A SUGGESTION FOR FINANCIAL CONDITION INDEX FOR TURKISH TOURISM SECTOR

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ABSTRACT

Purpose- When the economic structures and growth behaviors of the countries are examined, it is seen that the countries with the advantage in the tourism sector have achieved significant role if they give the necessary importance to this sector. It is insufficient and incomplete to consider the issue only in terms of macroeconomic indicators. In our study, we think that this sector should take place in the plans made by considering this sector and should be followed carefully. When the world literature is examined, it is seen that tourism financial conditions index has been developed and it has taken place in finance literature. However, we believe that we need to be taking into consideration of terrorism for this index in countries like Turkey. In our study, we introduce a new index by extension with terror variable to the tourism financial conditions index which is used and developed in the literature.
Methodology– In this study, Consumer Confidence Index (CCI), Composite Leading Indicator (CLI) Consumer Price Index (CPI), Real Effective Exchange Rate (REE), number of tourist arrivals (ARV) and number of terrorist attacks (TRR) for the period between 2004:01–2017:12 are used. The Factor Analysis is used to determine the direction of the coefficients of variables. The main purpose of data normalization is to guarantee the quality of the data before it is subjected to any analysis. In the study, min-max and z score methods, which are the most commonly used statistical normalization methods, were used in the normalization of variables.
Findings- According to factor analysis findings, only terror variable affects negatively on the TFCI. Other variables affect positively on the TFCITwo composite indicators were formed from the combination of the variables obtained as a result of standardization. These two variables are different in structure. Both composite indicators are made primarily from seasonal effects of the removal process.
Conclusion- As a result, Factor analysis is used to determine the direction of the coefficients of the variables that form the index. According to factor analysis findings, only terror variable affects negatively on the TFCI. And then two separate standardization methods were used to form the composite indicator. These are Z-standardization and Min-Max method. The variables obtained with both methods have seasonal effects, also the seasonally adjusted indices are reported.

Keywords: Tourism financial conditions index, tourism sector, monetary conditions index, financial conditions index
JEL Codes: E44, E47, G32

1. INTRODUCTION

The countries with the advantage in the tourism field have achieved important successes if they give the necessary importance to this sector. It is wrong and incomplete to consider the issue only in terms of macroeconomic indicators. In our study, we think that this sector should take place in the plans made in finance and should be followed carefully. When the literature is examined, it is seen that the tourism financial conditions index has been developed and has taken its place in the financial literature. Chang, Hsu and McAleer (2014); Chang (2015); Chang, Hsu and McAleer (2017) developed an alternative composite indicator for tourism based on MCI (Monetary Conditions Index) and FCI (Financial Conditions Index). The index is called the Tourism Financial Conditions Index in their studies. But we in countries like Turkey which is fighting terrorism in this study, we believe that terrorism should be calculated by adding the index of this variable. In this study, we propose a new index by adding terror variable to the tourism financial conditions index which is used and developed in the literature.

Chang (2017) proposed the Tourism Financial Conditions Index (TFCI). In this study, daily stock market returns, tourism stock market sub-index returns, exchange rate returns and interest rate differences are used for Taiwan on June 1, 2001 - February 28, 2014 period. TFCI was created by adapting and extending the commonly used Monetary Conditions Index (MCI) and Financial Conditions Index (FCI) to tourism

stock data. In this study, unlike TFCI calculations in the literature, the method GARCH, GJR and EGARCH conditional volatility models are discussed to determine natural volatility in daily tourism stock market returns. As a result, the findings showed that the new tourism financial conditions index can be estimated by using the conditional average of the return of the tourism stock market index. Also, the new daily TFCI was underlined simplicity and ease of interpretation. And the index clearly expressed that it would be useful in predicting the current economic and financial environment for tourism stock market returns, especially since it is based on the calculation and interpretation of publicly available information.

2. METHODOLOGY

2.1. Data

In this study, Consumer Confidence Index (CCI), Composite Leading Indicator (CLI) Consumer Price Index (CPI), Real Effective Exchange Rate (REE), number of tourist arrivals (ARV) and number of terrorist attacks (TRR) for 2004:01– 2017:12 period data. In the study, the coefficients of variables are determined the direction of the factor analysis in the index. Then standardization methods were used and a composite index was obtained from the variables.The definitions of the variables used in the analysis are given below.

CCI: Consumer confidence index (This consumer confidence indicator provides an indication of future developments of households' consumption and saving, based upon answers regarding their expected financial situation, their sentiment about the general economic situation, unemployment and capability of savings)

CLI: Composite leading indicator (The composite leading indicator (CLI) is designed to provide early signals of turning points in business cycles showing the fluctuation of the economic activity around its long term potential level. CLIs show short-term economic movements in qualitative rather than quantitative terms.)

