results were found through an error correction model. The findings were interpreted in line with the results confirming a correlation between the Participation30 and Borsa Istanbul100 indexes. We believe this research will contribute to the scientific literature and money managers greatly.

Key Words: STRATEGIC MANAGEMENT, FINANCIAL MANAGEMENT, ISLAMIC FINANCE, STOCK PORTFOLIO MANAGEMENT

Jel Codes: M1, M16, M19, D12

[1] Assistant Professor Dr., Karabük University, osmankurter@karabuk.edu.tr, ORCID: 0000-0001-7581-1316

[2] Doctoral Student, Karabük University, cansu.arslan9478@gmail.com, ORCID: 0000-0003-1740-5146

BANKACILIK YÖNETİMİ AÇISINDAN KATILIM30 ENDEKSİ İLE BORSA İSTANBUL100 ENDEKSİ ARASINDAKİ NEDENSELLİK İLİŞKİLERİNİN İNCELENMESİ

ÖZ

Para ve finans yönetimi zor bir iştir ve kararlar doğru bir şekilde alınmazsa, çok zararlı sonuçlar doğurabilirler. Bu çalışmanın amacı, sermaye piyasalarında faaliyet gören Katılım endeksi ile Borsa İstanbul100 endeksinin kısa ve uzun vadeli ilişkilerini incelemektir. Sermaye piyasalarının genel durumu hakkında bilgi veren Borsa İstanbul100 endeksi ile Türkiye'de İslami prensiplere uygun bir şekilde faaliyet gören Katılım 30 Endekslerinin logaritmik değerleri arasındaki ilişkileri 2011-2020 yılları arasındaki iş günlerini kapsayan haftalık veriler ele alınarak analiz edilmiştir. Investing.com adlı bağımsız çevrimiçi kaynaktan elde edilen verilerin kullanıldığı çalışmanın analizinde eş bütünleşme testi, nedensellik testi ve birim kök testi uygulanmış olup hata düzeltme modeli aracılığıyla sonuçlar bulunmuştur. Bulunan sonuçlar doğrultusunda sonuçlar yorumlanmaya çalışılmıştır. Bulgular, Katılım30 ve Borsa İstanbul100 endeksleri arasındaki ilişkiyi doğrulayan sonuçlar doğrultusunda yorumlanmıştır. Bu araştırmanın bilimsel literatüre ve para yöneticilerine büyük katkı sağlayacağına inanıyoruz.

Anahtar Kelimeler: STRATEJİK YÖNETİM, FİNANS YÖNETİMİ, İSLAMİ FİNANS, HİSSE SENEDİ PORTFÖY YÖNETİMİ

Jel Kodları: M1, M16, M19, D12

INTRODUCTION

For both money managers working for finance corporations and individual investors managing their own money, the level of risks while operating in financial markets is as important as the Return on Investment (ROI). This fact coupled with issues such as operating in contrast to the Islamic rules, most businesses not operating according to a participatory model, almost all Muslim economists and scholars finding interest-free financing more convenient, and their desire to make a profit by investing in Islamic financial instruments, requires establishing a stock market in accordance with the Islamic rules and beliefs, such as in Malaysia and other Muslim countries (Abbes & Trichilli, 2015).

The impossibility of establishing a stock exchange market that is fully compliant with Islamic rules in the short term has necessitated the idea of choosing from companies that operate on existing stock markets. Since personal investors do not know if a company is operating in accordance with Islamic standards, or to what extent it is engaged in forbidden product transactions when its activities are examined, as well as the fact that they cannot predict how they are dealing with the interest-bearing banking activities and the awareness that it is difficult to examine all this information one by one has led the pious investor to search for new approaches. In addition to these religious conviction reasons, recent financial crises and fraudulent activities in the markets motivated investors to start searching for new and safer products and services. In this context, the Participation Index was developed and published by Bizim Menkul Değerler A.Ş. on January 6, 2011, consisting of the first 30 stock market investors based on their sensitivity toward Islamic rules and obligations.

The fact that the stocks are based on a partnership relationship as a matter of principle, and that the invested funds are transferred directly to the real economy, shows that stock instruments can be evaluated in terms of interest-free investment

options in Islamic finance activities. In addition, the researchers with this study tried to clarify how Islamic Index is independent of interest-bearing banking activities and how it is different from conventional finance which is traded in stock exchanges and included in customer indices, and how Islamic Finance Index is legitimate and operates in a partnership-based system of companies. In this context, another aim of this study is to determine the relationship between Islamic indices and interest rates, and to examine the index performance as well as the ROI and volatility of these indices. For this study, Participation Indices, which started publishing in Turkiye in 2011, have been empirically analyzed.

