Relationship between Foreign Trade Deficit and Special Consumption Tax Revenues with Structural Breaks in Turkey

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Abstract
Trade balance is one of the most important indicators of economic stability. The increasing capital inputs in recent years, where capital liberalization is highly realized, make local currency more valuable. During this process that import grew while export went down, the foreign trade deficit has become greater, which impairs competition. Special consumption taxes that have been implemented more actively in recent years are intended to reduce domestic demand for import and avoid foreign trade deficits. This study examines whether there is a relation between the foreign trade deficit and special consumption taxes for Turkey between 01/2006 and 05/2013 using the Zivot-Andrews unit root test based on structural breaks, the Gregory-Hansen cointegration test and the Toda-Yamamoto causality analysis. Empirical practices in the study showed that neither series were stationary in level and there was no long-term relation between them. As a result of the Toda-Yamamoto method based on the Granger causality analysis, bidirectional causality was determined in between the variables.
Keywords: Foreign trade deficit, Special consumption tax, Structural change, Toda-Yamamoto causality analysis

1. Introduction

Current deficit and thus trade balance are among the most popular discussions in Turkey in recent years. Particularly for the last three decades where financial liberalization and globalization has grown, trade balance of countries breaks down more rapidly with the increasing capital input and more valuable domestic currency. When foreign trade deficits are continuous, current deficit and national debt grows inevitably. In order to avoid such a situation that would lead to economic regression in the long term, governments seek for new measures to reduce foreign trade deficits. Imposing customs duty is one of the most conventional methods to minimize import. Yet, reducing import by minimizing particularly domestic demand is a method that has been implemented more actively in recent times. One method of reducing import demand is the special consumption taxes (OTV) imposed on goods and services that are used commonly by the consumer and are largely dependent on foreign production. OTV was first put in effect in 2002 in Turkey on commonly used goods and services, mainly petroleum products, alcohol, tobacco and solvents. This kind of taxes must be selected and implemented cautiously for the goods for which the elasticity of demand is different. This is because taxes are the basic element of public revenue. Thus, OTV was initially imposed on limited number of goods, and it was also intended to reduce foreign trade deficits in the long run. Current account balance is essentially ensured through the trade in goods. Therefore, the method to be adopted for financing foreign trade deficits is very important. Conventional methods used for financing foreign deficits include customs duties and debt instruments. However, special consumption taxes have also been preferred in recent years for reducing the demand for import.

This study is intended to determine whether there is causal relation between the special consumption tax revenues and foreign trade deficits, and what the direction of such a relation is. Although there are a limited number of studies in literature on the causal relation between current deficit and special consumption taxes, no study exists regarding the relation between foreign trade deficit and OTV. For this purpose, this study first examines the theoretical framework between OTV and foreign trade deficit, then explains the econometrical method, and finally shows the findings.

2. Theoretical Framework

2.1 Importance of the Relation of Foreign Trade Deficit and OTV Revenues

The current account located under the balance of payments is equal by absolute values to capital account balance, which also includes the change in foreign exchange reserves that show corresponding movements of the Central Bank when considered net errors and omissions excepted. Current account deficit means that the amount of money a country sends out abroad is greater than it receives. This deficit is cleared by borrowing, or selling domestic assets. In the case of current account surplus, capital is transferred abroad by the nationals. In general, current account refers to total liabilities against residents abroad, or the change in assets that exist abroad. If the

amount that comes in a country for financing the current deficit is more than the amount that is sent out by nationals of that country, liabilities are also greater. In other words, indebtedness of the nationals to the residents abroad increases (Babaoğlu; 2005:5).

Continuous rise of current account deficit in proportion to national income upon the economic crises after 1990 makes the issue of current deficit more important. Because the current account records goods and service trade as well as transfer payments of a country, the current account is divided into three subgroups. The account that records the goods trade, i.e. total goods import and export, shows foreign trade balance of the economy. When services and net transfers are added to this item, current account balance is obtained. If the revenue earned from the goods and services trade and net transfers is unable to cover the payments in this account, current deficit occurs (Peker and Hotunluoğlu; 2009: 222).

