

# Comparison of the Performances Islamic and Conventional Market Indices and their Causal Relationship

H. Ali ATA

*Gaziantep University, Department of Business Administration, Gaziantep/TURKEY*

Mehmet Fatih BUĞAN

*Gaziantep University, Department of Business Administration, Gaziantep/TURKEY*

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## Abstract

Although market indices created for the trading of Islamic funds are quite new compared to conventional market indices, because of their differences in risk-return ratios, they can perform better especially during crises. Therefore, in this study, performances of Islamic and conventional Dow Jones and Morgan Stanley indices created for Turkey have been compared for crisis periods and the possibility of a causal relationship between the indices has been investigated. As a result of comparisons made via t-Tests, it has been observed that there is no statistically significant difference between the averages of indices for each period. As a result of an asymmetric causality test, existence of a causal relationship in different time periods has been discovered between market indices. There were findings concerning asymmetric information phenomenon in the Morgan Stanley market indices and it has been determined that there is a stronger causal relationship between both the positive and the negative shocks of the Dow Jones market indices.

**Keywords:** Islamic Finance, Islamic Indices, t-Test, Rolling Window Asymmetric Causality Test

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## INTRODUCTION

Islamic financial investments which have reached quite high levels of trading volumes by achieving a fast growth trend in the recent years are distinguished from conventional investments by their characteristic features. Islamic financial investments are defined in the literature as social responsibility investments, faith-based investments or investments compatible with moral values. Actually it can be said that at the origin of moral investments lie perspectives of monotheistic religions towards commercial activities (Renneboog et al. 2008). For instance, as it is the case in the religion of Islam, charging interests for loans had been strictly forbidden until the 16<sup>th</sup> century in Christianity by the Catholic Church. Similarly, in the studies conducted in Malaysia in the mid-1980s, Sukuk<sup>1</sup>, which is a type of asset-based security, was designed in accordance with Islamic, Christian and Jewish religious rules (Abdul-Rahman, 2014).

It can be said that in addition to increasing the opportunities for investors with religious sensitivities to invest in the capital markets, Islamic financial investments, an alternative to the conventional investment instruments, have also been influential in the proliferation of Islamic finance. Especially during financial crises, they have started to be considered by investors also outside the Islamic geography as alternative reasons for hedging.

Indices created for the trading of Islamic funds are quite new compared to conventional indices. The first Islamic index is the DMI 150 index launched in 1998 by Faisal Finance and Bank Vontebel in order to measure the performance of 150 publicly traded global companies. The Dow Jones Islamic Market Index (DJIMI) whose data have been used in this study was created in 1999 (El Khalichi et al. 2014).

While the Dow Jones Islamic index was being created, questions of compliance with Islamic rules have been asked to scientists related to the subject and companies whose business did not involve production related to gambling, alcohol, hotels, entertainment, pork or similar products, from 34 different countries have been determined (Hussein 2007). In the creation of the index, stocks were required to hold up to three financial criteria. First of all, the ratio of total debt to total assets should not be equal to or higher than 33%. Second, the ratio of receivable accounts to total assets should not be equal to or higher than 45%. Third, non-operating interest income should not be equal to or higher than 5% (Some scholars argue that a level as high as 8%

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<sup>1</sup> Sharia-compliant bonds (t.n.)

could be permissible for granting a license). Companies meeting these criteria are included in the DJIM index. If it is determined by an inspection that a company no longer meets the criteria, which it has previously met, it is removed from the index (Hassan and Girard 2011). Similar criteria are applied for the MSCI Islamic index used in the study. Interesting results have been obtained in a study conducted by using the data of companies which have been approved by the board monitoring compliance with Islamic rules and are listed in BURSA, the stock exchange of Malaysia which has contributed substantially to the development of Islamic finance. It has been determined that only 198 out of 642 companies subject to the research meet the debt and liquidity criteria established by Dow Jones (Rahman et al. 2010). This situation shows that meeting the financial criteria is as important as being compliant with Islamic rules as a sphere of operation.