The data obtained from the investing.com website was used in this research (Investment, (n.d.). Between Participation Index and market interest rates, the unit root test, cointegration test, causality analysis was carried out, and the results were obtained through the error correction model. While the Participation Index analysis was carried out, the same analysis was also applied to BIST100 index market interest rates in order to better interpret the results and compare both of these results. The reason we compared the Participation Index with the Borsa Istanbul 100 (BIST100) Index as a criterion is that this index is the Benchmark index of Borsa Istanbul, and at the same time, as it is known, the companies included in this index are not subject to any participation finance selection criteria. The participation Index was also compared with the BIST100 index and different investment instruments in terms of uncertainty and return rate performances.

LITERATURE REVIEW

After reviewing the literature, it is discovered that there are many pieces of research conducted comparing the Islamic Index and the conventional indexes. Munusamy analyzed the performance of Islamic and traditional indices in India and according to this analysis, no difference was found between the average daily return of the Nifty Shariah index and the conventional Nifty index (Munusamy, 2011).

Another research was conducted in Malaysia on Islamic equity investment which is one of the examples of Islamic Indexes. This study confirmed that the Kuala Lumpur Shariah Index (KLSI) outperformed the Kuala Lumpur Composite Index (KLCI) (Bhatti & Mansor, 2011). The result of this work shows that the risk-adjusted returns and beta for KLCI are also lower in the short run and higher than for KLSI with risk-adjusted returns and beta.

Sadeghi conducted research on the Malaysian Islamic Index's stock performance and liquidity in Bursa Malaysia (Sadeghi, 2008). The research used case study methodology to estimate the average cumulative returns of Shariah-compliant stocks, and the study concluded that Islamic indices have a strong positive effect on the financial performance of the said shares (Sadeghi, 2008). Some investors have become increasingly interested in investing their assets in Islamic indices rather than relying entirely on costly active investment management methods.

Yalın and Parsva performed a similar study on Malaysian indices and arrived at similar results. According to this research, the average daily return of all indices is positive in the non-crisis period, but the FTSE Shariah index has a higher standard deviation than its traditional counterparts during the crisis, which means that it brings higher risk than its conventional counterpart in crisis and non-crisis periods (Yalın & Parsva, 2012).

Hassan and Girard conducted research on American Dow Jones Islamic Market (DJIM) index using Sharpe, Treynor & Jensen's methodology, which excludes all indexes whose line of business is contrary to Islamic principles (Hassan & Girard, 2011). They concluded that both groups were weakly integrated and could not find a significant difference in performance between Islamic and traditional indices. According to this study, similar reward and diversification advantages in terms of risk are available for both index groups.

By examining the return rate, performance, and volatility of the BIST100 and Participation30 indices at the same time, Seçme, Aksoy, and Uysal determined the volatility of the BIST100 and Participation30 indices by applying GARCH(1,1) and EGARCH(1,1) models (Seçme et al., 2016). These researchers examined the relationship between the performances of both indices. In the third stage of their study, which mainly focuses on four sections, ROI performances are compared, and in the last section, the relationship between Borsa Istanbul National 100 index and Dow Jones Industrial Average and Participation 30 index, and DJIM indexes are analyzed. As a result of this research, it was concluded that the index volatility of the BIST100 Index is higher than the volatility of the Participation30 Index. It has also been observed that both of the mentioned indices respond more vigorously to the negative effects of the markets than the positive ones. A strong relationship was found between both indexes. However, since beta is close to 1 but < 1, it has been concluded that it can be taken into a portfolio by risk-averse investors for diversification purposes only. When the index performances are compared, it has been determined that the Participation 30 Index is more successful than the BIST100 Index. In the Participation 30 Index, a positive value was determined according to the Jensen alpha performance criterion.