The special consumption tax (OTV) is the tax that is imposed on individually specified goods and services in return for the turnover taxes imposed on all the goods and services except for the exemptions in any production and distribution level of the economic process. There are various opinions explaining why government needs indirect taxes such as the special consumption tax, in addition to direct taxes. First is the belief that the Special Consumption Tax would improve social welfare. However, the Special Consumption Tax must not be optimal in terms of effectiveness and fairness in order to improve social welfare. Another justification of the Special Consumption Tax consists of externalities. Taxing alcoholic beverages, tobacco and products that cause environmental pollution serves for internalizing the externalities. The rate to be applied and goods to be selected for the Special Consumption Tax is very important to achieve desired effectiveness. The Special Consumption Tax imposed on tobacco, cigarettes and alcoholic beverages in developed countries is applied on additional luxury products that are preferred by individuals with higher income in developing countries in order to ensure income equity. Nevertheless, this kind of taxes is imposed on the goods with lower elasticity of demand. As explained before, this tax on the goods with lower elasticity of demand, which are consumed more commonly by low-income individuals, has a negative impact on the distribution of income and the principle of fairness of taxation. There are also those who defend that the OTV is useful in generating tax revenue with minimum intervention on the market as it is imposed on the goods with low elasticity of demand. The main basis for this opinion is the fact that demand for the goods with increasing price due to taxation barely changes because of low elasticity. As a result, it is claimed that government earns the desired tax revenue, which does not lead to improper distribution of resources as no significant change occurs in consumer preferences (Çapar; 2004: 121-122).

2.2 Foreign Trade Deficit and the Course of OTV Revenues in Turkey

The most important factor of current deficit in Turkey is known to be the foreign trade deficit. Pursuant to the import-substitution production policy of Turkey before 1980, imported goods were intended to be manufactured domestically. After 24 January 1980, a growth policy based on export was adopted with free trade policy. However, because necessary legal and structural regulations were not made and import exceeded export, result was the foreign trade deficit. After foreign trade deficits followed a consistent course, proportion of export to import was about 60% by the end of 2011 (Göçer; 2013: 215).

Turkey continuously faced with foreign trade deficit during 1997-2010. The foreign trade deficit of Turkey has grown during boomers while it regressed significantly during shrinkages. The main determinant of the fluctuations of foreign trade balance is the fluctuations in imports. Proportion of foreign trade to GDP was 8.8% in 1999 while it was lower during 1998 and 1999 with the influence of slowdown in growth rate whereas it rose up to 10% in 2000 where the economic growth was more rapid, and the program based on exchange rates was implemented. It was down to 5.3% in 2001 with the effect of economic crisis, and 8.7% during 2002-2008 with a continuous rise in the following years. The 2009 global economic crisis caused a significant reduction in foreign trade deficit, which led to the fall of its proportion to GDP down to 6.3%. However, this rate was again up to 9.7% in 2010 when the economy started to grow rapidly.

As the use of natural gas became widespread during 1997–2010, Turkey's position as the net energy importer was consolidated. In addition to the increasing dependence on foreign sources, rapid rise of energy import prices impacted foreign trade deficit in a negative way. This was more apparent during the period of 2005–2008 (Yükseler; 2011: 4). It reached up to USD 48.5 billion by 2010, which is the result of continuously increasing foreign trade deficits.

A country with current deficit can borrow from other countries, sell the stocks, bonds and similar financial assets, or reduce foreign exchange reserves to finance its deficit. Which of and to what extent these methods are resorted to depends on deliberate decisions of policy-makers as well as the degree of deficit and general tendency in the world. Because no development occurred to finance high current deficit in recent years in services balance and transfer payments that include the items other than trade balance, actual focus has been given on the movements within the capital account (Telatar, 2011:28). In addition to the capital account, the special income tax, imposed on the most commonly used goods and services, is another important source of

income used to finance current deficit.

The special consumption taxes are imposed on individually selected goods and services - unlike the general consumption tax - during production and distribution stage of the economic process or except for the exemptions in only one of them. What make the special consumption tax "special" is that the number of goods and services it covers is more limited than general consumption taxes. OTV covers addictive products such as alcohol, tea and tobacco; highly demanded products such as oil, gas, cement and glass; and luxury goods such as fur, jewelry and motor vehicles (Taylar, 2012: 439-440). This will ensure to earn public revenue and reduce foreign trade deficits by scaling down domestic demand that requires the said goods to be imported. Table 1 below shows the OTV revenues in central budget of Turkey during 2006-2012.

