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The Relationship Between Consumers' Expectation for the Future of Economy and Stock Value: A Cross-County Analysis

Tüketicilerin Ekonominin Geleceğine Dair Beklentileri ile Hisse Değeri Arasındaki İlişki: Ülke Karşılaştırmalı Bir Analiz

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Anahtar Kelimeler:

Tüketici Güveni, Stok Değeri, Nedensellik, Etki Tepki

ÖZET

Bu çalışmanın amacı, tüketicilerin ekonominin geleceğine dair beklentiler ile hisse senedi değeri arasındaki uzun ve kısa dönemli ilişkileri Türkiye, İtalya, İspanya ve Yunanistan'da analiz etmektir. Analizler, 2002 Ocak- Ocak 2012 dönemine ait aylık frekansta 121 gözlemden oluşan veri seti kullanılarak gerçekleştirilmiştir. Çalışmada incelenen değişkenler arasındaki uzun dönemli ilişkiler eşbütünleşme yöntemi kullanılarak incelenmiştir. Kısa dönemli ilişkilerin araştırılmasında ise nedensellik ve etki tepki yöntemleri kullanılmıştır. Yapılan analizler sonunda, Türkiye ve İspanya'da tüketicilerin ekonominin geleceğine dair beklentileri ile hisse senedi değeri arasında kısa ve uzun dönemde bir ilişki olduğu tespit edilmiştir. İtalya ve Yunanistan'da ise tüketici güven endeksi ile hisse senedi değerleri arasında uzun dönemde bir ilişki tespit edilmemesine rağmen kısa dönemde hisse senedi değerinden güven endeksi yönünde nedensellik ilişkisi olduğu görülmüştür. Her bir ülke için yapılan etki tepki analizlerinde ise, hisse senedi değerinde ortaya çıkan bir şoka güven endeksinin pozitif yönde tepki verdiği ancak şiddetinin her bir ülke için farklı olduğu görülmüştür.

Keywords:

Consumer Confidence, Stock Value, Causality, Impulse Response

ABSTRACT

The objective of this paper is to investigate the relationship between consumers' expectations about the future of the economy and stock value in Turkey, Italy, Spain and Greece. The analyses were realized on the totally 121 observations, monthly frequency, belonging to period of January 2002-January 2012. For long term relationship between variables, cointegration method was employed. On the other hand, causality and impulse response methods were used to investigate into short term relationship between variables. After analyses implemented, it is captured that there is a short and long term relationship between consumers' expectations about the future of the economy and stock value in Turkey and Spain. The other empirical finding is that whereas the long term relationship is not available, short term causality relationships are observed in Italy and Greece. The Granger causality is from stock value to consumer confidence index in all examined countries. The response of the consumer confidence index is positive to shock originated in the stock index in all analyzed countries.

JEL Classification: C22, G12, G19.

1. INTRODUCTION AND LITERATURE

Optimism in consumer confidence may trigger desire for making large expenses and increase the tendency for borrowing, while pessimism may cause consumers to reduce their expenditures (CBRT, 2012). Confidence also affects to the consumer tendency. Katona (1968) refers that consumption is connected with both purchasing power of consumers and their willingness to purchase. Whereas Roos (2008) refers to purchasing power is related objective factors, the request of purchase depends on subjective factors. In this sense, the starting point of consumption is cognitive and it goes to real economy, also to stock market. Many studies which examines the relationship between the real economy and the stock market are seen in literature. Carroll, et al. (1994), Bram and Ludvigson (1998) find that an increase in the consumer sentiment leads to consumption growth in the short term in US. The indirect channel of consumer confidence played an indirect role on the Great Depression. The October 1929 stock market crash and the subsequent stock market volatility in 1930 caused a sharp increase in uncertainty, which led to a large-scale postponement of purchases of durable goods by consumers Romer (1990).

[1] All the views expressed in the paper belong to the author and do not represent those of the Central Bank of the Republic of Turkey, or its staffs.

In the theoretical literature, there are three outstanding theory between stock market and real economy. The first is called as conventional wealth effect which is about consumption. The second is Tobin's Q theory about investment and the last one is about expenditure. Besides, there are many studies recently based on that rising stock markets cause of the consumers feel better about the future, so they spend more (Jansen and Nahuis, 2002). A decrease in consumer confidence could lead to lessen in consumer spending. In other word, optimist consumers spend more, simultaneously increasing firms' profits and raising the firms' stock prices Dale Bremmer (2008).