Investigating the performance and abnormal returns of participation indices, Altın & Caba compared the DJIM World index and Participation 30 index in their study and found beta was smaller than 1 and therefore concluded that there was a weak relationship between these two indexes (Altın & Caba, 2016). They conducted this study based on these two main objectives: the first purpose is to evaluate the performance of participation indices which are considered new in the sector, and the other is to examine the market index operating in the BIST and the BIST100 index, which is described as all sector indices, in terms of abnormal returns. As a result of the Kolmogorov-Smirnov (K-S) Test and Levene Test analysis based on the daily data of 2015, it has been determined that the performance of the participation indices is successful and provides positive returns in the market. In addition to this

determination, it was stated as a result of the analysis that the volatility of the participation indices was lower and more stable than the conventional indexes.

Aiming to examine the relationship between Islamic indices and traditional indices, İçellioğlu determined that there is a causal relationship between the Participation30 index, and the BIST-100 index (İçellioğlu, 2018). In his study, he tested the logarithmic values of the Participation30 Index and BIST100 Index in the EViews 8 Program by considering the data covering the business days in the 2013-2018 period. EViews is a statistical package software program that offers powerful statistical, time series, forecasting, and modeling tools through an object-oriented interface. In the analysis, the cointegration test, unit root analysis, and causality analysis were applied. The results obtained with the error correction model were evaluated. At the end of these processes, a long and short-term relationship was determined between BIST 100 and Participation30 indices. The short-run causality relationship is unidirectional, and this indicates a trend has been developing to show investors are leaning toward PBIST-100 Index and away from the Participation30 index.

In the study he carried out, Çürük aimed to present theoretical information that can increase the depth of Islamic indices traded in capital markets and thus reveal Turkey's applications (Çürük, 2018). Model Portfolio indices, which are Turkish examples of Islamic indices, focused on Participation30 and Participation50 indexes. It is thought to provide an alternative for global investors seeking to invest in Islamic financial instruments.

Investigating the future movements of BIST participation indices with the Markov Chain model Yavuz, in his research, took into account the data of the years 2014-2016. The 520-day closing values of the KATLM index and the 514-day closing values of the KAT50 Index were taken into account and an MZ model was created and the stability, increase and decrease of the indices were taken into account in the model.

In order to examine the future values of the indices, a transition probabilities matrix was also created by performing an MZ analysis. When all findings of this method were examined, the result was founded to be in the direction that the future movements of the participation indices will be successful. In conclusion of his research, after evaluating all literature and considering his empirical findings coupled with observation of the successful performance of the indices in the past, the researcher expects more entrepreneurs to switch to participation indexes rather than stay with the conventional index in the future (Yavuz, 2019).

Sakarya, Yıldırım, and Yavuz examined the risk and return performance of the Participation30 index, Corporate Governance index, and BIST 50 index between 2011 and 2016 in their research. The study evaluated seven different periods of overall market performance, four of which are during the decline and three of which are increasing market periods. After the research was completed, it has been determined that the participation 30 index is more reliable and more stable than the corporate governance index and BIST50 indexes (Sakarya et al., 2018).

METHODOLOGY

Time series analysis can be expressed as the process of determining the probability state of a time series and predicting the situation that may occur in the future or determining the relationships in more than one time series. While creating econometric models in time series analyses using economic data, one of the theories of the series is that the series does not contain a unit root; in other words, it is stationary. In the time series analysis investigating the existence of unit roots, the first unit root test was developed by Dickey and Fuller in 1979.

The purpose of the unit root test is to investigate the existence of a first-order unit root and the significance of the trend together. In the modeling phase of the test developed by Dickey and Fuller in 1979; stable and trendless; stable and trendy; unstable and trendless; they used three types of analysis models. They obtained tau

test statistics for these three models and used them in the hypothesis testing phase. The Dickey-Fuller test hypothesizes that error terms are statistically non-autocorrelated, in other words, they have a constant and independent variance. The Augmented Dickey and Fuller (ADF) test was created in 1981 to solve common statistical analysis to find out if a time series have constant or independent variance, which mostly exists in the error terms in the Dickey and Fuller tests (İçellioğlu, 2019). Basically, the researcher is testing the time series to determine if it is stationary or not.

Dickey and Fuller Test

Developed by Statisticians David Dickey and Wayne Fuller in 1979, it is also the most widely used unit root test in the literature, based on the distribution of the least squares predictor of the parameters. The standardized Dickey-Fuller (DF) test is based on the theory that error terms have the same distribution and are independent. The DF test measures whether it has a unit root in the AR (1) stage with or without a constant term (Dickey & Fuller, 1979).

