The Relationship between Consumer Confidence and Financial Market Variables in Turkey during the Global Crisis

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30th Annual Meeting of The Middle East Economic Association,
Allied Social Science Associations,
Atlanta, GA, January 3-6, 2010

Abstract

This study examines the relationship between consumer confidence and financial markets for an emerging economy, namely Turkey. We believe that in emerging markets the future is uncertain rather than risky. In such an economy, consumer confidence should be regarded as an economic indicator which derives most of its information content from past and current economic outlook. Therefore, we model consumer sentiment as a function of high frequency financial market variables such as interest rates, exchange rates and the stock exchange index. Using weekly data for the global crisis period of January 2008 – October 2009, this paper empirically validates the existence of cointegration between consumer confidence and the financial market variables of interest. Hence, in emerging markets consumer confidence should be viewed as an endogenous variable rather than just reflecting the sensitivity of consumers about the future path of the economy.

Keywords: Consumer Confidence, Emerging Markets, Financial Market Variables, Cointegration.

JEL Codes: C22, C32, E27, E37.

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1. Introduction

Consumer confidence surveys are based on the discipline of psychological economics. This branch builds on the notion that household behavior depends not only on ability to buy but also on willingness to buy (Katona, 1968). Ability to buy term depends on objective factors whereas willingness to buy stands for the subjective factors.[2] Income alone is unable to include all the information that explains the changes in consumer behavior. The consumer confidence index, a composition trying to measure both the ability and willingness to buy that individuals possess might contain additional information in determination of consumer attitudes. Fuhrer (1993), Howrey (2001), Ludvigson (2004) and Dion (2006) are some of the examples of this literature. However, these studies analyze the explanatory power of consumer confidence restricting it to the role of an exogenous variable, mainly for developed countries.

The daily available source of information for households in emerging economies is the developments in financial markets. As the level of income is close to subsistence, households in emerging markets could only follow the economic outlook through the willingness to buy factor. In such economies, consumer confidence should be regarded as an economic indicator which derives most of its information content from past and current economic outlook. This framework should strengthen especially during the crisis periods when the future is uncertain rather than risky.

Following Mishkin (1978), we model consumer sentiment for Turkish economy as a function of high frequency financial market variables such as interest rates, exchange rates and the stock exchange index for the recent global crisis period of 2008-2009. The analysis is based on a weekly data set calculated from daily CNBC-e Consumer Confidence index values and the movements in stock exchange market, foreign exchange rates and bill/bond interest rates. Within this framework, the second section of the study covers a brief literature survey on consumer confidence. Section three explains the methodology of CNBC-e Consumer Confidence Index in Turkey. In section four, we introduce the methodology of our study and present the results of our empirical analysis. Section five concludes with a short assessment of the results and future research.

[2] A recent study by Roos (2008) shows that Katona's theory of psychological analysis of economic behavior can be incorporated into the standard model of intertemporal utility maximization by allowing for a time-varying preference parameter which is exogenous to the consumer and determined by the social environment.

2. Literature Review

Mishkin (1978) is credited as the first study to show the existence of a relationship between financial variables and consumer sentiment for the US economy during 1954Q1 – 1976Q4. The theoretical framework is built on the liquidity hypothesis which takes the household balance sheet as the main determinant of financial distress. If the values of financial assets are rising, then the probability of financial distress will decrease leading to an increase in optimism of households. Therefore, it is possible to model consumer confidence as an endogenous variable which depends on major financial market variables.