### LITERATURE

In the literature, Islamic and conventional market indices have been compared in terms of performance criteria. Besides, the existence of differences in terms of index performances has been investigated. In several studies conducted (Ahmed and Ibrahim (2002); Hussein (2004); Efkahani et al. (2005); Abdullah et al. (2007); Hasan et al. Girard (2011); Lobe et al., (2012); Albaity et al. Mudor (2012)), it has been observed that there is no statistically significant difference between the performances of Islamic indices and conventional indices. However, there can be differences in index performances during bear and bull market periods. In their study, Hussein (2004) states that Islamic indices perform better during bull market periods. However, Abdullah et al. (2007) have reached the conclusion that Islamic indices perform better during bear market rather than bull market periods. The study by Lobe et al. (2012) has provided results consistent with the study by Hussein (2004). In other words, Islamic indices show lower performance during a bear market period and higher performance during a bull market period. On the other hand, in their study on S&P Shariah Index and conventional indices, Alam and Rajjaque (2010) have found out that during periods of overall economic stagnation or distress Islamic indices perform better. Most recently, in a study conducted by Ho et al. (2014), it has been concluded that most of the Islamic indices perform better especially during crisis and what is called bear market periods. There are views which attribute the possible causes of differences among the results of conducted studies to regional economic conditions and market characteristics.

In terms of risk-based performance criteria, it has been concluded in a study conducted by Hakim and Rashidian (2004) that Islamic indices are not affected by the market and interest rates. However, in their study Lean and Parsva (2012) have determined that particularly during crisis periods Islamic indices are riskier and show a negative performance along with conventional indices. On the other hand, in their study on Indonesian indices, Sukmana and Kolid (2012) have compared Jakarta Islamic and conventional indices in terms of risks and have concluded that the Islamic indices are less risky. In the conducted studies, although different results have been reached in terms of the Islamic indices' risk and return performances, findings concerning how the Islamic indices show higher performances especially during post-crisis periods are prevalent.

In the study by Albaity and Mudor (2012) on the causal relationship between Islamic and conventional indices, the Islamic indices in Malaysia have been compared with non-Islamic indices and it has been concluded that, in terms of long term relationships in pre- and post-crisis periods, the Islamic indices are more integrated. It has been determined that in the sub-periods between Islamic indices, causality is unidirectional in the short term and similarly the conventional indices show unidirectional causality during periods of financial crisis.

In this study as well, international Islamic and conventional indices created for Turkey have been compared and it has been examined whether or not there were differences in terms of index performances during crisis periods. Moreover, the existence of a causal relationship between indices has been investigated.

### DATA AND METHODOLOGY

The Dow Jones and Morgan Stanley Islamic indices used in the study have been being calculated since 2004. Calculations of conventional indices are dated even older. Therefore, index data are considered adequate to compare 2008 pre-crisis, crisis and post-crisis periods. The Islamic and conventional indices were calculated based on monthly percentage changes for each period in a way that would allow performance comparison. Four analysis periods consisting of all periods (2005-2014), pre-crisis period (2005-2007), crisis period (2008-2009) and post-crisis period (2010-2014) were created. The data used in the study were collected from the S&P Dow Jones Index and MSCI database.

In the comparison of Islamic and conventional index performances, the existence of any significant difference in market indices during pre-crisis, crisis and post-crisis periods has been tested with an independent samples t-Test. In the study, causal relationship between indices has also been investigated. Within this scope,

first of all ADF unit root test has been implemented in order to examine the stationarity of the series. ADF unit root test is a test which does not take into consideration structural changes. If there are structural breaks in the series, traditional tests can yield misleading results. Therefore Zivot and Andrews (1992) unit root test which takes into consideration structural breaks has been implemented in the study.

The causal relationship between Islamic and conventional market indices has been examined with Hatemi-J (2012) asymmetric causality test. According to Hatemi-J (2012), the existence of asymmetric information in financial markets should be taken into consideration when analyzing the causal relationship in the series. The reason is that the impact of negative shocks which take place in the series is more distinctive relative to positive shocks. Inspired by Granger and Yoon's (2002) study, Hatemi-J (2012) divided the series into positive and negative shocks and investigated the causality between the shocks. In response to the problems of non-normal distribution of series and heteroscedasticity, critical values have been collected with the bootstrap simulation method.