Table 1. OTV in Central Budget Revenue (Thousand TRY)

Year	2006	2007	2008	2009	2010	2011	2012
OTV	36,926,175	39,110,505	41,831,723	43,619,794	57,285,121	64,188,786	71,705,543
Petroleum and Natural Gas Products	20,550,743	22,051,751	23,941,458	25,524,959	31,697,176	33,572,623	35,934,622
Motor Vehicles	4,138,481	4,293,326	3,804,892	3,352,689	6,192,786	8,567,837	8,408,972
Alcoholic Beverages	1,897,552	1,889,360	1,986,817	2,134,395	2,868,288	3,856,415	4,642,864
Tobacco Products	8,918,380	9,646,527	10,888,211	11,546,093	14,784,461	15,850,168	19,975,803
Cola Drinks	446,112	184,582	205,102	212,317	221,356	280,991	276,449
Consumer Durables and Other Goods	974,907	1,044,959	1,005,243	849,341	1,521,054	2,057,748	2,466,815

Source: http://www.bumko.gov.tr/TR,166/merkezi-yonetim-butce-gelirleri-2006-2012.html Accessed on: 23.07.2013

Table 1 shows that the OTV revenues increased continuously except for cola drinks. Motor vehicles, alcohol and tobacco products constitute the consumption group showing the greatest increase as the OTV revenue.

Table 2. OTV Growth Rates (%)

Year	2007	2008	2009	2010	2011	2012
OTV	5.9	7.0	4.3	31.3	12.1	11.7
Petroleum and Natural Gas Products	7.3	8.6	6.6	24.2	5.9	7.0
Motor Vehicles	3.7	-11.4	-11.9	84.7	38.4	-1.9
Alcoholic Beverages	-0.4	5.2	7.4	34.4	34.5	20.4
Tobacco Products	8.2	12.9	6.0	28.0	7.2	26.0
Cola Drinks	-58.6	11.1	3.5	4.3	26.9	-1.6
Consumer Durables and Other Goods	7.2	-3.8	-15.5	79.1	35.3	19.9

Source: http://www.bumko.gov.tr/TR,166/merkezi-yonetim-butce-gelirleri-2006-2012.html Accessed on: 23.07.2013

According to Table 2 that shows OTV growth rates, 2010 was the year with the largest OTV increase while it was relatively low in 2007. In general, however, OTV rates seem to increase continuously during 2007-2012. Particularly the OTV growth rates for consumer durables, tobacco and alcohol products in recent years are remarkable. After 2009, the OTV revenues from motor vehicles have an important share in central budget while

oil and gas products have always held the top ranks.

Table 3. Foreign Trade Balance (Million Dollar)

Years	Export	Import	Goods Balance
1998	30,741	-44,779	-14,038
1999	29,031	-38,802	-9,771
2000	30,825	-52,882	-22,057
2001	34,729	-38,092	-3,363
2002	40,719	-47,109	-6,390
2003	52,394	-65,883	-13,489
2004	68,535	-91,271	-22,736
2005	78,365	-111,445	-33,080
2006	93,613	-134,671	-41,058
2007	115,361	-162,213	-46,852
2008	140,800	-193,821	-53,021
2009	109,647	-134,497	-24,850
2010	120,902	-177,315	-56,413
2011	143,396	-232,535	-89,139
2012	163,235	-228,957	-65,722

Source: DPT, Temel Ekonomik Göstergeler 2013, Accessed on: 23.07.2013

Table 3 shows the import, export values and foreign trade balance in Turkey during the period of 1998-2012. As shown in the table, Turkey's import amounts have always been higher than export amounts. Because Turkey meets most of the need for certain product groups such as motor vehicles, electronics and alcohol with import and high share of imported intermediate goods in export goods makes import rates higher than the export. As a result, foreign trade deficit inevitably occurs. The import amounts fell down in 2001, 2009 and 2012. Table 2 shows that when OTV revenues were earned significantly from imported goods, they were lower in 2009 compared to the previous year. Accordingly, the decrease in OTV revenues is an indication of the decline in import. Indeed, this consolidates the causal relation between OTV and foreign trade deficits as the OTV is imposed on the most commonly used goods and services.

