

Effects Of Expectations And Confidence Indices On Financial Markets*

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ABSTRACT

Financial markets, financial decisions and risk, as well as the way in which stock prices and returns are estimated, are the most researched topics in financial literature. There are many economics and financial theories developed, discussed and modelled in the literature. An important part of these theories and models is assessing psychological factors, which affect investors and financial decisions. The study of Kahneman and Tversky (1979) showed that the psychology of investors affects stock prices. One of the first finance theories and models, also known as the traditional finance theory, states that the investors are rational and markets are efficient. On the other hand, the second one known as behavioral finance theory, states that markets are not efficient and investors are irrational, implying that psychological and emotional characteristics of investors effect investors' decisions.

This study firstly deals with anomalies in financial markets, rumors, decision making under uncertainty, investor psychology, investor sentiment, herd psychology and consumer confidence. Then it examines the investor sensitivity and the effects of consumer confidence on financial markets. Finally it analyzes the effect of consumer confidence indices on financial markets. As a result from this research, stock prices are expected to be influenced by consumer expectations and investor sentiment.

Keywords: Behavioral Finance, Confidence Index, Investor Responsibility, BİST 100.

Jel Classification: G10, G15, G41.

Beklentiler Ve Güven Endekslerinin Finansal Piyasalar Üzerine Etkisi

ÖZET

Finansal piyasalar, finansal kararlar ve risklerin yanı sıra hisse senedi fiyatlarının ve getirilerinin tahmin edilme şekli finans literatüründe en çok araştırılan konular arasındadır. Literatürde geliştirilen, tartışılan ve modellenen pek çok iktisadi ve finansal teori mevcuttur. Bu teorilerin ve modellerin önemli bir kısmı, yatırımcıları ve finansal kararları etkileyen psikolojik faktörleri değerlendirmektedir. Kahneman ve Tversky'nin (1979) çalışması, yatırımcıların psikolojisinin hisse senedi fiyatlarını etkilediğini göstermiştir. Geleneksel finans teorisi olarak da bilinen ilk finans teorileri ve modellerinden biri, yatırımcıların rasyonel olduklarını ve piyasaların verimli olduğunu ifade etmektedir. Davranışsal finans teorisi olarak bilinen ikincisi ise, piyasaların etkin olmadığını ve yatırımcıların rasyonel olmadığını ve yatırımcıların psikolojik ve duygusal özelliklerinin yatırımcıların kararlarını etkilediğini ifade etmektedir.

Bu çalışmada önce finansal piyasalardaki anormaller, söylentiler, belirsizlik durumunda karar verme, yatırımcı psikolojisi, yatırımcı duyarlılığı, sürü psikolojisi ve tüketici güveni ele alınmaktadır. Daha sonra, yatırımcı duyarlılığı ve tüketici güveninin finansal piyasalardaki etkileri incelenmiştir. Son olarak ise, tüketici güven endekslerinin finansal piyasalar üzerindeki etkisi analiz edilmiştir. Bu araştırmanın bir sonucu olarak, hisse senedi fiyatlarının tüketici beklentileri ve yatırımcı düşüncelerinden etkilenmesi beklenmektedir.

Anahtar Kelimeler: Davranışsal Finans, Güven Endeksi, Yatırımcı Sorumlulukları, BİST 100.

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1. INTRODUCTION

Financial markets, financial decisions and market operations have always been subject to research and still keep being up to date. The most researched topic in finance is about the risk and the predictability of stock prices and returns. Over the past years, many economics and finance theories have been developed, debated and plenty models have been built.

The Efficient Market Hypothesis (EMH), which emerged in 1960s, has achieved a great success both theoretically and empirically. Efficient Market Hypothesis suggest that investors are rational and they consider all the available information in the financial decision-making process. In this context it is impossible to gain abnormal return using all available information. However, market anomalies emerging in the marketplace, have caused the theories in economics and finance to be questioned. This in the same time has led to the shift of financial models from Efficient Market Hypothesis to behavioral finance since 1980s. According to researches, in many cases investors do not act rationally and as a result financial models do not fit the market. Transaction volumes, volatility, excessive and low responses, calendar and seasonal anomalies have been of the main topics observed in financial markets. In the same time the effects of human nature and human behavior on economics and financial markets as well as financial decisions have been and important topic of discussion.