In this ADF test, the DF test was revised for solving the autocorrelation problems by adding appropriate lagged values to the model. Phillips-Perron unit root test allows the error term to be distributed differently and to be weakly dependent, allowing it to solve the autocorrelation problems (Enders, 2004).

Co-Integration Test

The cointegration test developed by Clive Granger is a method that does not contain a unit root and is used to analyze the relationship between two-time series. If two or more time series are stationary, even though they may not be unit-roots of each other, and their linear combination is stationary, it is possible to say that these series are cointegrating.

Prior to the 1980s, most researchers studied time series that did not contain a unit root time series. Because of the absence of this important step, their accuracy was challenged and proved by Clive Granger and Robert Engle that misleading regression was encountered in said research. The reason for the misleading regression is that time series without unit roots show a stochastic trend effect. This is why the researchers applied the co-integration test to avoid reaching skewed or inaccurate results.

In variables such as the stock market, exchange rates, and interest rates, volatility is mostly encountered when following the development in these markets. It was determined that almost all of the time series studies in the literature contained unit root tests. Since the spurious regression problem arises in the relationship of these non-stationary series, different methods have been proposed by experts to find a solution to this problem. One of the suggested methods is to take the differences of the series and include them in the regression, but this raises other problems along the way. This method causes the loss of vital information for the long-term balance analysis. When the first differences in the variables are taken, the possibility of seeing the possible long-term relationship between these variables disappears. This situation has been the starting point for using the cointegration test to overcome this problem (Hjalmarsson & Österholm, 2007)

The difference between the unit root test and the cointegration test is while the unit root test is applied to univariate time series, the cointegration test is used for the variability relationship between clusters each of which has a unit root. The cointegration approach developed by Engle and Granger eliminated this shortcoming. According to this new approach, the first difference with a unit root at the level can be shaped by the time series levels without a unit root, and in this way, the problem of long-term information loss is eliminated (Tetik, 2011).

Granger Causality Test

While expressing causality first time proposed in 1969, Granger states that "If Y's prediction is more successful when the past values of X are used than when the past values of X are not used, then X is the Granger cause of Y". After determining the accuracy of this statement, the relationship between them is expressed as X→Y. Since causality inference is made with the Granger Causality test, not an assumption, the variables should be stationary prior to application (Granger: 1988).

Granger causality analysis test consists of time series data. If the past values of the stationary variable Z_t are sufficient to explain the volatility of the other stationary variable, Y_t, there is a causal relationship between these two variables. If both Y_t and Z_t variables do not contain a unit root and are cointegrated, the Granger causality analysis can be formulated as:

$$\Delta Y_t = \alpha_1 + \alpha_y (Y_{t-1} - \beta_1 Z_{t-1}) + \sum_n \alpha_{11(n)} \Delta Y_{t-n} + \sum_n \alpha_{12(n)} \Delta Z_{t-n} + e_{Yt}$$

$$\Delta Z_t = \alpha_2 + \alpha_z (Y_{t-1} - \beta_1 Z_{t-1}) + \sum_n \alpha_{21(n)} \Delta Y_{t-n} + \sum_n \alpha_{22(n)} \Delta Z_{t-n} + e_{Zt}$$

In the model, it is assumed that there is no relationship between the error terms e_{yt} and e_{zt}. The αy and αz coefficients represent long-run causality relationships, and the αy and αz coefficients are the coefficients of the error terms (Tetik, 2011).

RESULTS

The relationship between Participation Index and the market interest rates is analyzed by utilizing unit root analysis, cointegration, and causality analysis tests. The data used in the study was obtained from the https://tr.investing.com/ website. While these analyses were carried out for the Participation Index, the same analyses were also applied between the BIST100 index and market interest rates to better interpret the results. The factor in determining the BIST100 index as a criterion is that this index is the benchmark index of Borsa Istanbul, and the companies included in this index are not subject to any Shariah selection factors.

In the application part of the study, it was tried to determine whether there is a relationship between interest-free indexes and traditional indexes. The existence of the relationship between the Participation30 Index (XK030) and the BIST100 Index (XU100), which is part of the interest-free index operating in Borsa Istanbul, is examined.

Terms Used in the Model

KTEND: Participation Index.
BIST100: Represents Borsa Istanbul 100.