In line with, there are many academic studies investigating in the consumer expectations about the future of economy and stock value. Consumer confidence index are represented to consumers feels or expectations about future of the economy in the most of these studies. Otoo (1999) finds that changes in equity values and consumer sentiment are contemporaneously correlated. It is also stated that an increase of the equity prices leads to boost consumer confidence with a lag, but that the reverse does not run. Jansen and Nahuis (2002) studied the (short-run) relationship between stock market developments and consumer confidence in eleven European countries over the years 1986-2001. In their paper, Granger causality method was employed. At the end of study, they found that stock returns and changes in sentiment are positively correlated for nine countries, with Germany as the main exception. Moreover, stock returns generally Granger-cause consumer confidence at very short horizons (two weeks to one month), but not vice versa. Statman and Fisher (2002), Huth (2003) find a positive relationship between consumer confidence and current stock returns in US. It is also found that the causality is from stock value to consumer confidence index. Kremer and Westermann (2004) find a unidirectional causality running from stock prices to consumer confidence. Lemmon and Portniaguina (2006) show evidence that consumer confidence only forecasts the returns of small stocks and stocks with low levels of institutional ownership in US. Hong et al. (2007) states that there are greater co-movements when the stock market goes down than when it goes up. Best (2008) finds that average increases in the S&P 500, Dow Jones Industrial Average, and Nasdaq indexes are well explained by the increases in CEO confidence in the period January 2000 - April 2008. Karnizova and Khan (2010) stated asymmetric effects of stock price changes on confidence changes. They indicated that declining of the stock index have larger and statistically more significant effects relative to its increases in Canada. Chen (2011) found that market pessimism has more impacts on stock returns during in the bear markets. Besides, the lack of consumer confidence causes of a higher probability of switching to a bear market regime. Movements in stock indices influence consumer confidence through two separate channels. The first channel is the traditional wealth effect where movements in stock indices cause changes in households' current wealth which directly influences consumer sentiment. The second channel is the "leading indicator" channel, in which consumers interpret current changes in stock exchange index as reliable indicators of future income changes (Poterba and Samwick, 1995; Morck, et. all, 1990).

The objective of this paper is to investigate the relationships between consumers' expectations about the future of the economy and stock value in Turkey, Italy, Spain and Greece. Turkey is the candidate country of European Union. Italy, Spain and Greece are the Union Countries. The primary similarity of the four countries is their basis on the Mediterranean countries. There is a common opinion about Mediterranean countries people patterns resembling each other. Besides, especially Greece and Italy suffer some economic problems. All these are the primary motivation factors behind of the paper.

The plan of the rest of the paper is as follows. In section 2, the variables and data set are explained. In section 3, the methods implemented in paper are introduced. The empirical findings are given in section 4 and Section 5 concludes.

2. DATA SET

Consumer confidence index as the indicator of consumer expectations for the future of economy and stock exchange index of the investigated countries are the primary variables used within the analysis. The CNBC –e consumer confidence index (TCCI) is used for Turkey. The consumer confidence indices for Italy (ICCI), Spain (SCCI) and Greece (GCCI) are taken from European Commission Economic and Financial Affairs web page (ECEFA, 2012). The figure of 100 is added to every confidence index value. If the index value is bigger than 100, it shows optimist expectation of consumers for the future of economy and vice versa.

Another variable is the stock exchange index of investigated countries as the indicator of stock value. ISE national 100 index (ISE100), taken from CBRT web page (CBRT 2012), for Turkey. The stock exchange index of Italy (FTSEMIB), Spain (MADX), Greece (ASE) are taken from Bloomberg. The analyses were realized on the totally 121 observations belonging to period of January 2002-January 2012, monthly frequency. All analyses are realized by Eviews 6 and at statistical significance level of 5%.

3. METHODS

3.1. Stationary

Before analyzing with time series, it should be tested whether the series of the variables are stationary or not. Stationary testing is also known unit root test. In case of studying with non-stationary time series, there is probability of encounter spurious regression problem. In this case, the results of the regression analysis do not reflect the real relationship between

examined variables (Gujarati 1999). There are some methods to search whether a series is stationary or not. The most widely used tests are Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) test which takes into account structural break and trend to be likely in time series. In this study, these two methods are used to investigate whether series are stationary or not. The accounted t statistic are encountered with critical value and decided to rejection or acceptation of H_0 hypothesis (Enders 1995). If the accounted value in absolute is bigger than critical value, H_0 hypothesis is rejected and decided that the time series is stationary.