Several studies employ part of the methodology that Mishkin (1978) has introduced. Among others, Praet and Vuchelen (1989), using Germany, Italy, UK and France data, analyze the effect of oil prices, interest rates and US stock prices on consumer confidence index (CCI). They find that depreciation of domestic currency, increase in oil prices and interest rates reduce confidence. Similarly, Otoo (1999) employing US data concludes that increase in stock prices contributes positively to consumer sentiment. Moreover, Lee and Lee (2002) examine the 2000 recession of Taiwan and demonstrate the negative effect of wealth reduction on confidence. On the other hand, Golinelli and Parigi (2003) assess the effects of some economic and financial variables on consumer confidence for the period of 1970-2002 employing Australia, Canada, France, Germany, Italy, Japan, UK and US data. They find that the determinants of CCI for a country can not be generalized for other countries. In an influential article, Jansen and Nahuis (2003) focus on the relationship between stock market developments and consumer confidence in 11 European countries over the years 1986-2001. Their main finding is that there is a strong positive correlation between stock returns and changes in consumer sentiment with stock returns causing consumer sentiment at very short horizons of 2 weeks to 1 month. Therefore, they believe that the relationship between stock market and consumer sentiment depends on the expectations about economy-wide conditions rather than the conventional wealth effect. Likewise, Kremer and Westermann (2004) obtain a positive coefficient for stock prices while investigating the relationship between consumer confidence and stock market developments in the Euro zone using VAR analysis. Finally, Vuchelen (2004) analyzes whether information content of consumer sentiment can be explained by some economic and financial variables such as unemployment, growth rate, interest rates and exchange rates. Using quarterly Belgian data for the period 1985-2000, he finds that both interest rates and dollar exchange rate have significantly negative effect on consumer sentiment.

Previous studies usually focus on the relation between consumer confidence and several different economic and financial variables of interest. However, the data is from developed countries and consumer sentiment is always limited to the role of an independent variable that possesses some information about future economic activity.[3] In this respect, our study is important for three reasons: First, it analyzes the determinants of consumer confidence in an emerging economy like Turkey. Second, consumer confidence attains the role of an endogenous variable employing the analysis of cointegration. Last, the availability (and use) of weekly data for consumer confidence presents a unique opportunity to assess the dynamic relationship between high frequency financial market variables and consumer confidence.

During a crisis period, we propose that consumer confidence should have a closer relationship with short term financial market variables. Moreover, our study is one of the first attempts to analyze the determinants of consumer confidence in an emerging economy so that the functional identity of consumer confidence is revealed. This will strengthen the importance of consumer confidence for several reasons: First, it will validate the proposition that in emerging markets consumers (need to) act different due to the dynamic economic structure. Second, consumer confidence measures will get the attention they deserve in emerging markets. Last, we will learn more about the psychological framework of consumers in emerging markets where there is certainly a difference between ability to buy and willingness to buy.

3. CNBC-e Consumer Confidence Index

In Turkey, there are two consumer confidence indices that are announced on a monthly basis. One is the CNBC-e CCI and the other one is the TCMB – TUİK (CBRT - TURKSTAT) CCI. The correlation coefficient between these indexes has been significant and reaching to about 0.9. This study employs the CNBC-e Consumer Confidence Index as it has data of daily frequency available.

The methodology of CNBC-e CCI is similar to the Michigan University index of consumer

[3] Recently, Van Oest and Frances (2008) question the interpretation of movements in consumer confidence and propose a new methodology to capture the information content of consumer confidence through identifying the changes in consumer confidence which are significantly different from zero rather than modeling consumer confidence as a predictive variable.

sentiment.[4] The base period of the index is set as January 2002 and the value of the index at this period is 100. The database contains records of approximately 15,000,000 Turkish individuals. The index is compiled of 720 completed surveys. The survey data is obtained from the respondents between the 27th day of the past month and the 25th day of the current month. The distribution of the completed surveys meets seven criteria:

1) 70 percent is selected from Istanbul, Ankara and Izmir, 30 percent selected from other cities and big districts in Turkey.
2) 60 percent is selected from 36-55 age group, 40 percent is selected from 18-35 age group.
3) 50 percent is male and the other half is female.
4) 50 percent of the total surveys are composed of new records.
5) A minimum of 30 percent of new records belongs to individuals who had been successfully surveyed in the previous month.
6) A maximum 20 percent of 720 completed surveys may be composed of additional respondents and these respondents are not called again in the next month.
7) Respondents are not surveyed more than two times. This helps to minimize the biases in the answers of respondents.