Companies included in the participation 30 index

AKSA, ALKIM, ARDYZ, ASELS, BASGZ, BERA, BIMAS, BIOEN, CCOLA, EGEEN, EGGUB, EREGL, GUBRF, JANTS, KONYA, KRDMD, KRVGD, LOGO, OTKAR, PGSUS, QUAGR, RTALB, SASA, SELEC, THYAO, TKFEN, TKNSA, TMSN, TRILC, TTrak (Katılım Endexleri, 2022).

21 of these 30 Islamic stocks, which is about 70% of the total, are also included in the BIST100 index. It is possible to list the shares common to both of the two shares as AKSA, ALKIM, ASELS, BERA, BİMAS, CCOLA, EGEEN, EGGUB, EREGL, GUBRF, JANTS, KONYA, KRDMD, KRVGD, OTKAR, PGSUS, SASA, SELEC, TKFEN, TKNSA, and TTRAK. According to this Borsa Istanbul website information, 21% of BIST100 Index stocks are compliant with Islamic finance requirements.

The BIST100 index, which gives information about the general situation of the capital markets, has been analyzed by considering the weekly data covering the business days between 2011 and 2020, the relations between the logarithmic values of the Participation30 Indexes operating in accordance with Islamic principles in Turkiye. The review of approximately 9 years of weekly data was tested in the E-Views 8 software package program. The natural logarithms of the values related to the Participation30 Index and the BIST100 Index in the analysis were used. The

abbreviations given to the variables in the model were determined as LNKTEND for the Katılım30 and LNBIST100 for the BIST100 indexes.

Dickey-Fuller Test Findings

When two different variables are considered, in order to analyze the existence of a long-term relationship between them, it is necessary to analyze the stationarity of the time series of those variables (Dickey & Fuller, 1979 and İçellioğlu, 2018). One of the most widely used methods in practice to test stationarity is unit root analysis.

Damodar N. Gujarati expressed stationarity as "a probabilistic process whose variance and mean do not change during the process and that the common variance between two times is based only on the distance between the two processes, not the period in which this common variance is calculated". Unit root series are classified as non-stationary series and the most applied method for these non-stationary tests is the ADF application (Gujarati, 2005).

In this study, the ADF test was used to determine the stationarity of the series. While the hypothesis based on ADF analysis is that the unit root of the series exists, another hypothesis suggests that the unit root of the series does not exist.

Stationary Dickey-Fuller Equation: $\Delta Y_t = \alpha_0 + \gamma Y_{t-1} + u_t$

Dickey-Fuller Equation with Stationary Trend: $\Delta Y_t = \alpha_0 + \alpha_1 t + \gamma Y_{t-1} + u_t$

Table 1: ADF Unit Root Test Result

	Stationary		Stationary Trend		
Variables	ADF Test Statistics	Probability Values	ADF Test Statistics	Probability Values	I(O)
LNKTEND	1.135719	0.9978	-1.033595	0.9371	Contains Root, Not Stationary
LNBIST100	-0.769825	0.8262	-3.242421	0.0774	Contains Root, Not Stationary
Critical Values	1 % 5 %	-3.442746 -2.866900	1 % 5 %	-3.975871 -3.418519	
	Stationary		Stationary Trend		

Variables	ADF Test Statistics	Probability Values	ADF Test Statistics	Probability Values	Stationary Degrees
LNKTEND	-22.26631	0.0000	-22.35825	0.0000	I (1)
LNBIST100	-22.79120	0.0000	-22.79848	0.0000	I (1)

Source: Researchers' own calculation.

Table 1 shows the results of the ADF unit root test. The test was applied considering the stationary trend & stationary status of the series. In both options, it has been determined that the probability values of the series are above the 5% and 10% values. Since the ADF test statistics are between the statistical values, H0 cannot be rejected at both 5% and 10% probability levels. That is why it is determined that the LNBIST100 and LNKTEND series are not stationary.

Since it is possible to make any time series stationary when the difference is taken, with the ADF unit test, the ADF test was applied to the first differences of the series. The results were reanalyzed. When the results were examined, the probability values of the first differences between the LNBIST100 and LNKTEND series were calculated as 0.00.

According to the calculated analysis, the null hypothesis of H0 is rejected. The first differences of the series do not contain a unit root. Series are stationary. When the stationarity of the first differenced time series is determined, it is possible to describe these series as I(1) with the first-degree difference (Gujarati, 2005).

