INFORMATION CONTENT OF CONSUMER SENTIMENT IN TURKEY

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─Abstract ─

Even though consumer confidence/sentiment indices are measured in many developed and developing countries, the vast literature on consumer confidence focus on the behavior of the indices for developed economies in order to show whether these indices have some predictive power in terms of estimating the future path of consumption, hence final domestic demand. When comparing the economic environment of both developed and developing countries, the differences in expectation formation of consumers in developed and developing countries are remarkable due to the high sensitivity of consumers in developing countries to the level of income. In this context, this paper analyzes the effects of the expectation and tendency components of consumer sentiment on real final domestic demand for the Turkish case using some econometric techniques. Employing consumer confidence measures of CNBC-e and CBRT-TURKSTAT, this study also assesses the information content of these indices for the global crisis period.

Key Words: *Consumer Confidence, Consumer Expectations, Unit Root, Cointegration*

JEL Codes: C22, D12, E21

1. INTRODUCTION

Business and consumer surveys provide important information for future economic activity, short-term forecasting and pave the way for new economic researches. Furthermore, these surveys are useful in detecting key turning points in an economy and they can be utilized as a key complement to low frequency official statistics, namely quarterly consumption spending and/or GDP figures. The high frequency characteristic of these surveys, therefore, enables one to monitor economic developments in an economy and capture the short run dynamics thereof.

Since consumption has the biggest share in the expenditure category, a significant change in the marginal propensity to consume due to change in consumer sentiment might affect the level of domestic demand, and hence economic growth. In this context, the linkage between consumer spending and consumer spending has been studied by many authors. These studies, however, examines the explanatory power of consumer sentiment and regarded consumer confidence as an explanatory variable.

Like the studies mentioned above, this study attaches importance to consumer confidence measures of CNBC-e and Central Bank of Republic of Turkey (CBRT) in terms of explaining future consumption path. Unlike the other studies, this study divides consumer confidence into two categories, one is measuring the ability to buy durable goods (tendency component) and the other

is measuring the economic expectations (expectation component). After incorporating real interest rate into the model, this study aims to investigate the effect of major purchases at present, economic expectations and real interest rate on the real final domestic demand proxied by CNBC-e consumption index for the Turkish case.

Next section mentions about the relevant literature on the link between consumer confidence and consumption spending. Section three explains the data, methodology of both CNBC-e and CBRT Consumer Confidence Indices and the empirical findings. The last section gives a short assessment on the findings.

2. LITERATURE SURVEY

There is a broad literature searching for the relationship between the consumer confidence/sentiments and the consumption expenditures since the question of what affects consumption dates back to very early years in economics.

Some economists argue that consumption expenditures are determined by economic variables such as consumer price index, personal disposal income, unemployment, stock prices, interest rates, etc. Others argue that consumer sentiments have more power in the anticipation of future consumption regarding that the information obtained through the consumer expectation indexes cannot be captured by economic variables. The literature is thus divided as those advocating the forecasting power of consumer indices on consumption and those defenders of other concrete economic variables as determinants of consumption.

Various researchers (Howrey, 2001; Garner, 1991; Fuhrer, 1993) emphasize that forecasting power of confidence/sentiment indices lose significance as other economic variables are included in the models, or, argue that consumption of only some goods are predicted by the indices. Moreover, some authors (Fan and Wong, 1998; Croushore, 2005) sharply reject the usefulness of consumer confidence indices in explaining future consumption expenditures.

In the light of these empirical researches, one can argue that there is uncertainty for the predictive power of the indices. Also it is possible that the index only reflects the answers to its questions. Some researchers (Vuchelen, 2004), in this respect, are hesitant to employ consumer expectation or sentiment indices as forecasting tools for some future consumption expenditure, since the information content of the indices are in a sense mysterious.

However, Mueller (1963), Ludvigson (2004), Carroll *et al.* (1994), Huth *et al.* (1994) and Souleles (2004) for US; Easaw and Heravi (2004), Acemoglu and Scott (1994) for UK; Angevine (1974) for Canada; Parigi and Schlitzer (1997) for Italy conclude that the responses of consumer surveys are significant in predicting consumption expenditure and growth.

Many studies (Katona, 1960; Pickering *et al.*, 1973; Pickering and Isherwood, 1975; Roos, 2008) focus on the importance of the individual survey questions rather than the aggregate index of consumer confidence and compare the effect of the survey questions extracted from a broader survey with the aggregate index itself in order to reveal the potential impact of consumers' behaviors on spending.