The index is composed of the following questions:

1) We would like to learn your current economic situation. Can you compare your (and your family's) current financial situation with last year?
2) What do you think your (and your family's) future financial situation will be in a year?
3) Can you compare your current expectations about Turkish economy with the previous month?
4) What do you think Turkish economy's situation will be in a year?
5) Do you think that the current period is a good time to buy durable consumer goods such as a TV set, refrigerator and furniture or vehicles or residence?

Answer Choices are, Better, Worse, Same and No Idea for the first 4 questions and Good

[4] Both the Michigan index of consumer sentiment and the Conference Board's consumer confidence index are based on five questions that have remained unchanged since their inception. Both surveys ask respondents two questions designed to measure attitudes about current conditions, and three questions that ask respondents about their future expectations. See Bram and Ludvigson (1998) and Garner (2002) for further details.

Time, Bad Time and No Idea for question 5.

4. Methodology of the Study

This section of the study consists of two parts: In the first part, there will be a short summary explaining the methodology of the empirical analysis. In the second part, we present the empirical findings with a brief interpretation.

4.1 Unit Roots, Cointegration, Vector Error Correction Models and Impulse Response Functions

Unit Root Tests

The common procedure in economics is to test for the presence of a unit root to detect non-stationary behavior in a time series. We employ two of conventional unit root tests as the Dickey-Fuller test (ADF) (Dickey and Fuller 1979 and 1981), and the Phillips–Perron (1988) test (PP). Moreover, standard unit root tests fail to account for the existence of structural breaks. Hence, we also employ several unit root tests allowing for structural breaks as Zivot and Andrews (1992) test (ZA), Schmidt-Phillips (1992) test (SP) and Lee-Strazicich (2004)[5] test (LS).

Cointegration

The concept of cointegration was introduced by Granger (1981) and more fully developed in Engle and Granger (1987). The cointegration of two variables is at least a necessary condition for them to have a stable long-run (linear) relationship. Johansen (1988) and Johansen and Juselius (1990) propose a procedure for estimating cointegrating relationships in a system of equations framework to make better use of all the information available in the long-run and short-run fluctuations of each variable.[6]

VECM

The direction of causality among the cointegrated variables could be specified by using the vector error correction models (VECM). The VECM augments a vector autoregressive process in first differences of the variables with their cointegrating relationship. This

[5] Lee-Strazizich (2003), Schmidt-Phillips (1992) and Zivot and Andrews (1992) tests are applied in Rats 7.0 program.
[6] We use only the Trace test as it has more local power than other alternatives.

modeling framework has several attractive features. First, the design of the VECM explicitly incorporates a role for the difference between the consumer confidence and financial market variables. Ceteris paribus, if the error-correction term equaled zero, there would be no need for either consumer confidence or any financial market variable(s) to adjust from its (their) current level(s). Second, the estimation of the error-correction term allows for a straightforward investigation into the behavior of the gap between consumer confidence and financial market variables over the data span. Finally, it is possible to examine the sign and magnitude of the coefficients in order to analyze the adjustment process by which long-run equilibrium between the series is restored.

A typical four-variable VECM for the consumer confidence index (CCI), stock exchange index (SE), exchange rate variable (XR), and interest rate variable (INT) can be written as:

$$\Delta CCI_t = \alpha_1 + \sum_{i=1}^{m} \beta_{1i} \Delta SE_{t-i} + \sum_{i=1}^{m} \gamma_{1i} \Delta XR_{t-i} + \sum_{i=1}^{m} \eta_{1i} \Delta INT_{t-i} + \sum_{i=1}^{m} \delta_{1i} \Delta CCI_{t-i} + \lambda_1 ECT_{t-1} + \varepsilon_{1t} \quad (1)$$

$$\Delta SE_t = \alpha_2 + \sum_{i=1}^{n} \beta_{2i} \Delta SE_{t-i} + \sum_{i=1}^{n} \gamma_{2i} \Delta XR_{t-i} + \sum_{i=1}^{n} \eta_{2i} \Delta INT_{t-i} + \sum_{i=1}^{n} \delta_{2i} \Delta CCI_{t-i} + \lambda_2 ECT_{t-1} + \varepsilon_{2t} \quad (2)$$