Engle-Granger Co-Integration Test and Error Correction Model Findings

The cointegration test was used to examine the long-run relationship between the two variables. According to the Engle-Granger test, it is assumed that the variables are equally stationary. When the unit root test was examined, the first-degree stationarity of both variables was determined. After creating a new regression with the variables whose stationarity is obtained, the stability of the residuals of this regression, in other words, the level value of the error correction model was analyzed.

As stated in the unit root test, the residues (u_t) in the regression model are made into a series, and the stationarity of this series is tested. If stationarity is detected in the level value for the dependent variable (Y_t) and the independent variable (X_t) after the examination, the result of cointegration will be obtained.

$$Y_t = \beta 1 + \beta 2\, X_t + u_t \quad (1)$$

$$u_t = Y_t - \beta 1 - \beta 2\, X_t \quad (2)$$

Table 2: Engle-Granger Cointegration Test Result

Error term	ADF Test Statistic	Probability Value	Stationary Status
Resid	-3.442869	0.0000	Stationary

Source: Researchers' own Calculation. *%1 significance level

When the error term result is examined, it is observed that the series does not contain a unit root. Therefore, it is possible to say that there is a long-term relationship between the stationary KTEND and the BIST100 series. Since the level values of the error terms do not contain a unit root (p value <0.05), there is a long-term cointegration relationship between these two series.

The short-term volatilities between the error correction model and the variables that have a long-term relationship are tried to be corrected. This model depicts testing a lagged value of the error term with the first difference of the variables.

$$\Delta Y_t = \alpha 1 + \alpha 2 \Delta X_t + \alpha 2 \acute{u}_{t-1} + \varepsilon_t \quad (3)$$

When the formula is examined, the first difference (ΔY_t and ΔX_t) of the two dependent and independent variables is expressed as a delay value of the error term ($\acute{u}_{t-1}$). α2, which is the coefficient of $\acute{u}_{t-1}$, expressed to what extent the volatility in the dependent variable in one period is corrected in the next period (Gujarati, 2005).

In order to observe whether the Participation30 Index has an effect on the BIST100 index or whether the BIST100 index has any effect on the Participation30 Index, two different models were created in which the independent and dependent

variables were swapped. The determinations obtained from the two models created are shown in Table 3 in Model 1, KTEND was determined as the dependent variable, and BIST100 was determined as the independent variable. In Model 2, contrary to Model 1, BIST100 Index was considered as the dependent variable and KTEND as the independent variable.

Table 3: Coefficient Values of the Error Term Model 1 & 2

Model 1- Variables	Model 1- Coefficient of Error	Model 1- Coefficient of Probability	Model 1- Significance Levels
DLNBIST100	0.829727	0.0000	*1 %
KALINTI(-1)	-0.106789	0.0156	*5 %
C	0.001564	0.0182	*5 %
R-Squared	0.757595	F-Statistics	803.2091
Adjusted R2	0.756652	Prob (F-statistics)	0.000000
Schwarz Criterion	-5.531787	Durbin-Watson Stat.	2.005234
Model 2	Model 2	Model 2	Model 2
DLNKTEND	0.913442	0.0000	*1 %
$KALINTI_2(-1)$	-0.126288	0.0040	*5 %
C	-0.001052	0.1309	*5 %
R-Squared	0.758746	F-Statistics	808.2666
Adjusted R^2	0.757807	Prob (F-statistics)	0.000000
Schwarz Criterion	-5.434446	Durbin-Watson Stat.	2.010584

Source: Researchers' own

As it is expressed in Table 3, the coefficient values depending on the error terms are negative and in addition, the probability value is significant. Therefore, it could be stated that there is a long-run relationship between the two variables.

In the error correction model, the error terms are depicted as (KALINTI(-1) for a delay value. Since the coefficient of the error term must be between 0 and -1 in order to be significant, the coefficient of -0.106789 satisfied this requirement. This means that

-0.106789 of one unit deviation in DLNKEND in the current period is corrected in the next period.

Granger Causality Analysis Findings

The existence of short-term relationships of indices with long-term relationships was tried to be determined by Granger Causality Test. H0 is to prove that there is no Granger causality from the independent variable LNKTEND to the dependent variable LNBIST100 logarithm, and the other hypothesis determined is to prove that there is causality from the independent variable LNBIST100 to the dependent variable LNKTEND index.

Table 4: Granger Causality Test Result

		Dependent Variable: LNBIST100
Independent Variable	Chi-square	p-value
LNKTEND	8.736539	0.0127
		Dependent Variable: LNKTEND
Independent Variable	Chi-square	p-value
LNBIST100	3.550211	0.1695
KTEND ⟹ BIST100		

Source: Researcher's own calculations.