Causal relationship between the series can change in a specific time period as a result of structural changes experienced due to economic and social developments. While in a specific period of time there are not any causal relationships between two series, a causal relationship can be observed at the levels of subsample (Balcilar and Ozdemir, 2013; Inglesi-Lotz et al. 2014). For this reason, the analysis of causality in rolling windows has taken place in two stages. In the first stage, an appropriate window size has been determined. This window size should be big enough to allow for significant test statistics and should be small enough to capture structural changes in the analysis period. In the study, the window size has been set as 60. In the second stage, Hatemi-J (2012) causality test has been applied to a number of observations equal to the determined window size and the resulting MWALD test statistics has been divided by the 10% bootstrap critical value and thereby normalized. The test statistics and the bootstrap critical values have been calculated for each window encompassing 60 observations from the first observation date of January 2005 to the last observation date of December 2014. Normalized test statistics have been transformed to a line chart and the existence of a causal relationship has been determined for cases where the line goes above the "y=1" line parallel to the horizontal axis on the chart.

### EMPIRICAL FINDINGS

In the study, a two-stage analysis has been conducted in order to compare the Islamic and conventional market indices and examine the causal relationship between them.

#### t-Test Results

By using the index data for the pre-crisis, crisis, post-crisis and all periods, the existence of a significant difference between Islamic and conventional indices has been tested with an independent samples t-Test. The results of the analysis have been summarized in Table 1. According to this, it has been observed that there is not a statistically significant difference between the averages of conventional and Islamic indices.

**Table 1. t-Test Results**

<b>Overall Period</b>	<b>Cor. Coeff.</b>	<b>t value</b>	<b>p value</b>
DJ Islamic-DJ Conventional	0,849	1,269	0,207
MSCI Islamic-MSCI Conventional	0,88	0,104	0,918
<b>Pre-Crisis (2005-2007)</b>	<b>Cor. Coeff.</b>	<b>t value</b>	<b>p value</b>
DJ Islamic-DJ Conventional	0,882	1,644	0,109
MSCI Islamic-MSCI Conventional	0,94	0,376	0,709
<b>Crisis Period (2008-2009)</b>	<b>Cor. Coeff.</b>	<b>t value</b>	<b>p value</b>
DJ Islamic-DJ Conventional	0,908	0,18	0,858
MSCI Islamic-MSCI Conventional	0,869	0,664	0,514
<b>Post-Crisis (2010-2014)</b>	<b>Cor. Coeff.</b>	<b>t value</b>	<b>p value</b>
DJ Islamic-DJ Conventional	0,761	0,657	0,514
MSCI Islamic-MSCI Conventional	0,853	-0,746	0,458

For all periods, we have observed a high correlation between the Islamic and conventional indices with a significance level of 0.05. However, it has been found out that there is not a statistically significant difference between Islamic and conventional index averages.

### The Results of the Unit Root and Causality Tests

In order to examine the stationarity of Islamic and conventional indices, ADF unit root test has been applied in the study. However, as the ADF unit root test does not take into consideration structural changes, Zivot and Andrews (1992) unit root test which takes structural breaks into account has been implemented.

The results of the unit root test are shown in Table 2. According to the ADF unit root test results, while the DJIM and DJTR contain level value unit root, MSTR and MSIS are stationary. It is understood that the shocks that will take place in the Morgan Stanley indices are temporary and that these indices are more stable. According to the Zivot and Andrews (1992) unit root test, all of the series are stationary with structural breaks. Therefore, the effects of shocks in the series are not permanent. In addition, when the dates of the structural breaks are looked into, it can be observed that 09/2008 points to a global financial crisis and 03/2010 points to the period when the effects of the financial crisis in Turkey were receding, economy was revitalizing and risk perception was decreasing.

**Table 2. Unit Root Test Results**

	ADF		Zivot ve Andrews (1992)	
	Test Statistics	p value	Test Statistics	Break Date
			Trend&Intercept	
DJIM	-0.4409	0.8971	-5.3541**	08/2008
DJTR	-0.7981	0.8154	-5.6132*	03/2010
MSIS	-3.6519*	0.0062	-7.0894*	08/2008
MSTR	-4.1288*	0.0013	-5.1067**	08/2008

\* Indicates significance at the 1% level. (Critical Value=-5,57)

\*\* Indicates significance at the 5% level. (Critical Value=-5,08)

The existence of potential causality between the Dow Jones and Morgan Stanley Islamic and conventional market indices has been analyzed with Hacker and Hatemi-J (2006) causality test. Test results are shown in Table 3.