Investor sentiment has gained momentum, especially after 1980s. Some Investors trading on financial markets are not rational, and sometimes they may make emotional decisions. Investors may trade according to the news instead of existing information. They also show low or excessive reaction to financial information which they have. When such behavior becomes systematic, it can pose a risk to financial markets.

Consumer confidence, an indicator of investor sentiment, has been an important and interesting concept in recent years and needs to be emphasized together with social capital. The ability of financial markets to function properly does not depend only on real variables. The aftermath of the financial crises experienced in recent years, has shown that the trust factor and the crisis of confidence have had a crucial role in deepening of the crisis. Even though trust is difficult to be defined, it has a big influence on financial markets.

This study will focus on the researches that examine investment sensitivity and the impact of consumer confidence on financial markets. The aim of this study is to determine the relationship between consumer confidence indexes and stocks in Turkey during 2007-2016 time period. To do so it uses subindexes of consumer confidence in order to determine their effect on stock returns.

Within the scope of this study, the data used in the analysis include BIST100 index returns, Consumer Expectation and Tendency Index, TSI Consumer Confidence Index, TCMB Real Sector Confidence Index, CNBCE-e Consumer Confidence Index and VIX. The frequency of the data used in this study is monthly within the timeline of January 2007 - December 2016. This study employs multiple regression, cointegration analysis, Granger causality, impulse response function of VAR analysis in order to

analyze the relationship between BIST100 index returns and consumer confidence indices. As a result from these analysis, stock returns are expected to be influenced by consumer expectations and a long-term causal relationship is expected to be found.

2. LITERATURE

Kahneman and Tversky (1979) found that the psychological factors effect investment decisions and stock prices which led to the field of behavioral finance. The Kahneman and Tversky's Expectation Theory paved the way to numerous researches investigating the relationship between investor psychology and stock prices. Many studies have determined the impact of investor sentiment on stock returns, especially on the US stock market. Investor sensitivity and psychology have provided insights into the phenomena, that can not be explained by traditional theories and hypotheses in financial markets.

A significant part of the studies that examine investor sentiment are about their impact on stocks. The starting point of investor sentiment theory is the "noise" concept in Black's (1986:532) financial markets. Black's conception of noise has been transformed into a theory by De Long, Shleifer, Summers and Waldmann (1990:703-738).

De Long, Shleifer and Waldmann (1990) analyzes the noise trading risk in financial markets. Irrational noise presented a market model in which traders affected prices with great luckiest beliefs and provided high expected returns.

Lee, Shleifer and Thaler (1991:75-109) investigates the relationship between investment trusts and investor sentiment. According to the results of the regression analysis, it is found that investor sensitivity and investment trusts are significantly related to each other.

Fama and French (1992:427-465) investigates the impact of investor sentiment on stock returns in the Chinese stock market using the three factor model. According to the analysis results, the investor's sensitivity helps to explain the missing part of the Fama-French model's definition of returns.

The model used in Barberis, Shleifer and Vishny (1998:307-343) explains investor sentiment with representation heuristics. According to the analysis results, in the long term (3-8 years), securities' prices showed a strong reaction in line with the news and the high value of securities returned to its average.

Elton, Gruber, and Busse (1998:477-500) studies the relationship between investor sentiment and stock returns. It employs regression analysis using investment trusts index, investor sentiment index and S&P Index data for the January 1969 - December 1994 time period. Analysis results show that the sensitivity of investors and investor sentiment were not important in the process of generating returns.

Baker and Stein (2002:1-39) examines the relationship between market liquidity and investor sentiment. It creates alternative theories and models to explain the relationship between liquidity growth and low yields. At the end of the study, investor

sentiment was found to be correlated with liquidity, new share issuance and expected returns.