$$\Delta XR_t = \alpha_3 + \sum_{i=1}^{p} \beta_{3i} \Delta SE_{t-i} + \sum_{i=1}^{p} \gamma_{3i} \Delta XR_{t-i} + \sum_{i=1}^{p} \eta_{3i} \Delta INT_{t-i} + \sum_{i=1}^{p} \delta_{3i} \Delta CCI_{t-i} + \lambda_3 ECT_{t-1} + \varepsilon_{3t} \quad (3)$$

$$\Delta INT_t = \alpha_4 + \sum_{i=1}^{r} \beta_{4i} \Delta SE_{t-i} + \sum_{i=1}^{r} \gamma_{4i} \Delta XR_{t-i} + \sum_{i=1}^{r} \eta_{4i} \Delta INT_{t-i} + \sum_{i=1}^{r} \delta_{4i} \Delta CCI_{t-i} + \lambda_4 ECT_{t-1} + \varepsilon_{4t} \quad (4)$$

where Δ denotes the first-difference operator, ECT stands for the error correction term, the terms m, n, p, and r are the lag lengths determined according to the Akaike Information Criteria (AIC). The coefficients λ_1, λ_2, λ_3, and λ_4 depict the adjustments of ΔCCI_t, ΔSE_t, ΔXR_t *and* ΔINT_t towards long-run equilibrium.

Impulse Response Functions (IRF)

In its simplest sense, an impulse response function outlines the effect of a one-time shock to one of the innovations on current and future values of the endogenous variables. Given the innovations are contemporaneously uncorrelated, interpretation of the impulse response is simple: the i-th innovation is simply a shock to the i-th endogenous variable.

4.2 Empirical Findings

This study employs a four-variable setup while searching for the long-run relationship between consumer confidence, stock exchange index, exchange rate and interest rates.

$$CCI_t = \alpha + \beta SE_t + \gamma XR_t + \eta INT_t + \varepsilon_t \quad (5)$$

The consumer confidence variable is the daily CNBC-e consumer confidence index. For the stock exchange index, daily Turkish Liras based İstanbul Stock Exchange 100 Index (SE) is used. Daily dollar exchange rate is selected as the exchange rate (XR) variable. Finally, the interest rate variable is the daily composite interest rate (INT) for the bond/bill with the highest volume in the market for the corresponding day. All the variables are averaged and transformed into weekly data. The data span is last week of December 2007 to third week of October 2009. All variables except INT are in their natural logarithms. The CCI is calculated[7] using the data obtained from CNBC-e Consumer Confidence Index Survey Provider. ISE and INT are obtained from ISE website (http://www.imkb.gov.tr), XR is obtained from CBRT website (http://www.tcmb.gov.tr).

Unit Root Test Results

In Tables 1 and 2, we display the ADF and PP unit root test results for levels and differences including only an intercept and both an intercept and a trend. The results of both tests are very similar and we are unable to reject the null of unit root at 5 % significance level. The results for all the variables in differences are also very similar and we reject the null of unit root at 5 % significance level except for the SE variable in constant case. In Tables 3 and 4, we have unit root tests that allow for structural breaks. Schmidt and Phillips (1992) test results are lower than the 5 % critical values for all variables. The break points obtained from Lee and Strazicich (2004) test for each variable are given in Table 3. Again we fail to reject the null hypothesis that allows for structural break for all variables. In Table 4, we have ZA test results for constant and constant and trend case. Except for the XR variable in constant case, we fail to reject the null of unit root. Hence, it appears that all our variables in question could be classified as non-stationary.

[7] The CCI values are first calculated daily with reference to the starting base value of January 2002. The daily values for the starting days of the new survey for each month (Between 26th and the end of the month) is set equal to the announced value of the previous month so that a large number of survey responses will be gathered that can be used to calculate the new month's daily values when the new month actually starts on the 1st. Finally, we average the daily values to obtain the weekly value.