**Table 3. Causality Test Results**

H <sub>0</sub> Hypothesis	MWALD Statistic	%1 Bootstrap Critical Value	%5 Bootstrap Critical Value	%10 Bootstrap Critical Value
DJTR =>DJIS	0.43	7.129	3.932	2.771
DJIS =>DJTR	0.332	6.909	3.949	2.734
MSTR=>MSIS	0.585	6.912	3.812	2.676
MSIS =>MSTR	3.115*	7.045	3.979	2.715

\* Indicates significance at the 10% level.

According to Table 3, there is a unidirectional causal relationship from the Morgan Stanley Islamic index to the conventional index. No causal relationship has been observed between the Dow Jones indices. The results of the asymmetric causality test in rolling windows are located in Figure 1 and Figure 2. The letters "P" and "N" in front of the names of the series in the figures represent positive and negative shocks respectively. Causal relationship between the Dow Jones indices can be seen in Figure 1 and between the Morgan Stanley indices in Figure 2.

According to Figure 1, a clear causal relationship from DJTR's positive shocks to DJIS's positive shocks between 05/2012 and 07/2014 can be observed. With fluctuations, this relationship was bilateral between 05/2012 and 12/2013. It is observed that the causal relationship from DJTR's negative shocks to DJIS's negative shocks was stronger than the positive relationship in the same direction and had continued until 05/2013. Except for short terms of relationship in different periods, a strong causal relationship from DJIS's negative shocks to DJTR's negative shocks between 10/2012 and 08/2013 has been detected. While in the Hacker and Hatemi-J (2006) causality test no causal relationship between the two series for the Dow Jones indices has been seen, it is observed that asymmetric causality occurred during periods of structural change.