The equations used in ADF (1) and PP (2) tests are given below;

$$\Delta Y_t = \beta_0 + \beta_1 t + \delta Y_{t-1} + \sum_{i=1}^{m} \beta_i \Delta Y_{t-i} + u_t \quad (1)$$

$$\Delta Y_t = \alpha_o + \alpha_1 (t - T/2) + \alpha_2 Y_{t-1} \sum_{i=1}^{m} \Delta Y_{t-i} + \varepsilon_t \quad (2)$$

In these equations, ΔY =Y-Y(t-1); t, trend variable, ε_t stochastic error terms and T indicates total observation number.

3.2. Cointegration Test

Cointegration test is applied to examine if there is a long term relationship among the investigated variables. When two variables are individually I(1), they are said to be cointegrated. This paper employs the cointegration test procedure developed by Johansen (1995). To make inference regarding the cointegrating relationship, the trace and maximum eigen-value are compared with tabulated in Osterwald-Lenum (1992).

3.3. Causality Test

Granger causality test is used to specify direction of the relationship of variables (Granger, 1969). The model given below is estimated to determine the direction of causality.

$$Y_t = \alpha_0 + \sum_{i=1}^{k1} \alpha_i Y_{t-i} + \sum_{i=1}^{k2} \beta_i X_{t-i} + \varepsilon_t \quad (5)$$

$$X_t = \chi_0 + \sum_{i=1}^{k3} \chi_i X_{t-i} + \sum_{i=1}^{k4} \delta_i Y_{t-i} + \nu_t \quad (6)$$

In these equations, k is the length of lag; ε_t and ν_t white noise error term (Granger 1969). If all of the coefficients of α in the equation (5) are meaningless as a whole, whereas all of the coefficients of δ in equation (6) are significant as a whole, there is one way causality from Y to X. In other words, Y is Granger causality of Y (Grene 2008).

3.4. Impulse-Response

Impulse-response is a method which is used to analyze the variables' reaction (what direction and what extent) to shock of error terms of variables in the model. More generally, an impulse response refers to the reaction of any dynamic system in response to some external change. Impulse responses trace out the responsiveness of the dependent variables in the VAR to shocks to each of the variables. So, for each variable from each equation separately, a unit shock is applied to the error, and the effects upon the VAR system over time are noted. Thus, if there are g variables in a system, a total of g2 impulse responses could be generated (Brooks, 2008).

4. EMPIRICAL RESULTS

Before proceeding to the analysis process, the natural logarithms of all the data is taken, then it is investigated whether they are stationary or not. As seen in Table 1, although the variables are not stationary on the level, they are stationary at fist differences for the both constant and constant-trend models. In other words all variables are I(1) according to ADF and PP test results.

Table 1. Stationary test results

	Level				First Difference			
	ADF		PP		ADF		PP	
	Constant	Constant and Trend	Constant	Constant and Trend	Constant	Constant and Trend	Constant	Constant and Trend
IMKB100	-1,4425 (0.5592) [1]	-1,7108 (0,7406) [1]	-1,2028 (0,6717) [6]	-1,8401 (0.6790) [6]	-9,0111** (0.0000) [0]	-9,0202** (0,0000) [0]	-9,0622** (0,0000) [4]	-9,0597** (0.0000) [4]
FTSEMIB	-1,1485 (0,6946) [3]	-1,5564 (0,5564) [3]	-0,9159 (0,7802) [7]	-1,376 (0,8632) [7]	-4,8269** (0.0001) [2]	-4,8571** (0.0007) [0]	-9,6082** (0.0000) [6]	-9,6043** (0,0000) [3]
MADX	-1,2371 (0,6567) [0]	-0,7609 (0,9655) [0]	-1,438 (0,5614) [5]	-1,0499 (0,9321) [5]	-9,4097** (0,0000) [0]	-9,4677** (0,0000) [0]	-9,4683** (0,0000) [5]	-9,4889** (0,0000) [4]
ASE	-0,2348 (09297) [1]	-0,0986 (0,9944) [0]	-0,1877 (0,9358) [6]	-0,5213 (0,9813) [5]	-8,355** (0,0000) [0]	-8,5972** (0,0000) [0]	-8,521** (0,0000) [5]	-8,6538** (0,0000) [4]
TCCI	-3,1238 (0,0274) [1]	-3,3671 (0,0608) [1]	-2,6326 (0,0893) [7]	-2,8663 (0,1772) [7]	-9,7491** (0,0000) [0]	-9,7102** (0,0000) [0]	-10,6844** (0,0000) [22]	-10,6203** (0,0000) [22]
ICCI	-1,7565 (0,4004) [0]	-3,2684 (0,0766) [0]	-1,2671 (0,6432) [2]	-3,2557 (0,0788) [5]	-10,3254** (0,0000) [1]	-10,2809** (0,0000) [1]	-13,5704** (0,0000) [2]	-13,5132** (0,0000) [2]
SCCI	-1,7441 (0,4066) [0]	-1,8289 (0,6846) [0]	-2,0899 (0,2491) [5]	-2,2637 (0,4500) [5]	-9,3199** (0,0000) [0]	-9,2795** (0,0000) [0]	-9,3899** (0,0000) [4]	-9,3506** (0,0000) [4]
GCCI	-0,1519 (0,9402) [0]	-1,6514 (0,7664) [0]	0,3049 (0,9777) [3]	-1,5384 (0,8109) [1]	-12,0437** (0,0000) [0]	-12,1561** (0,0000) [0]	-12,1339** (0,0000) [2]	-12,4784** (0,0000) [5]