Table 4. GDP Shares of OTV (%)

Year	2006	2007	2008	2009	2010	2011	2012
OTV	4.9	4.6	4.4	4.6	5.2	4.9	5.1
Petroleum and Natural Gas Products	2.7	2.6	2.5	2.7	2.9	2.6	2.5
Motor Vehicles	0.5	0.5	0.4	0.4	0.6	0.7	0.6
Alcoholic Beverages	0.3	0.2	0.2	0.2	0.3	0.3	0.3
Tobacco Products	1.2	1.1	1.1	1.2	1.3	1.2	1.4
Cola Drinks	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Consumer Durables and Other Goods	0.1	0.1	0.1	0.1	0.1	0.2	0.2

Source: http://www.bumko.gov.tr/TR,166/merkezi-yonetim-butce-gelirleri-2006-2012.html Accessed on: 23.07.2013

Table 4 above shows the share of OTV in GDP in Turkey during 2006-2012. Accordingly, the proportion of OTV in GDP was 4.9% in 2006 while it was recorded as 5.1% in 2012. Table 4 also shows that the OTV earned

from oil and natural gas products has the most important share in GDP with 2.6%. This consumption group is followed by tobacco products and motor vehicles, respectively.

3. Dataset, Econometric Method and Analysis

3.1 Dataset

In order to analyze the impact of OTV revenues on foreign trade deficit in Turkey, this study uses the series consisting of Foreign Trade Deficit (DTA) and Special Consumption Tax revenues (OTV) monthly data of 2006:01-2013:05 period. The DTA dataset is used in the analysis by converting into TRY the Export and Import data from Secretariat of Treasury Distribution database using the exchange rate obtained from Turkish Central Bank Electronic Data Distribution System (EVDS) while the OTV dataset is obtained from the EVDS.

3.2 Econometric Method

This section of the study will use econometric analysis, explain the Zivot-Andrews unit root test and Gregory-Hansen cointegration test that takes into account structural breaks, and describe the Toda-Yamamoto causality test. Empirical findings were obtained using the EViews 7.2 econometry packaged software.

3.2.1 The Zivot-Andrews Unit Root Test

Economic time series can face with structural changes due to economic crisis, natural disasters, instant policy changes and so on (Yılancı and Özcan, 2010:25). The econometric methods that ignore these structural changes will cause improper findings to be obtained. Criticizing the Perron (1989) test, which allows for a single break, for addressing the break externally, Zivot-Andrews (1992) developed the ZA unit root test that defines structural breaks internally as well.

The models addressed by the ZA unit root test include the following (Zivot and Andrews,1992:254):

$$y_t = \mu + \beta t + \delta y_{t-1} + \theta_1 DU(\lambda) + \sum_{i=1}^{k} \delta_i \Delta y_{t-i} + e_t$$

(Model A)

$$y_t = \mu + \beta t + \delta y_{t-1} + \theta_2 DT(\lambda) + \sum_{i=1}^{k} \delta_i \Delta y_{t-i} + e_t$$

(Model B)

$$y_t = \mu + \beta t + \delta y_{t-1} + \theta_2 DT(\lambda) + \theta_1 DU(\lambda) + \sum_{i=1}^{k} \delta_i \Delta y_{t-i} + e_t$$

(Model C)

Among the models above, Model A includes structural changes in average, Model B in slope, and Model C both in slope and in average. The time $t = 1,2,...,T$ refers to the T_B time of break $\lambda = T_B / T (\lambda \in (0.15, 0.85))$ and relative break reflection. Presence of structural break is only sought in its λ region (Yılancı and Özcan, 2010:25). The dummy variables DU and DT refer to the break in average and in trend, respectively, and are defined as follows:

$$DU_t = \begin{cases} 1 & \text{while } t \succ TB \\ 0 & \text{in other situations.} \end{cases}$$

$$DT_t = \begin{cases} t\text{-}TB & \text{while } t \succ TB \\ 0 & \text{in other situations.} \end{cases}$$

For an estimation of the breaking point, (T-2) regressions are defined using the Least Squares method for t = 2,…,(T-1); the breaking point is given by the date that is included in the model, which is a coefficient of the variable y_{t-1} and gives the smallest t statistics for δ, and that gives the least evidence to accept the hypothesis that there is a unit root in the series (Glynn et al., 2007:68).