Barber, Odean and Zhu (2007:1-28) investigates investor sentiment and systematic rumor. In the study, the transactions of 66,465 consumers between January 1991-November 1996 and 665,533 investors from January 1997 to June 1999 were analyzed.

Verma, Baklacı and Soydemir (2008:1303-1317) examines the impact of individual and institutional investor sentiment on stock markets. The focus of this study was on rational and irrational elements of individual and institutional investors and their effect on stock returns. It uses survey data from Investors Intelligence as the corporate sensitivity index. Vector Autoregressive Analysis (VAR) method was applied to the questionnaire data. According to the analysis results, a significant positive effect of irrational sentiment on past stock market incomes was found.

Hwang (2011:382-401) investigates the impact of private investor sentiment on the securities prices. As a result, it shows that the population of the country changes the special sensitivity demands for countries and affects the securities' prices and firm investment policies.

Sohn (2013:1-30) investigates the effect of investor sentiment on stock returns. In this study, investors sensitivity is defined in terms of Keynes' definition of animal spirit or risks. Monthly New York, Nasdaq and AMEX stock indices for the period 1934-2005 as well as Baker and Wurgler's (2006) six sensitivity variables were used in the study. According to the results of the VAR analysis, it is seen that the investor's sensitivity can predict the stock returns and the effect is great in the stocks where the arbitrage is limited.

3. METHODOLOGY

The aim of this study is to determine the relationship between consumer confidence indices and stock returns in Turkey during 2007-2016 time period. The above-mentioned studies focus on the main relationship between consumer confidence indices and stock returns. In this study, subindexes of consumer confidence indices are taken into consideration as well.

Some basic hypotheses of the research are shown below:

1. H_0 : There is no relationship between the BIST-100 index return and the consumer confidence indices depending on time.

H_1 : There is a time-dependent relationship between the BIST-100 index return and consumer confidence indices.

2. H_0 : There is no relationship between the BIST-100 index return and the foreign consumer confidence indices depending on time.

H_1 : There is a time-dependent relationship between the BIST-100 index return and the foreign consumer confidence indices.

3. H_0 : There is no causality relationship between BIST-100 index return and consumer confidence indices.

H₁: There is a causal relationship between BIST-100 index return and consumer confidence indices.

The model uses CNBC-e Consumer Confidence Index, TSI Consumer Confidence Index, TCMB Real Sector Confidence Index and Chicago Option Exchange Volatility Index (VIX) series, in order to reflect investor sentiment in the country.

The following formula is used in the calculation of the indices:

$$E_t = \frac{F_{it} * N_{it} * H_{it} * K_{it}}{B_t}$$

Monthly proportional changes of selected data were used in the study. Monthly proportional change is calculated as follows:

$$\text{Monthly Exchange Ratio} = \frac{R_t - R_{t-1}}{R_{t-1}}$$

The validity of the assumptions of the regression method was examined in the analyzes. First, we check the stability of the data, the degree of correlation between the independent variables, the relationship between the error terms, and whether the variance of the error terms are constant over time. Then we use VAR analysis, Granger causality test, Impulse-Response function and Variance decomposition methods.

In the study, the Augmented Dickey-Fuller (ADF) unit root test developed by Dickey and Fuller (1981), was applied to the series and all series were found to be stationary. All series are stable and suitable for regression analysis.

Table 1. Regression Analysis Between BIST 100 and Indices

Dependent Variable: BISTYIELD				
Method: Least Squares				
Sample: 2007M01 2016M12				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
CNBC	0.01805	0.1806	0.1259	0.9291
RSCI	0.66849	0.2681	2.6694	0.0141
TSI	0.32179	0.4976	0.6692	0.5321
C	0.01566	0.0102	1.6414	0.1249
R-squared	0.20316	Mean dependent var		0.01719
Adjusted R-squared	0.16787	S.D. dependent var		0.09087
S.E. of regression	0.08481	Akaike info criterion		-2.12219
Sum squared resid	0.45577	Schwarz criterion		-1.99571
Log likelihood	80.3729	Hannan-Quinn criter.		-2.07183
F-statistic	5.66545	Durbin-Watson stat.		2.50997
Prob(F-statistic)	0.00367			

When the coefficients of the regression analysis are examined, it is seen that the Reel Sector Confidence Index is statistically significant at the 2% significance level, and the CNBC-e Consumer Confidence Index and the TSI Consumer Confidence Index are not significant. According to the results of regression analysis; There is a statistically significant relationship between the monthly changes in the TCMB Real Sector Confidence Index and the monthly changes in the BIST 100 index return rate. The adjusted coefficient of the regression model (Adjusted R-squared) is 0.1679.