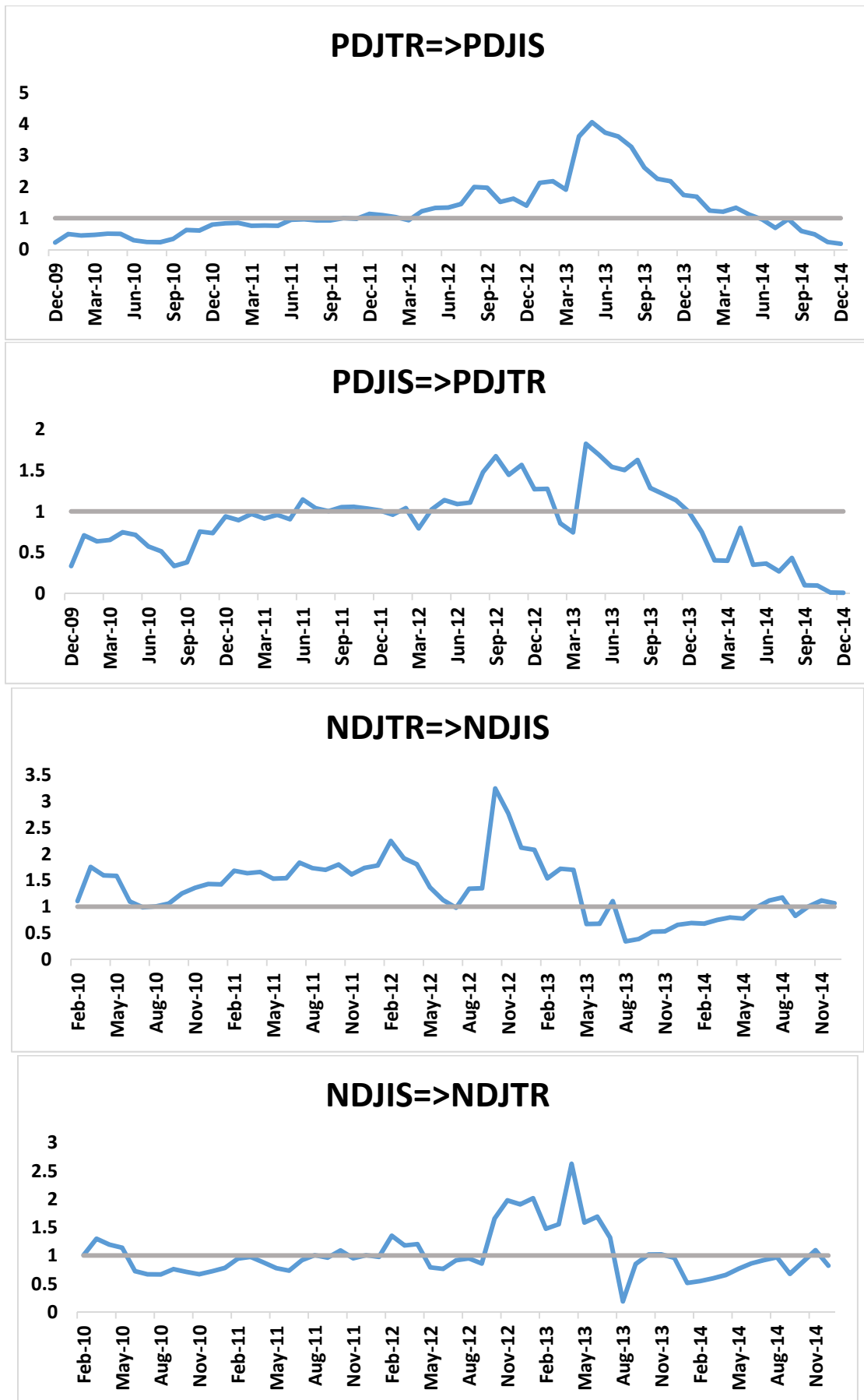


Figure 1. Dow Jones Indices Rolling Window Causality

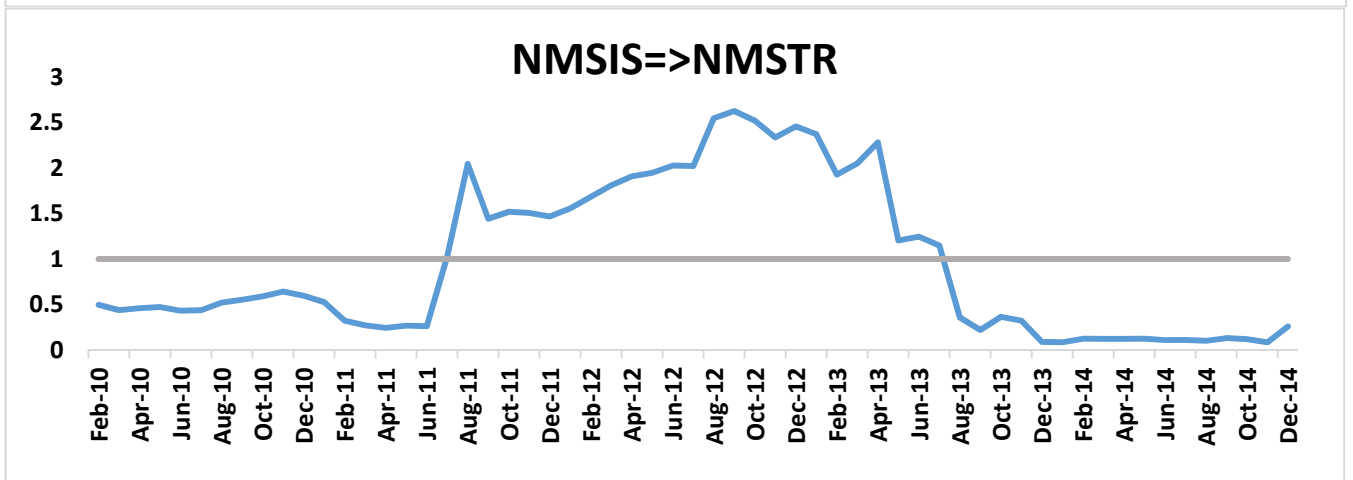