This test checks through the accuracy of $\delta = 1$ hypothesis. After the breaking date is determined, the null hypothesis that shows the presence of a unit root without structural break if the t statistics for δ is greater than the ZA critical values by absolute value. Alternative hypothesis of the test is that the series has a static trend with

the presence of structural break that occurred in the trend function (Yılancı and Özcan, 2010:26).
Although there is no consensus on which of the above models are better, economic studies generally use Model A and Model C (Yavuz, 2006:166). This study will evaluate the empirical findings for Model A and Model C.

3.2.2 The Gregory-Hansen Cointegration Test

After the unit root test results are obtained, the cointegration test developed by Gregory and Hansen (1996), allowing for a single structural break. Gregory and Hansen developed the standard Johansen cointegration test, which assumes that the coefficients in the cointegrated vector do not change by the time, so as to address the structural break internally (Çatık, 2006:10).

The Gregory and Hansen cointegration test that allows for structural break uses three different variables to test the presence of a long-term relation among the variables. These three models include:

Model C (Break in the Constant):

$$y_{1t} = \mu_1 + \mu_2 \varphi_{t\tau} + \alpha^T y_{2t} + e_t \qquad \text{is expressed as } t = 1,\ldots,n$$

and μ_1 in the model indicates the constant before the breakage while μ_2 indicates the change made by the breakage on the constant.

Model C/T (Break in the Constant with Trend):

$$y_{1t} = \mu_1 + \mu_2 \varphi_{t\tau} + \beta t + \alpha^T y_{2t} + e_t \qquad \text{is expressed as } t = 1,\ldots,n$$

This model considers the breakages both in the constant and the trend.

Model C/S (Regime Change):

$$y_{1t} = \mu_1 + \mu_2 \varphi_{t\tau} + \alpha_1^T y_{2t} + \alpha_2^T y_{2t} \varphi_{t\tau} + e_t \qquad \text{is expressed as } t = 1,\ldots,n$$

and μ_1 and μ_2 are as expressed in the model that shows breakage in the constant. α_1 is the slope coefficient before breakage while α_2 indicates the change in slope after breakage (Gregory and Hansen, 1996:103).

Structural break for the three models will be defined using the following dummy variables:

$$\varphi_{1t} = \begin{cases} 0, & \text{if } \quad t \le [n\tau] \\ \\ 1, & \text{if} \qquad\qquad\qquad\qquad t \succ [n\tau] \end{cases}$$

τ refers to the structural breakage point that takes the value of (0.1) while $[n\tau]$ indicates the integer section of it (Gregory and Hansen, 1996:102).

The date on which the Philips test statistics (Z_α^* and Z_t^*) and Augmented Dickey Fuller test statistics (ADF^*) calculated for these three models are at the minimum level specifies the appropriate breakage date.

The test statistics are expressed as (Gregory and Hansen, 1996:106):

$$\left. \begin{aligned} Z_\alpha^* &= \inf Z_\alpha(\tau) \\ Z_t^* &= \inf Z_t(\tau) \\ ADF^* &= \inf ADF(\tau) \end{aligned} \right\} \quad \tau \in T$$

After comparing the test statistics with table critical values for the appropriate model, alternative hypothesis showing the presence of a cointegration relation among variables with the structural breaks is tested against the main hypothesis that there is no cointegration among variables. The table critical values are determined by the number of variables, and included in the study conducted by Gregory and Hansen (1996) (Tıraşoğlu and Yıldırım, 2012:115).

3.2.3 The Toda-Yamamoto Causality Test

Since the Granger causality analysis requires zero restrictions with specific parameters, the test statistics can be obtained applying the Wald or χ^2 test. However, in the case that VAR models contain non-static variables,

distributions of F or χ^2 may have non-standard asymptotic characteristics. As a result of their study, Toda and Yamamoto (1995) developed a causality test that uses level values regardless of stability of the series in estimation of the VAR models and does not consider whether the series are cointegrated or not. Before this test is applied, an appropriate length of delay is to be determined for the VAR model (Akçacı, 2013:74).