CPI: Consumer Price Index (Inflation measured by consumer price index (CPI) is defined as the change in the prices of a basket of goods and services that are typically purchased by specific groups of households)

REE: Real Effective Exchange Rate (Real effective exchange rate, it is obtained by purifying relative price effects in the nominal effective exchange rate.)

ARV: Total Visitor Arrivals

TRR: Number of terrorist attacks in the Global Terrorism Database

Standardization methods applied to variables are reported below.

2.2. Methodology for Constructing New Index

TFCI, Consumer Confidence Index (CCI), Composite Leading Indicator (CLI) Consumer Price Index (CPI), Real Effective Exchange Rate (REE), number of tourists (ARV) and number of terrorist attacks (TRR) used in the study. The main purpose of data normalization is to guarantee the quality of the data before it is subjected to any analysis. There are many types of data normalization in the literature. Data normalization is particularly useful for the modelling application where data is usually of different scales. Min-max, Z-score, median normalization, etc. in the literature. Although there are many different techniques such as min-max and z score methods are preferred (Jain, Nandakumar & Ross, 2005; Jain &Bhandare, 2011; Nayak, Misra& Behera, 2014; Chiaramonte, Croci& Poly, 2015; Svirydzenka, 2016; Mare, Moreira & Rossi, 2017; Jain, Shukla &Wadhvani, 2018). Therefore, in the study, min-max and z score methods, which are the most commonly used statistical normalization methods, were used in the normalization of variables.

The most commonly used score normalization technique is the z-score that calculated using the arithmetic mean and standard deviation of the given data. In the Z-score method, each observation data is subdivided to the standard deviation after subtraction from the observation mean to eliminate the difference in the unit of measurement of the data.

$$z_i = \frac{x_i - \mu}{\sigma} \tag{1}$$

"μ" is the arithmetic mean and σ is the standard deviation of the given data. Z-score normalization determines a common numerical range for normalized scores of different structures.

The simplest normalization technique is Min-Max normalization. Min-Max normalization maintains the original score distribution other than the scaling factor and converts all scores into a common range. In this method, the difference between the minimum value of each observation and the series is divided by the difference between the maximum and minimum values of the series.

$$s_i = \frac{x_i - x_{min}}{x_{max} - x_{min}} \tag{2}$$

In order to calculate TFCI, the different structure between the data was corrected by conversion according to variables, Min-Max and Z-score methods.

The corrections were made for all the variables used and the analysis was performed on the values that are clearly written and calculated below.

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The procedure for calculating the values obtained by the Min-Max Method is shown below,

$$Consumer\ Confidence\ Index : sCCI_i = \frac{CCI_i - CCI_{min}}{CCI_{max} - CCI_{min}}, \tag{3}$$

$$Consumer\ Leading\ Indicator : sCLI_i = \frac{CLI_i - CLI_{min}}{CLI_{max} - CLI_{min}}, \tag{4}$$

$$Consumer\ Price\ Index : sCPI_i = \frac{CPI_i - CPI_{min}}{CPI_{max} - CPI_{min}}, \tag{5}$$

$$Real\ Effective\ Exchange\ Rate : sREE_i = \frac{REE_i - REE_{min}}{REE_{max} - REE_{min}}, \tag{6}$$

$$Number\ of\ Tourist : sARV_i = \frac{ARV_i - ARV_{min}}{ARV_{max} - ARV_{min}}, \tag{7}$$

$$Number\ of\ Terror\ Attack : sTRR_i = \frac{TRR_i - TRR_{min}}{TRR_{max} - TRR_{min}}, \tag{8}$$

The procedure for calculating the values obtained by the Z-Score Method is shown below,

$$Consumer\ Confidence\ Index : zCCI_i = \frac{CCI_i - \mu_{CCI}}{\sigma_{CCI}}, \tag{9}$$

$$Consumer\ Leading\ Indicator : zCLI_i = \frac{CLI_i - \mu_{CLI}}{\sigma_{CLI}}, \tag{10}$$

$$Consumer\ Price\ Index : zCPI_i = \frac{CPI_i - \mu_{CPI}}{\sigma_{CPI}}, \tag{11}$$

$$Real\ Effective\ Exchange\ Rate : zREE_i = \frac{REE_i - \mu_{REE}}{\sigma_{REE}}, \tag{12}$$

$$Number\ of\ Tourist : zARV_i = \frac{ARV_i - \mu_{ARV}}{\sigma_{ARV}}, \tag{13}$$

$$Number\ of\ Terror\ Attack : zTRR_i = \frac{TRR_i - \mu_{TRR}}{\sigma_{TRR}}, \tag{14}$$

Factor analysis is a method for investigating whether several variables of interest are linearly related to a smaller number of unobservable factors. Usually, the goal of factor analysis is to aid data interpretation. The factor analyst hopes to identify each factor as representing a specific theoretical factor. Therefore, many of the reports from factor analysis are designed to aid in the interpretation of the factors (NCSS Statistical Software, 2014). Another goal of factor analysis is to reduce the number of variables. However, Factor analysis is used in the literature to determine the weights and direction of the variables that form the index while creating composite indexes.