Overall, previous studies show the relationship between consumer confidence and domestic demand and also argue that consumer confidence can be used as a proxy for consumption spending. In this study, the effect of sub-indices of consumer confidence (expectation and tendency components) on real final domestic demand is discussed rather than the aggregate index

and the relationship between sub-indices extracted from CNBC-e and CBRT consumer confidence indices, real interest rate and real final domestic demand is examined by employing the analysis of cointegration.

3. THE METHODOLOGY AND EMPIRICAL FINDINGS

3.1. Data

The period covered in this study is the monthly data for 2002 January – 2010 April[1]. Real interest rate (R) is calculated for Turkey to represent the level of interest rate. To measure the level of consumption, monthly CNBC-e consumption index[2] (real final domestic demand, hereafter RFDD) is used. As for the expectation component (EC) and tendency component (good time to buy measure) (TC), relevant survey questions of CNBC-e and CBRT consumer confidence indices are utilized. All variables except the interest rate are seasonally adjusted and expressed in their logarithmic forms and all variables are used in real terms.

3.2. CNBC-e and CBRT Consumer Confidence Indices

We examine the CNBC-e consumer confidence index, which begins on January 2002. The survey whose methodology is adopted from the Michigan survey is conducted on a real time basis and announced monthly. Respondents are asked 5 questions, the first two of which are related to personal condition and expectations of the respondents. The third and the fourth ones reflect the respondents' expectations about the general economic outlook. The last question measures current consumption tendency of consumers. For the expectation and tendency components, we utilize two questions from the index (Question 2 and Question 5).

Q2) How do you think your (and your family's) future financial situation will be in a year? (Better, Worse, Same, No Idea)

Q5) Do you think that it is the appropriate time to buy durable consumer goods such as TV, refrigerator and furniture and/or vehicles and/or residence? (Good Time, Bad Time, Same)

As for the survey conducted by CBRT, the survey covers all individuals at the age of 15 and having a job in urban and rural areas of Turkey who provides income. 2000 individuals belonging to the above characteristic were selected from Household Labor Force Survey (HLFS) in December 2003, January and February 2004 and from March 2004; these individuals have been interviewed at house as samples in HLSF. The balance method of European Union is has been used and the balance is calculated as the difference between the percentages of positive and negative responses and 100 is added to this difference so as to form a separate index for each question. The general index is the arithmetic mean of these separate indices. As for the expectation and the tendency components of CBRT confidence index, the following two questions (Question 2 and Question 7) from the index are used in this analysis.

[1] The CBRT index begins on December 2003 so we take the starting point as December 2003 in order to see the linkage between CBRT sub-indices and other variables of interest.

[2] CNBC-e consumption index is constructed by collecting the sales per customer data from companies that have extensive chain stores in Turkey. The data for various sectors are deflated by the corresponding consumer price inflation (CPI) data for each sector.

Q2) How do you expect your purchasing power situation to change over the next 6 months? (Much more better, A little bit better, Remain the same, A little bit worse, Much worse, No idea)

Q7) Do you think now is a good time it is the right moment for people to buy durable consumption goods such as refrigerator, TV, furniture, etc.? (Yes, it is the right time now; It is neither the right time, nor the wrong time; No, it is not the right time now; No idea)

In the light of the above explanations, two kinds of consumer confidence indices will be examined in Section three with the results of empirical findings and the linkage between these two indices will be measured in terms of their predictive ability for the domestic demand.

3.3. Empirical Findings

Testing whether the time series reveal non-stationarity or have unit root is crucial to see the reversion of the relevant series to a long run mean or see the random walk behavior. This study employs Augmented Dickey-Fuller test (ADF) (Dickey and Fuller, 1979), and Kwiatkowski *et. al.* (1992) (KPSS). After detecting the existence of unit root, we apply the cointegration test developed by Johansen (1988), and Johansen and Juselius (1990) in order to see the long run link between the expectation and tendency questions of two indices, real interest rate and RFDD proxied by CNBC-e consumption index. As the final part, Granger causality test results will be demonstrated in order to show the direction of the relationship between the survey questions and the real final domestic demand.

Table 1 shows that unit root test results confirm nonstationarity of the series. All series except $TC_{CNBC\text{-}e}$ and TC_{CBRT} (for ADF test) and $EC_{CNBC\text{-}e}$ (for KPSS) reveal nonstationarity, which pave the way to apply Johansen-Juselius cointegration test so as to see whether there is a long run link between real final domestic demand, sub-indices and real interest rate.