The Granger Causality Analysis test was applied to the hypothesis whose lag length was determined to be 1. After the causality analysis was examined, it was determined that there is a one-way causality relationship at the 1% significance level. While there is short-term causality from Participation30 Index to BIST100100 Index, there is no causality from BIST100 Index to Participation Index. There is also unidirectional causality between both indices. Any change in the KTEND index is the cause of the changes in the BIST100 shares, but the changes in the BIST100 are not the cause of the volatility in the participation index (KTEND).

KTEND is the cause of BIST100 ($p<0.05$).

BIST100 is not the cause of KTEND ($p>0.05$).

As a result of these examinations, it is thought that there is one-way causality originating from the common shares.

CONCLUSION

As markets and wealth grow, investors' need for new products and stocks grows as well. There seem to be serious shortcomings in addressing investors' demand in Turkiye in the Islamic finance area. Participation indices have been created to fill this void by Borsa İstanbul in order to increase the awareness of enterprises on the principles of participation finance and to offer more investment options in the participation banking and finance sector.

Participation Indexes are the most important tool in the hands of financial institutions to develop and offer products that are suitable for individuals who are conscious of Islamic investment rules. Changes in the stock market portfolio are also an indicator of the growing economy and expanding stock market. By following the fluctuations in the stock market indices, it is possible to observe the effects of inflation, risk, growth, investments, and economic crises on the economy.

The Participation30 Index rules, which are compliant with other international Islamic practices and benchmarks, offered by BIST may also appeal to the need of foreign investors. There are various sector indices for the comparison of investments in different sectors, but the comparison of different indices by the fund owners who invest by being conscious of interest-free investment and participation banking does not make much sense due to the lack of different investment options. This study, which was conducted to guide investors by determining financial performance criteria for investors who are conscious of Islamic finance rules, will make an important contribution to the literature, and to these investors.

Although participation indices, which are organized according to participation banking criteria, have been available around the world for many years, they have

gained rapid momentum since 2011 in Turkiye. Participation indices operate differently from other sector indices in the BIST and it is possible to say that it is a more homogeneous index. Accordingly, the relationships between the logarithmic values of the BIST100 index and the Participation30 Indices, which operate permissibly with regard to Islamic criteria in Turkey, were analyzed by considering weekly data, covering the working days between 2011 and 2020. The weekly data used in the study were analyzed in the E-Views 8 Program. In the study, which aims to examine the short and long-term risk and return of Participation30 and the BIST100 Index as of January 06, 2011, the causality relationship and stagnation of the indices were analyzed by using time series measurement methods.

21 of the 30 companies in the Participation30 Index are also included in the BIST100 companies, which corresponds to a ratio of 70%. In this context, the presence of 21 partner companies in the study and how these two indices affect the causality relationship is one of the important points for the study. When the ADF unit root test was examined, it was determined that the first differences between both variables did not contain a unit root. It has been observed as a result of the analysis that the error terms do not contain unit roots in the cointegration test of the series whose stationarity is determined. In this case, it is possible to say that there is a long-term relationship.

When the error correction model results of the series are analyzed, the Participation30 and Bist100 Indexes approach equilibrium in the long run. According to the conclusion we have reached here, the imbalances between the variables are corrected.

When the causality analysis was examined, a one-way relationship was determined. To express this relationship, the volatility in the Participation30 Index causes changes in the Bist100 Index as well. In this context, when there is any volatility in the Participation30 index, the same effects are observed in the BIST100 Index. On

the other hand, 79% of the 100 stocks in the BIST100 Index are not included in the participation index. In this respect, the volatilities in the BIST100 index do not cause a change in the short-term Participation30 index.

The results of the analysis show that the volatility in the BIST100 Index is not directly reflected in the Participation30 Index in the short term, but when the indices are considered in the long term, both tend to be the same.

Participation indices create an alternative market for investors who want to minimize their risk by diversifying their portfolio, as well as for entrepreneurs who are highly sensitive due to their religious beliefs. For investors with Islamic concerns, the Participation30 Index allows entrepreneurs to invest with peace of mind, without causing a loss of financial performance.

When the Participation30 Index and BIST100 indices are compared, it is possible to say that the Participation indexes offer alternative reliable investment opportunities for entrepreneurs and money managers.

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