3. FINDINGS AND DISCUSSIONS

Factor analysis is performed to determine the coefficients of the series to be included in the TFCI. According to the Factor analysis findings, when creating the TFCI variable, it was determined that the coefficient of the terror variable should be negative and the coefficient of other variables should be positive.

Table 1: Factor Analysis

| Rotated Component Matrix			
	1	2	3
TRR		-0.695	
CPI		0.893	
CCI	0.779		
CLI	0.856		
REE			0.763

ARV			0.694
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.			
Kaiser's measure of sampling adequacy (MSA) = 0.528			

After the variables were standardized, TFCI index was calculated and graphed according to both standardization techniques.
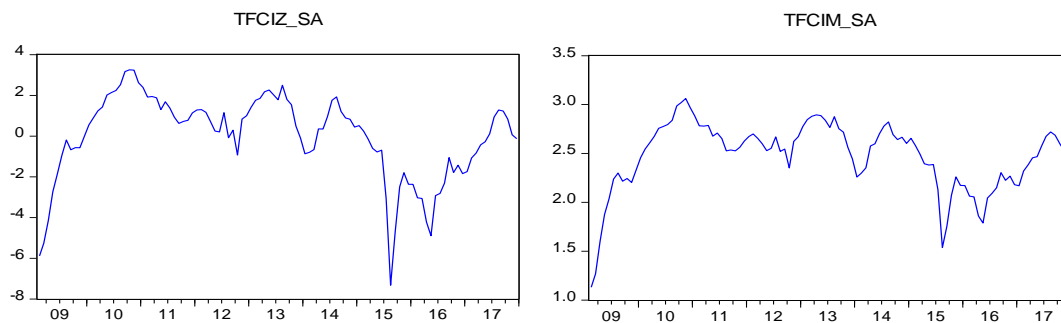
$$Z\,Score: TFCI_i = zCCI_i + zCLI_i + zCPI_i + zREE_i + zCCI_i + zARV_i - zTRR_i \qquad (15)$$

$$Min - Max\,Score: TFCI_i = sCCI_i + sCLI_i + sCPI_i + sREE_i + sCCI_i + sARV_i - sTRR_i \qquad (16)$$

Figure 1: TFCI Indices Obtained by Z-Score and Min-Max Standardization Technique
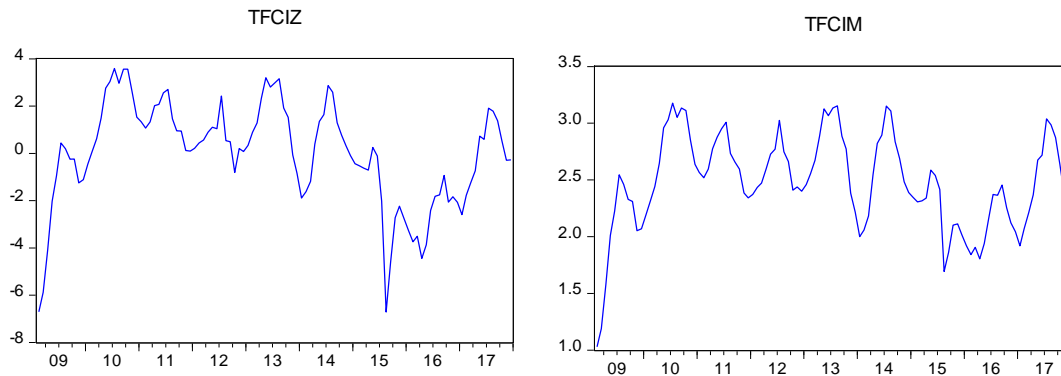
Figure 2. Seasonally adjusted TFCI indices

Two alternative variables were formed from the combination of the variables obtained as a result of standardization. These two variables are different in structure. Both composite indicators are made primarily from seasonal effects of the removal process.

4. CONCLUSION

In this study, the TFCI index introduced by Chan et.al. (2014), Chan (2015) and Chan et al. (2017) is improved by adding the effect of terrorist attacks. TFCI which has already been introduced by Chans' studies is conducted in Turkey for the period of 2004-2017. The methodology we used for this composite indicator is also revised whit transformation process. One reason for the selection of Turkey in the study of the tourism industry is affected by terrorist attacks.

First, factor analysis is used to determine the direction of the coefficients of the variables that form the TFCI. Accordingly, the analysis findings, only terror variable affects negatively on the TFCI. Then two separate standardization methods were used to form the composite indicator. These are Z-standardization and Min-Max method. The variables obtained as a result of both methods were determined for the presence of seasonal effects and seasonally adjusted.

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