In the field of finance, there may be cases where single equation models are inadequate for some events to be announced. Because there is a multifaceted and complex relationship between variables. In such cases, the model commonly used to explain these events is the VAR (Vector Autoregressive Model) Model.

The steps of VAR Model are stated below:

- Selection of variables,
- Provision of stability condition
- Identification of cointegration
- Determination of lag lengths
- Granger causality test
- Impulse-Response Analysis
- Variance Decomposition

The VAR model's impulse-response and variance decomposition results are useful in examining the dynamic relationships between variables. The impulse-response function measures the effects of the next period on each variable by a shock occurring during the period $t = 0$ through the residual of the model variables. The variance decomposition shows the ratio of the variance of the predictive error that can be loaded into each of the variables for a given period of time for any variable. VAR analysis was applied to all variables in terms of long-term relationship and causality between the Consumer Confidence Indexes and the Chicago Option Exchange Volatility Index (VIX) and BIST 100 Index yield.

When the Augmented Dickey-Fuller (ADF) coefficients are examined, it is seen that the TCMB Real Sector Confidence Index variable is significant at 2% level. Before other analyzes, the ideal lag length must be determined before VAR analysis. In the Akaike Information Criteria (AIC) direction, the smallest is set to 3 (three).

Regression analysis shows the relationship between independent variables and dependent variables. But it does not show the causality of the relationship. Results of the Granger causality test between variables are presented in Table 2. According to the results of analysis, BIST 100 index turnover is the reason of Granger of TCMB Reel Sector Confidence Index.

Table 2. Granger Causality Relation

Pairwise Granger Causality Tests		
Sample: 2007M01 2016M12		
Lags: 2		
Null Hypothesis:	F-Statistic	Prob.
RSCI does not Granger Cause BIST	2.2381	0.1328
BIST does not Granger Cause RSCI	5.3263	0.0235
VIX does not Granger Cause BIST	2.0809	0.1513
BIST does not Granger Cause VIX	1.0825	0.3664
VIX does not Granger Cause RSCI	5.4081	0.0230
RSCI does not Granger Cause VIX	0.5089	0.6294

After determining the causality relation between the variables, the dynamic relations between the variables are examined by the impulse-response functions. According to the result of the Impulse-Response Analysis, when a standard deviation shock occurs in the BIST 100 series, the initial response of the variable itself is 89.63 units. When 1 standard deviation shock occurs in the variables in the second period, the BIST 100 series reacts to the TCMB Real Sector Confidence Index variable 1.32 (+) and the BIST 100 series to VIX variable 2.13 (-).

The variance decomposition shows that the variance of estimation error of each variable occurs depending on the shocks of the other variables in the model. Results of the ten-year variance decomposition of the variables are presented.

The TCMB Real Sector Confidence Index reveals 6.87% and VIX 4.13%, while a significant part (85%) of the error variance of the changes in the BIST 100 index returns according to the results in the table is explained by itself.

Table 3. BIST 100, TCMB Real Sector Confidence Index (RSCI) ve Volatility Index (VIX) Variance Decomposition Analysis

Variance Decomposition of BIST: Period	S.E.	BIST	RSCI	VIX
1	0.08963	100.000	0.0000	0.0000
2	0.09567	91.2620	1.8951	4.2726
3	0.09662	86.5708	6.5170	4.1074
4	0.09824	85.7869	6.4564	4.0695
5	0.09911	85.2109	6.8110	4.1078
6	0.09921	85.0965	6.8031	4.1267
7	0.09925	85.0286	6.8638	4.1272
8	0.09926	85.0217	6.8643	4.1293
9	0.09926	85.0204	6.8647	4.1293
10	0.09926	85.0198	6.8653	4.1293

The results show that there is both short and long-term relationship between BIST 100 index and TCMB Real Sector Confidence Index and expectations variables.