The VAR (p+d_{max}) model is estimated for the Toda and Yamamoto test. d_{max} refers to the degree of maximum integration of series. The VAR (p+d_{max}) model used in the Toda and Yamamoto test is defined as

$$Y_t = \alpha_0 + \sum_{i=1}^{p+d_{max}} \alpha_{1(i+d)} Y_{t-(i+d)} + \sum_{i=1}^{p+d_{max}} \alpha_{2(i+d)} X_{t-(i+d)} + \varepsilon_{1t}$$

$$X_t = \beta_0 + \sum_{i=1}^{p+d_{max}} \beta_{1(i+d)} Y_{t-(i+d)} + \sum_{i=1}^{p+d_{max}} \beta_{2(i+d)} X_{t-(i+d)} + \varepsilon_{2t}$$

The main hypothesis in the first model is indicated as $H_0 : \alpha_{2(i+d)} = 0$ and shows that the variable X is not the Granger reason for the variable Y while alternative hypothesis is $H_1 : \alpha_{2(i+d)} \neq 0$ and shows that X is the Granger reason for Y. These hypotheses are tested with the Wald test that complies with the χ^2 distribution with p degree of freedom. Similarly, the second model is also tested. The additional terms here (d_{max}) is not included in the limitation (Yılancı and Özcan, 2010:28).

3.3 Analysis of the Study

Graph 1 visualizes the series of foreign trade deficit (DTA) and special consumption revenues (OTV).
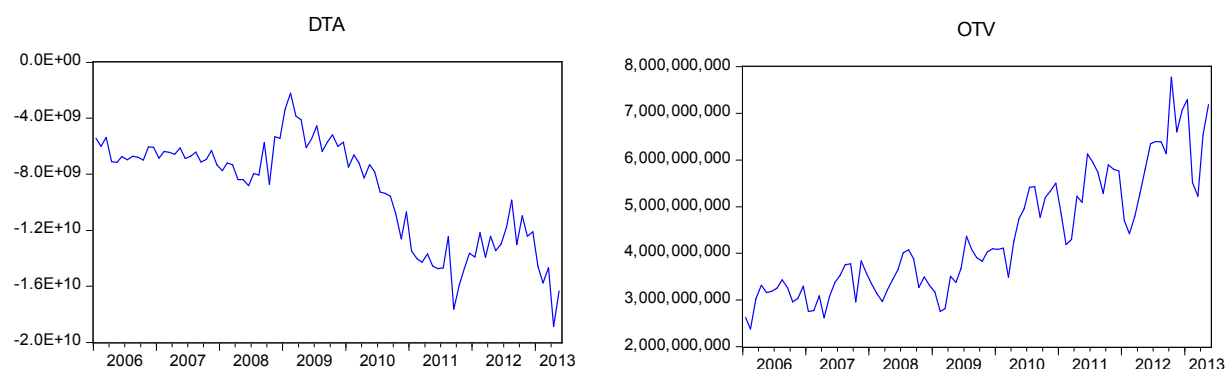

Figure 1. Variables

3.3.1 Conclusions and Assessment of the Zivot Andrews Unit Root Test

Table 5 shows the results of Zivot Andrews unit root test with structural breaks. Table 5 includes the findings of Model A and Model C for the ZA test results. Model A considers only the breakage in level while Model C takes into account the breakage in both level and slope. Dates of breakages are specified in the box on the right of test statistics. The values in parentheses next to the test statistics indicate the appropriate delay.

Table 5. Conclusions and Assessment of the Zivot Andrews Unit Root Test (Level Values)

Series	ZA Test			
	Model A		Model C	
DTA	-2,90 (12)	*2010:07*	-2,94 (12)	*2010:07*
OTV	-2,73 (12)	*2008:10*	-3,06 (12)	*2008:10*
	Critical Values of the Test			
	1%	5%		10%
Model A	-5.34	-4.83		-4.58
Model C	-5.57	-5.08		-4.82

The ZA test results show that;

- Because the DTA series contains unit root for Model A and Model C at the significance level of 1%, 5% and 10%, as the test statistics is smaller by absolute value than critical values.
- The OTV series contains unit model for both series at all the three significance level, and is not statationary.