Cointegration Test Results

Next step is to check whether the non-stationary series are cointegrated. The results of Johansen-Juselius cointegration tests using trace statistics are shown in Table 5 for the case of a constant and for the case of a constant and trend. One cointegrating vector is obtained showing the long-run co-movement of the variables of interest.

It is important to analyze the coefficient estimates of the cointegration relationship to derive inferences from the long-run relationship. The normalized cointegrating coefficients from Johansen-Juselius estimation are in Table 6. The results could be summarized as:

a) The negative and significant coefficient for stock exchange index variable is the striking result of the analysis. It is well known that the share of foreign investors in İstanbul stock exchange is significantly high, around 65 % on average. This probably is one of the reasons why a one percent increase in stock exchange leads to a 1.36 % decrease in consumer confidence. Moreover, during the recent crisis the households' expectations have been very pessimistic whereas the stock exchange movements have been forward looking and rather optimistic. Finally, the household behavior could be with respect to an uncertain future whereas the investors act with respect to a risky future.

b) Negative and statistically significant coefficient for exchange rate variables lead us to believe that households in Turkey lose confidence as their purchasing power declines. During the recent global crisis, one percent increase in exchange rate (dollar) leads to a 2.59 % decline in CCI.

c) Like the exchange rate variables, our a priori expectation for the sign of the interest rate is realized as it obtains a negative (and statistically significant) coefficient. The rising cost of capital, the tightness in the credit market and the liquidity concerns mean that the confidence of individuals decrease as interest rates surge up. A one percent increase in composite interest rates reduces confidence by 0.08 %. During the crisis, the effect of interest rate on CCI is not any different from a boom period.

VECM Results

Table 7 reports the results from estimation of the VECM with the choice of lag length of the series determined by using the AIC. The error-correction term for CCI is statistically

significant and negative. Thus, we can argue that the short-run deviations are corrected towards long run equilibrium.

IRF

To further evaluate the nature and determinants of CCI, we use impulse response functions where stock exchange index, exchange rate, and interest rate are the impulses and the consumer confidence is the response. The impulse response graphics for each equation in the Appendix show the response of consumer confidence index to a one unit shock in each of the exogenous variables. The results are in accordance with our a priori expectations depending on economic theory. We see a positive response to SE, and a negative response to XR and INT.

5. Conclusion

What determines consumer confidence in Turkey has been the starting point of this study. Change in consumer confidence is expected to have a strong impact on economic growth. Growth models tend to incorporate consumer confidence as an exogenous variable. In contrast to general approach, this study argues that the consumer confidence should be endogenously determined within an economic system.

So far several factors have been detected that are likely to affect the consumer confidence in an economy. Unemployment, oil prices, financial market indicators like the movements in stock exchange markets, exchange rates or interest rates and external shocks like wars, terrorist attacks etc. are among those factors.

Our findings suggest that movements in exchange rate and bond interest rates are negatively affecting consumer confidence. For instance, rising interest rates and exchange rates usually reflects negative economic, political or geo-political news that are quickly priced in money and foreign exchange markets. Empirical findings indicate that the movements in these markets are closely watched by consumers and negatively reflected in their behaviors.

On the other hand, our finding that the movements in stock exchange market are negatively related with consumer confidence is a lit bit surprising. One could expect a rising stock exchange market should come up with rising consumer confidence as the market implies a positive wealth effect. However the period of analysis has some special features. Stocks in all

over the world have risen in 2009 while the economies were contracting and unemployment rates were rising. Stocks also prices positive and negative expectations. The period of our analysis covers the first year of the recent global economic crises. Almost all central banks in the world have reduced their policy interest rates to the lowest points that they can. That has made the capital to move to stock exchange markets in the world. At the same time, expansionary fiscal policies signaled a positive economic growth in the coming quarters. That has also made stocks attractive for investors. Such circumstances might cause overpricing or bubbles in stock exchange markets. In other words, stock prices may not reflect the real economic life, the state of unemployment or pressures on real wages.

It seems that we have witnessed such a bubble at stock exchange market of Turkey. Rising unemployment and uncertainty in the world economy seems to offset the positive signals for asset values given by the Istanbul Stock Exchange market. As a result, consumer confidence has fallen. A similar analysis in the post-crises period would better tell us the relation between the stock prices and consumer confidence.