MacKinnon (1996) one-sided p-values. [ ] lag lengths for models. H_0: Series is not stationary. (ADF-PP),
**, * represent the statistical significance level of 1% and 5% respectively.

4.1. Long Term Relationship

Johansen cointegration test is employed for analyzing the long term relationship between the variables. The lag order is taken as 2 according to Akaike and Hannan-Quin Information Criteria. The long term relationship between consumer confidence index and stock exchange index is analyzed for each country by using unrestricted cointegration method and test results are presented in Table 2. As shown in the Table, there is one a cointegration vector between consumer confidence index and stock exchange index at statistical significance level of the %1 according to both trace and max-eigen statistics in Turkey. In Spain, there is one cointegration vector at statistical significance level of the %1 according to trace statistics. These findings indicate that there is long term relationship between consumer confidence index and stock exchange index in Turkey and Spain. On the other hand, there is not such a long term relationship according to both max-eigen and trace statistics in Italy and Greece as seen in Table2.

Table 2. Cointegration Test Results (Unrestricted Rank Test)

TURKEY
Trace

H_0	H_n	Eigenvalue	Trace Statistic	1% Critical Value	Probability
r=0	r=1	0,1731	24,8933**	19,9371	0,0015
r≤1	r=2	0,0207	2,4715	6,6349	0,1159

Maximum Eigenvalue

H_0	H_n	Eigenvalue	Ma-Eigen Statistic	1% Critical Value	Probability
r=0	r=1	0,1731	22,42178**	18,5200	0,0021
r≤1	r=2	0,0207	2,4715	6,6349	0,1159

ITALY
Trace

H_0	H_n	Eigenvalue	Trace Statistic	1% Critical Value	Probability
r=0	r=1	0,0334	5,5332	19,9371	0,7499
r≤1	r=2	0,0137	1,5957	6,6349	0,2065

Maximum Eigenvalue

H_0	H_n	Eigenvalue	Ma-Eigen Statistic	1% Critical Value	Probability
r=0	r=1	0,0334	3,9374	18,5200	0,8659
r≤1	r=2	0,0137	1,5957	6,6349	0,2065

SPAIN
Trace

H_0	H_n	Eigenvalue	Trace Statistic	1% Critical Value	Probability
r=0	r=1	0,1096	15,7108*	19,9371	0,0464
r≤1	r=2	0,0170	2,0174	6,6349	0,1555

Maximum Eigenvalue

H_0	H_n	Eigenvalue	Ma-Eigen Statistic	1% Critical Value	Probability
r=0	r=1	0.109566	13.69342	18.52001	0.0614
r≤1	r=2	0.016951	2.017378	6.634897	0.1555

GREECE
Trace

H_0	H_n	Eigenvalue	Trace Statistic	1% Critical Value	Probability
r=0	r=1	0,0340	4,0166	19,9371	0,9022
r≤1	r=2	0,0000	0,0002	6,6349	0,9892

Unrestricted Rank Test (Maximum Eigenvalue)

H_0	H_n	Eigenvalue	Ma-Eigen Statistic	1% Critical Value	Probability
r=0	r=1	0,0340	4,0163	18,5200	0,8576
r≤1	r=2	0,0000	0,0002	6,6349	0,9892

- **, * Trace and max-eigenvalue tests indicate 1 cointegrating eqn(s) at statistical significance level of the %1 and %5 level respectively.
- Probability, MacKinnon-Haug-Michelis (1999) p-values.