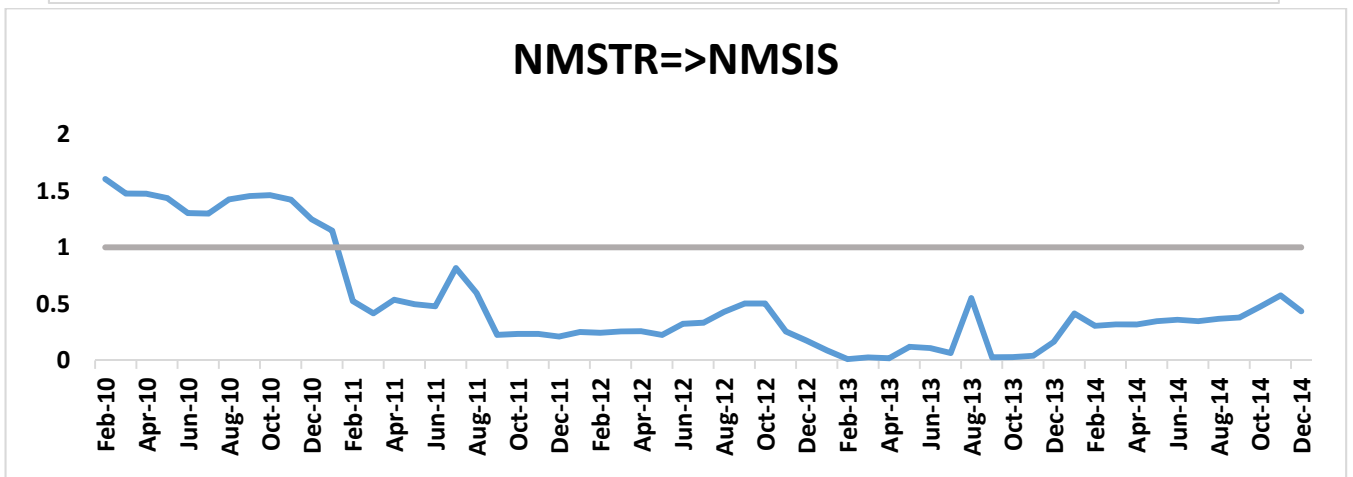
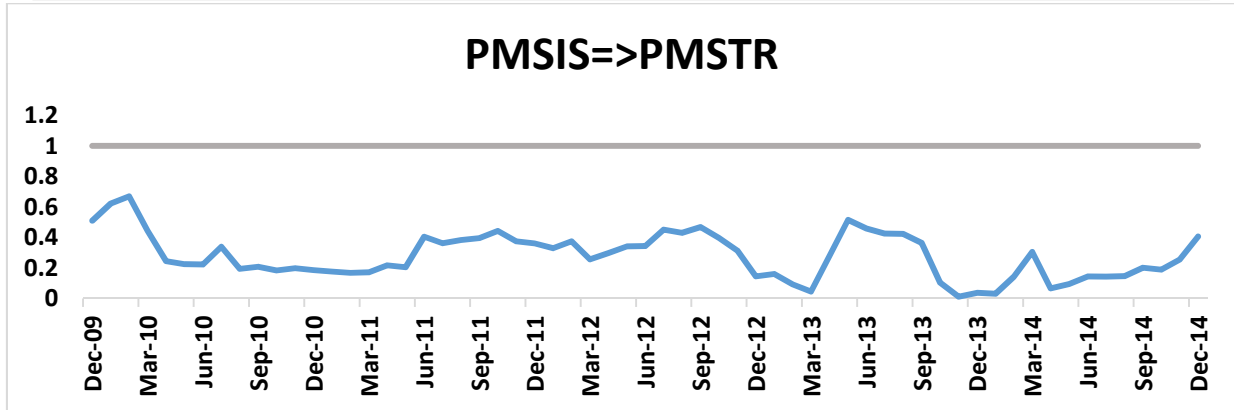
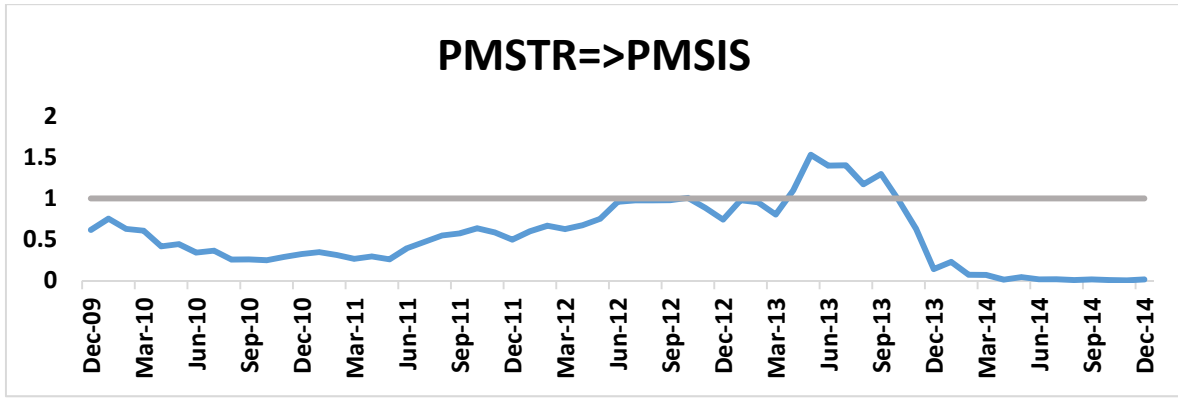