Hence, this study has focused on the relation between financial market parameters and consumer confidence to test whether the latter would be an endogenous variable. Within this framework, an analysis of the relation between unemployment figures and consumer confidence has been left for further research.

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Appendix

Table 1: ADF and Phillips-Perron Unit Root Tests in Levels

Variables	ADF		PP	
	Constant	Constant and Trend	Constant	Constant and Trend
CCI	-1.453 (0.552)	-2.006 (0.590)	-1.514 (0.5220)	-2.048 (0.5671)
SE	-1.467 (0.545)	-0.347 (0.988)	-1.492 (0.5333)	-0.721 (0.9682)
XR	-1.787 (0.384)	-1.685 (0.749)	-1.513 (0.5225)	-1.337 (0.8724)
INT	-0.317 (0.917)	-2.213 (0.476)	-0.119 (0.9434)	-1.827 (0.6838)

Notes: For both tests, we use Akaike Information Criteria with a maximum lag length of 10. (*) denotes significance for 5 % level. For Phillips-Perron unit root test, we use Bartlett Kernel Spectral estimation method and select Newey-West automatic bandwidth. The p-values are given in brackets.

Table 2: ADF and Phillips-Perron Unit Root Tests in First Differences

Variables	ADF		PP	
	Constant	Constant and Trend	Constant	Constant and Trend
CCI	-10.025* (0.000)	-10.054* (0.000)	-10.020* (0.000)	-10.052* (0.000)
SE	-2.371 (0.152)	-3.812* (0.020)	-8.017* (0.000)	-8.541* (0.000)
XR	-4.535* (0.000)	-4.590* (0.001)	-8.284* (0.000)	-8.312* (0.000)
INT	-4.058* (0.001)	-4.586* (0.002)	-7.246* (0.000)	-7.397* (0.000)

See Notes of Table 1.

Table 3: LM Unit Root Tests

Variables	Schmidt and Phillips (1992)[a]		Lee and Strazicich (2004)[b]		Break Point
	Stat	Lags	Stat	Lags	
CCI	-2.634	4	-2.994	4	18/03/2009
SE	-1.365	8	-1.617	8	31/12/2008
XR	-1.963	3	-2.136	3	03/09/2008
INT	-1.618	4	-2.119	3	04/06/2008

Notes: [a] stands for LM test for a unit root in the presence of deterministic trends. Critical value at 5 % significance level is -3.060. Critical values of the test are given in page 264 of the paper. [b] denotes minimum LM Unit Root Test with One Structural Break (using Model A structural break). Critical value at 5 % significance level is -3.566. Critical values of the test are in page 11of the paper.

Table 4: Zivot-Andrews Unit Root Test

Variables	Constant			Constant and Trend		
	t-stat	lag	break	t-stat	lag	break
CCI	-3.633	0	01/04/2009	-3.278	0	15/10/2008
SE	-2.612	7	14/05/2008	-4.805	7	15/10/2008
XR	-5.672**	3	15/10/2008	-5.767**	3	15/10/2008
INT	-3.090	4	07/05/2008	4.446	4	24/12/2008

Notes: For constant case, critical values are -5.34 and -4.80 for 1 % and 5 % significance levels, respectively. For constant and trend case, critical values are -5.57 and -5.08 for 1 % and 5 % significance levels, respectively. AIC is used for lag selection with a maximum lag length of 10. (**) denotes significance for 1 % level.

Table 5: Johansen Cointegration Test - Trace Statistics

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	10 % Critical Value	Probability
None	0.276409	63.63822	60.08629	0.0523*
At most 1	0.188178	34.52066	39.75526	0.2653
At most 2	0.110097	15.75795	23.34234	0.5121
At most 3	0.056771	5.260124	10.66637	0.5595

Notes: Lag length is chosen as 5 according to the lowest AIC. Linear deterministic trend (restricted) case is selected. (*) denotes significance at 10 % level.