4. RESULTS

As expected, there is a relationship between consumer confidence and changes in BIST 100 index return rate. If consumer confidence increases, a rise in BIST index is

expected. In the study, a causal relationship from BIST 100 index to consumer confidence was found. In other words, the increase in stock returns is positively reflected in the market.

According to the results of the Impulse-response analysis, the BIST 100 Index responds to a shock in the TCMB Real Sector Index in the direction of the first decrease in a direction of increase in shock resulting from the Expectation of Exchange and VIX.

An important finding in the study is that the Chicago Option Exchange Volatility Index (VIX) has an impact on changes in the BIST 100 index return rate. VIX is a closely watched display at financial markets abroad. In this respect, traders which are trading on financial markets need to be closely monitored.

The results of the study are presented below summarily:

- There is cointegration between variables and BIST 100 index yield. There is a long-run relationship between BIST 100 index yield and variables in model.
- There is one way Granger causality from the changes in BIST 100 index yield to TCMB Reel Sector Confidence Index.
- There is one way Granger causality from VIX (volatility index) to TCMB Reel Sector Confidence Index.
- BIST 100 index turnover is the reason for the Granger of the TCMB Real Sector Confidence Index. Stock prices affect consumer confidence.
- BIST 100 found that there are both short and long-term relationships between the changes in the index return and the expectations variables and the TCMB Reel Sector Confidence Index, which provides information about the general course of the economy.

5. CONCLUSION

Financial markets and financial decisions have been the subject of many researches in the past and today. The risk and the predictability of stock price and returns are the most searched topics in finance literature. Many economics and finance theories have been developed, discussed and models have been built in the literature. An important part of these theories and models do not take into account the psychological factors that affect investors and financial decisions. Kahneman and Tversky's (1979) studies have shown that investor psychology also has an impact on stock prices. The first of these theories and models is the traditional financial theories which show that markets are efficient and investors are rational. The second is behavioral finance theories that indicate that markets are ineffective, investors may be irrational, and investors are influenced by psychological and emotional factors.

Numerous studies have been conducted to determine the impact of investor sentiment, especially on the US stock market stock returns. The most important problem in these studies is that investor sentiment can not be directly observed. In these studies, various variables assumed to represent investor sentiment were used. These variables include investment trusts, stock market trading volume, cash flows of mutual funds, IPO, Volatility Index (VIX) and so on.

Investor sensitivities and psychology have provided insights into phenomena that can not be explained by traditional theories and hypotheses in financial markets. With investor sentiment and psychology, it has become possible to understand the crises in the financial markets, to understand the anomalies and price bubbles, to make the financial and economical analyzes realistic, accurate and meaningful.

This study investigates the effect of consumer confidence indices, which represent investor sentiment, on stock returns. Regression models and VAR analysis were used to examine the impact of investor sentiment on the proportional change in BIST 100 index returns. In the study, data of January 2007-December 2016 period are used and in regression models, BIST 100 is used as dependent variable and the investor sensitivity representative variables are used as independent variables. The results of the analysis show that the investor's sensitivity has the power to influence stock returns and there is a long-term causality relationship. The results are consistent with the study of Fisher and Statman, Qiu and Welch, Korkmaz-Çevik and Arısoy in the literature. In addition, this study demonstrates the impact of investor sentiment and investor psychology on financial markets as well as macroeconomic variables. In addition, stock prices and returns affect consumer confidence.

There are some missing aspects of this work. It is not possible to determine the investor's sensitivity to the independent variables in the analyzes, since there are no direct measures of investor sentiment and psychology. In addition, using sectoral indices, it will be useful to reveal the investor's sensitivity on a sectoral basis.

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