Table 1: ADF and KPSS Test Results[3]

ADF				**KPSS**		
Variable	**Case**	**Lags**	**t-stat**	**Case**	**Lags**	**t-stat**
RFDD	No Trend	2	-2.543	Trend	8	0.247*
$EC_{CNBC\text{-}e}$	No Trend	3	-2.156	Trend	7	0.106
$TC_{CNBC\text{-}e}$	No Trend	1	-2.916*	Trend	8	0.184*
EC_{CBRT}	No Trend	1	-2.138	No Trend	6	1.024*
TC_{CBRT}	Trend	1	-3.470*	No Trend	6	0.954*
R	Trend	5	-3.453	Trend	8	0.151*

As indicated in Table 2, Johansen-Juselius cointegration test results display that there exists one cointegrating vector for the relevant variables.

After we detect the long run link among the variables in question, regardless of the selection of sub-indices (CNBC-e or CBRT), we proceed with the Granger causality test for the direction of

[3] For ADF test, critical values for constant and constant-trend case are -2.892 and -3.458 for 5% significance level, respectively. For KPSS test, critical values for constant and constant-trend case are 0.463 and 0.146 for 5% significance level, respectively. (*) denotes significance at 5 percent level. ADF test has unit root in the null hypothesis whereas it is stationary in KPSS test.

the relationship between real final domestic demand and expectation and tendency components of two consumer confidence indices. When sub-indices of CNBC-e consumer confidence index are considered, Granger causality test implies unidirectional relationship running from tendency component to real domestic demand. However, we cannot argue the same thing for the direction of the relationship between expectation component and domestic demand. As for the second Granger causality test in which sub-indices of CBRT consumer confidence index is considered, there is a one-way relationship from both expectation and tendency components to domestic demand. These tests demonstrated on Table 3 shed light on the fact that tendency components (good time to buy measure) are important especially in developing countries (here our example is Turkey) and affect the consumption levels, and hence domestic demand in an economy.

Table 2: Johensen-Juselius Cointegration Test Results[4]

Variable	Null	Eigenvalue	Trace Stat.	Variable	Null	Eigenvalue	Trace Stat.
RFDD	r = 0	0.178	48.489*	**RFDD**	r = 0	0.363	62.286*
EC_{CNBC-e}	r □ 1	0.149	29.468	**EC_{CBRT}**	r □ 1	0.213	29.769
TC_{CNBC-e}	r □ 2	0.099	13.813	**TC_{CBRT}**	r □ 2	0.124	12.539
R	r □ 3	0.038	3.742	**R**	r □3	0.041	2.972

Constant case is employed.

Table 3: Granger Causality Test Results

Null	Observation	F-stat	P-value
EC_{CNBC-e} Does Not Granger Cause RFDD	98	0.909	0.4066
TC_{CNBC-e} Does Not Granger Cause RFDD	98	2.769	0.068
EC_{CBRT} Does Not Granger Cause RFDD	98	4.201	0.019
TC_{CBRT} Does Not Granger Cause RFDD	98	4.741	0.012

Number of Lag is chosen as 2.

4. CONCLUSION

It is argued that consumer surveys of consumer behaviors can be useful in providing information for short term forecasts of consumer spending on durable goods. Even though the number of questions included, index calculation method or the methodology of indices result in some debates in the literature, some meaningful and crucial empirical findings might deal with these debates.

This study has attempted to test whether there is a long run link between real interest rate, tendency and expectation components of CNB real final domestic demand proxied by CNBC-e consumption index. After detection of non-stationarity for the series mentioned above, we employed cointegration test so as to see the possible long run link between the variables of interest and found that there exists one cointegrating vector for two sets of variables; one set includes sub-indices of CNBC-e consumer confidence, and the second set includes the ones of CBRT consumer confidence. The results of Granger causality test are worth mentioning such that we see the strong

[4] 5 % critical values for the Maximal Eigenvalue test are 27.58, 21.13, 14.26 and 3.84 for the constant case, 5 % critical values for the Trace test are 47.85, 29.80, 15.49, and 3.84 for the constant case. (*) denotes significance at 5 % level.

effect of "buying climate" measure on the domestic demand for two cases in which both sub-indices of CBRT and CNBC-e consumer confidence are considered.

Our work regarding the importance and statistical significance of sub-indices in terms of explaining the future consumption pattern is developmental. Further work that may use different econometric techniques or deal with other key survey questions might be essential for extending the research area.