4.2. Short Term Relationship

The short term relationship between examined variables is investigated by Granger Causality/Block Exogeneity Wald Test and impulse response analysis. Granger Causality/Block Exogeneity Wald Test results are presented in Table 3. As seen in the Table, the causality is from stock exchange index to confidence index but not vice versa in Turkey, Spain and Greece. In other word, the causality relationship is one way from d(ISE100) to d(TCCI) in Turkey. It is from d(MADX) to d(SCCI) in Spain and from d(ASE) to d(GCCI) in Greece. Lastly, causality relationship is reciprocal in Italy. While d(FTSEMIB) is the Granger cause of d(ICCI) at statistical significance level of the %1, d(ICCI) is also Granger cause of d(FTSEMIB) at statistical significance level of the %5 in Italy.

Table 3. Granger causality test results

TURKEY / VEC Granger Causality/Block Exogeneity Wald Test Results			
Dependend Variable: d(TCCI)	**Chi-sq**	**df**	**Prob.**
d(IMKB100)	12,2090	2	0,0022**
Dependend Variable: d(IMKB100)	**Chi-sq**	**df**	**Prob.**
d(TCCI)	1,2260	2	0,5417

ITALY / VAR Granger Causality/Block Exogeneity Wald Test Results			
Dependend Variable: d(ICCI)	**Chi-sq**	**df**	**Prob.**
d(FTSEMIB)	13,4294	4	0,0094***
Dependend Variable: d(FTSEMIB)	**Chi-sq**	**df**	**Prob.**
d(ICCI)	11,3776	4	0,0226**

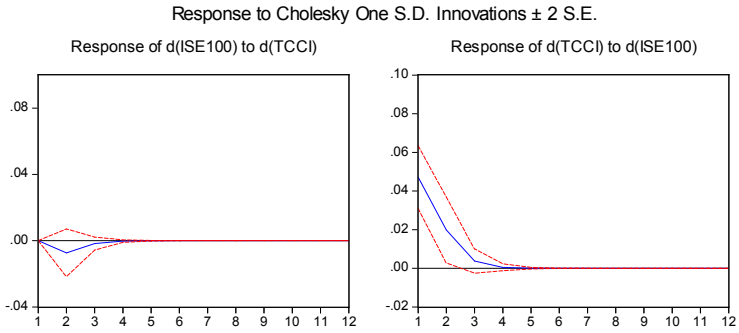
SPAIN / VEC Granger Causality/Block Exogeneity Wald Test Results			
Dependend Variable: d(SCCI)	**Chi-sq**	**df**	**Prob.**
d(MADX)	14,5136	2	0,0007***
Dependend Variable: d(MADX)	**Chi-sq**	**df**	**Prob.**
d(SCCI)	4,6685	2	0,0969*

GREECE / VAR Granger Causality/Block Exogeneity Wald Test Results			
Dependend Variable: d(GCCI)	**Chi-sq**	**df**	**Prob.**
d(ASE)	16,9207	4	0,002***
Dependend Variable: d(ASE)	**Chi-sq**	**df**	**Prob.**
d(GCCI)	6,5097	4	0,1642

**, * represent the statistical significance level of 1% and 5% respectively.

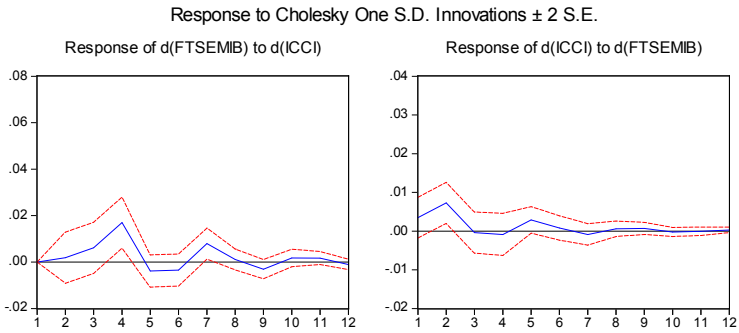
Impulse-response analysis was applied to see the reaction to the shock originated in the investigating variables and the results were presented in Figures below.