Figure 2. Morgan Stanley Indices Rolling Window Causality

According to Figure 2, there is a unidirectional causal relationship from MSTR's positive shocks to MSIS's negative shocks between 05/2013 and 11/2013. In the rolling windows throughout the analysis period, this relationship has progressed unilaterally. There has been a unidirectional causal relationship from MSTR's negative shocks to MSIS's negative shocks until 01/2011.

There has been a strong unidirectional causal relationship from MSIS's negative shocks to MSTR'S negative shocks between 07/2011 and 08/2013. It is understood that the unidirectional causal relationship in Hacker and Hatemi-J (2006) is caused by this relation. In addition, the lack of any causal relationship from MSIS's positive shocks to MSTR's positive shocks and the lack of any strong causal relationship in the negative shocks in the same direction show that the asymmetric information phenomenon is in effect.

### CONCLUSION

With the increasing popularity of the Islamic indices, demand for investment instruments in compliance with Islamic rules has increased and within this scope, Islamic market indices have started to be calculated in different countries in addition to the conventional index calculation. In this study, a comparison of Islamic indices created for Turkey and conventional indices has taken place. At the end of the study, it has been found that there is not a statistically significant difference between the Dow Jones and Morgan Stanley Islamic and conventional market indices in pre- and post-2008 crisis periods.

As a result of the unit root test conducted within the scope of the analysis, it has been determined that the Morgan Stanley indices are stationary at the level value while the Dow Jones indices are stationary at the level value with structural breaks. As a result of the Hacker and Hatemi-J (2006) causality test, a unidirectional causality has been observed only from the Morgan Stanley Islamic index to the conventional index. However, as a result of the changing asymmetric causality test in rolling windows, it has been observed that there is a causal relationship between the series in different time periods as well. In the Morgan Stanley indices, findings concerning the asymmetric information phenomenon have been discovered and stronger causal relationships have been observed between both the positive and negative shocks of the Dow Jones indices. This situation shows that the Morgan Stanley indices are more sensitive to only negative shocks while the Dow Jones indices are more sensitive to both positive and negative shocks.

Although especially during crisis periods there is not a significant difference between Islamic and conventional market indices, the discovery of a bilateral causality in the Dow Jones indices shows that there is a difference in terms of the risk and return preferences of investors. In the Morgan Stanley indices, a unidirectional causal relationship from conventional indices to Islamic indices in positive shocks was observed while in negative shocks there was a case of strong causal relationship from Islamic indices to conventional indices.

In the literature, studies on the causal relationship between Islamic and conventional market indices are very limited. There are not any studies on asymmetric causal relationships between Islamic and conventional indices created for Turkey that take into consideration the structural breaks as well. Therefore, the findings collected in this study are expected to contribute to the relevant literature.

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