BIBLIOGRAPHY

Acemoglu, Daron and Andrew Scott (1994), "Consumer confidence and rational expectations: Are agents' beliefs consistent with the theory?" *Economic Journal*, Vol. 104, pp. 1–19.

Angevine, Gerald (1974), "Forecasting consumption with a Canadian consumer sentiment measure", *The Canadian Journal of Economics*, Vol. 7, No. 2, pp. 273-289.

Carroll, Christopher, Jeffrey Fuhrer and David Wilcox (1994), "Does consumer sentiment forecast household spending? If so, why?", *American Economic Review*, Vol. 84, pp.1397–1408.

Croushore, Dean (2005), "Do consumer-confidence indexes help forecast consumer spending in real time?", *North American Journal of Economics and Finance*, Vol. 16, pp. 435–450.

Dickey, David and Wayne Fuller (1979), "Distribution of the Estimators for Autoregressive Time Series with a Unit Root", *Journal of the American Statistical Association,* Vol. 74, pp. 427-31.

Easaw, Joshey and Saeed Heravi (2004), "Evaluating consumer sentiment as predictors of UK household consumption behaviour: Are they accurate and useful?", *International Journal of Forecasting*, Vol. 20, pp. 671–681.

Fan, Simon and Phoebe Wong (1998), "Does consumer sentiment forecast household spending?: The Hong Kong case", *Economics Letters*, Vol. 58, pp. 77–84.

Fuhrer, Jeffrey (1993), "What role does consumer sentiment play in the U.S. macroeconomy?", *Federal Reserve Bank of Boston New England Economic Review*, Jan/Feb, pp. 32-44.

Garner, Alan (1991), "Forecasting consumer spending: Should economists pay attention to consumer confidence surveys?", *Federal Reserve Bank of Kansas City Economic Review*, Vol. 76, pp. 57–71.

Howrey, Philip (2001), "The predictive power of the index of consumer sentiment", *Brookings Papers on Economic Activity*, Vol. 1, pp. 175–213.

Huth, William, David Eppright and Paul Taube (1994), "The indexes of consumer sentiment and confidence: Leading or misleading guides to future buyer behavior", *Journal of Business Research*, Vol. 29, pp.199-206.

Johansen, Soren (1988), "Statistical Analysis of Cointegration Vectors", *Journal of Economic Dynamics and Control*, Vol. 12, pp. 231-54.

Johansen, Soren and Katarina Juselius (1990), "Maximum Likelihood Estimation and Inference on Cointegration-with Application to the Demand for Money", *Oxford Bulletin of Economics and Statistics*, Vol. 52, pp. 169-210.

Katona, George (1960), The Powerful Consumer, New York: McGraw-Hill.

Kwiatkowski, Denis, Peter Phillips, Peter Schmidt and Yongcheol Shin (1992), "Testing the Null Hypothesis of Stationarity Against the Alternative of a Unit Root: How Sure Are We That Economic Time Series Have a Unit Root?", *Journal of Econometrics,* Vol. 54, pp. 159-78.

Ludvigson, Sydney (2004), "Consumer Confidence and Consumer Spending", *The Journal of Economic Perspectives*, Vol. 18, No. 2, pp. 29-50.

Mueller, Eva (1963), "Ten years of consumer attitude surveys: Their forecasting record", *Journal of the American Statistical Association*, Vol. 58, pp. 899–917.

Parigi, Giuseppe and Giuseppe Schlitzer (1997), "Predicting consumption of Italian households by means of survey indicators", *International Journal of Forecasting*, Vol. 13, pp. 197–209.

Pickering, J. F., J. A. Harrison, C.D. Cohen, (1973), "Identification and Measurement of Consumer Confidence: Methodology and Some Preliminary Results", Journal of the Royal Statistical Society" Series A (General), Vol. 136, No. 1, pp. 43-63

Pickering, J. F. and B. C. Isherwood (1975), "Determinants of Expenditure on Consumer Durables", *Journal of the Royal Statistical Society*, Series A (General), Vol. 138, No. 4, pp.504-530

Roos, Michael (2008), "Willingness to consume and ability to consume", *Journal of Economic Behavior & Organization*, Vol. 66, pp. 387–402.

Souleles, Nicholas (2004), "Expectations, Heterogeneous Forecast Errors, and Consumption: Micro Evidence from the Michigan Consumer Sentiment Surveys", *Journal of Money, Credit and Banking*, Vol. 36, No. 1, pp. 39-72.

Vuchelen, Jef (2004), "Consumer sentiment and macroeconomic forecasts", *Journal of Economic Psychology*, Vol. 25, pp. 493–506.