As seen in Graph 1, there is no reaction of d(ISE100) to shock (1 standard deviation)originated in the d(TCCI). The response of the d(TCCI) to shock originated in the d(ISE100) is positive in Turkey. The magnitude of the response is approximately 5%.



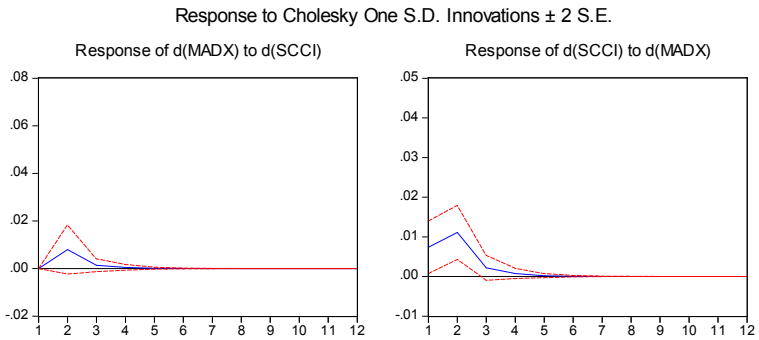
Graph 1. Impulse Response Graphs for Turkey

The impulse response results of Italy are given in Graph 2. As seen in the Graph, there is no reaction of d(FTSEMIB) to shock originated in the d(ICCI) initially. The response of the d(ICCI) to shock originated in d(FTSEMIB) is positive (approximately 0,5 %).



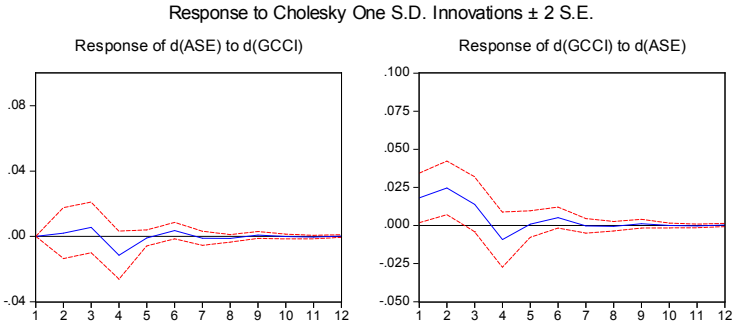
Graph 2. Impulse Response Graphs for Italy

The impulse response analysis was implemented for Spain and the results are given in Graph 3. As seen in the Graph, there is no reaction of d(MADX) to shock originated in the d(SCCI) initially like other countries. The response of d(SCCI) to shock originated in d(MADX) is positive (approximately 0,8 %).



Graph 3. Impulse Response Graphs for Spain

As seen in the impulse response analysis results of Greece (Graph 4), there is no reaction of d(ASE) to shock originated in the d(GCCI) initially like other countries. The response of d(GCCI) to shock originated in d(ASE) is positive and its value is approximately 0,2 % .



Graph 4. Impulse Response Graphs for Greece

5. CONCLUSIONS

In this study, the long and short term relations between consumer expectations for the future of the economy and stock value are investigated in Turkey, Italy, Spain and Greece. The analyses were realized on the totally 121 observations belonging to period of January 2002-January 2012, monthly frequency.

At the end of cointegration analysis, it was found that a long term cointegration relationship available between consumer confidence index and stock value in Turkey and Spain. In other word, consumer confidence and stock exchange indices co-move together in the long term in Turkey and Spain. But there is not such a long term relationship between examined variables in Italy and Greece. The short term relations between consumer confidence index and stock exchange index were analyzed by Granger causality and impulse response analysis. It was found that the causality is from stock exchange index to consumer confidence index in investigated countries. While the causality relationship is one-way, from stock exchange index to consumer confidence index, in Turkey, Spain and Greece, it is reciprocal in Italy.

It is seen that the consumer confidence index response positively to shock originated in stock exchange index, but its magnitude is different for all the countries. Looking at the country level, the most serious response to shock originated in the consumer confidence index is seen respectively in Turkey, Greece, Spain and Italy.

Consequently, it was determined that there is a similarity in terms of the long term relationship between consumer index and stock value in Turkey and Spain. Additionally, it is found that the development in the stock market is one of the determinants which affects consumer confidence index in all investigated countries in short term.

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