Table 6: Normalized Cointegrating Coefficients

CCI	SE	XR	INT	Trend
1.000	-1.358*	-2.585*	-0.076*	0.007*
	(0.346)	(0.543)	(0.016)	(0.002)

Notes: The values in brackets are standard errors. (*) denotes significance at 5 % level.

Table 7: VECM

Error Correction:	Δ(CCI)	Δ(SE)	Δ(XR)	Δ(INT)
CointEq1	-0.176546	0.058254	-0.094724	-0.143940
	[-2.25355]	[1.31603]	[-2.73862]	[-0.25619]
Δ(CCI(-1))	-0.080221	-0.083047	0.027188	0.506585
	[-0.64195]	[-1.17618]	[0.49278]	[0.56525]
Δ(CCI(-2))	0.073088	0.051148	-0.057488	-0.722449
	[0.58879]	[0.72925]	[-1.04893]	[-0.81151]
Δ(CCI(-3))	0.116522	0.010867	-0.032203	-1.565.313
	[0.97749]	[0.16134]	[-0.61187]	[-1.83097]
Δ(CCI(-4))	0.276473	-0.086645	0.070353	0.651220
	[2.34662]	[-1.30157]	[1.35249]	[0.77072]
Δ(CCI(-5))	-0.024316	-0.028637	0.021232	-0.613861
	[-0.20455]	[-0.42635]	[0.40454]	[-0.72005]
Δ(SE(-1))	0.520654	0.166917	-0.117716	-1.385.318
	[1.86872]	[1.06031]	[-0.95696]	[-0.69330]
Δ(SE(-2))	0.337368	0.059487	-0.107022	-3.570.186
	[1.26097]	[0.39351]	[-0.90602]	[-1.86066]
Δ(SE(-3))	0.775209	-0.017215	0.130446	0.913316
	[3.12485]	[-0.12281]	[1.19097]	[0.51334]
Δ(SE(-4))	0.323239	-0.083819	0.110896	2.809.657
	[1.20805]	[-0.55442]	[0.93872]	[1.46416]
Δ(SE(-5))	-0.208922	-0.022726	-0.045289	-2.593.797
	[-0.79623]	[-0.15329]	[-0.39094]	[-1.37838]
Δ(XR(-1))	-0.010023	-0.242748	0.177886	-1.262.854
	[-0.02854]	[-1.22328]	[1.14720]	[-0.50138]
Δ(XR(-2))	0.612832	0.294076	-0.161120	-1.654.787
	[1.69485]	[1.43941]	[-1.00926]	[-0.63813]
Δ(XR(-3))	0.515008	-0.048263	0.120077	-1.592.231
	[1.45437]	[-0.24122]	[0.76804]	[-0.62697]
Δ(XR(-4))	0.527260	-0.200868	-0.005735	0.924911
	[1.55776]	[-1.05031]	[-0.03838]	[0.38102]
Δ(XR(-5))	-0.116567	-0.087274	-0.030969	-4.963.655
	[-0.35146]	[-0.46571]	[-0.21149]	[-2.08678]
Δ(INT(-1))	0.014506	0.004381	0.003060	0.335498
	[0.70676]	[0.37772]	[0.33770]	[2.27916]
Δ(INT(-2))	-0.008466	-0.011076	-0.003084	0.022910
	[-0.40626]	[-0.94065]	[-0.33523]	[0.15329]
Δ(INT(-3))	-0.001265	-0.042755	0.028926	0.425407
	[-0.05988]	[-3.58198]	[3.10136]	[2.80790]
Δ(INT(-4))	0.020857	0.018318	-0.002387	-0.220410
	[0.89335]	[1.38860]	[-0.23153]	[-1.31637]
Δ(INT(-5))	0.030703	0.001407	0.000587	-0.170606
	[1.35569]	[0.10992]	[0.05871]	[-1.05040]
C	-0.000711	-0.000249	0.005416	-0.020422
	[-0.08030]	[-0.04973]	[1.38498]	[-0.32151]

Notes: The values in brackets are t-statistics.

Impulse Response Analysis