Since the level values of series are not stationary, the ZA test will be repeated taking the first difference of the series.

Table 6. Conclusions and Assessment of the Zivot Andrews Unit Root Test (First Differences)

Series	ZA Test			
	Model A		Model C	
DTA	-16,01 (12)	2009:03	-16,96 (12)	2011:11
OTV	-8,21 (10)	2009:12	-8,57 (10)	2011:09
	Critical Values of the Test			
	1%	5%	10%	
Model A	-5.34	-4.93	-4.58	
Model C	-5.57	-5.08	-4.82	

As summarized in Table 6, the series become stationary at all significance levels for both models when the first difference of series is taken. Therefore, DTA and OTV are stationary at the first degree, i.e. I (1).

3.3.2 Conclusions and Assessments of the Gregory-Hansen Cointegration Test
The Gregory-Hansen cointegration test was performed to show whether there is a long-term relation among variables under structural breakage, as both series are I (1) after the level of stability of the series under structural breakage is identified, and minimum ADF test statistics and the corresponding breakage periods are presented in Table 7.

Table 7. Conclusions of the Gregory-Hansen Cointegration Test

Model	Breakup Period	ADF Statistics	Critical Values
Breakage in Constant	2010:07	-3,689881 (4)	*1%* -5.44 and *5%* -4.92
Breakage in Constant and Trend	2010:10	-3,153990 (1)	*1%* -5.80 and *5%* -5.29
Regime Change	2010:11	-3,586000 (8)	*1%* -5.97 and *5%* -5.50

Note: Critical values were obtained from Gregory and Hansen (1996:109). The values in parentheses show the number of delays selected by the Akaike Information Criterion.

Because minimum ADF statistics calculated for all models is smaller than critical values, the basic hypothesis that shows no cointegration among the series cannot be accepted. Therefore, it is possible to claim that there is not long-term relation between the foreign trade deficit and special consumption tax revenues according to the Gregory-Hansen test result. Moreover, there is a structural break for the three models in 7th, 10th and 11th months of 2010, respectively.

3.3.3 The Toda-Yamamoto Causality Test
This section of the study will analyze the causality relation between the foreign trade deficit and special consumption taxes, using the Granger causality test based on the Toda-Yamamoto method.

Table 8. Conclusions of the Toda-Yamamoto Causality Test

Basic Hypothesis	Length of Delay	χ^2 Statistics
DTA ⇏ OTV	(p=2) + (d_{max}=1) = 3	11,46950 (0.0094)
OTV ⇏ DTA	(p=2) + (d_{max}=1) = 3	13,11225 (0.0044)

Note: The values in parentheses are probability values of the related test statistics. The p value for appropriate VAR model has been determined according to the Schwarz Information Criterion.

As Table 8 shows, both the main hypothesis showing that foreign trade deficit is not the Granger reason for special consumption tax revenues at the significance level of 1%; and the main hypothesis showing that special

consumption tax revenues are not the Granger reason for foreign trade deficit are rejected. Therefore, according to the Toda-Yamamoto causality analysis, it is observed that there is a bidirectional causality relation between foreign trade deficit and special consumption tax revenues.

4. Conclusion

The issue of current deficit has come to the forefront in Turkey after 1980s and 1990s when restrictions on foreign trade and capital flows were removed to a large extent. Another factor that stimulates the issue of current deficit is the increasing tendency of financing opportunities in recent years. The ability to finance high level of current deficit has become a way of keeping the current deficit at sustainable levels. Current account balance consists of three items including the goods trade account covering import and export; services account such as tourism, insurance and transport; and transfer account. Undoubtedly, the item with the biggest effect is the goods trade account. A deficit or surplus in current account balance is usually dependent on this account. Therefore, countries can take new measures to reduce import for the purpose of obstructing rapid growth of foreign trade deficit and thus the current deficit.

When the short-term capital transactions with speculative purposes are directed to high real interests in the international markets, short-term foreign exchange reserves increase, but domestic currency becomes over-valued against foreign currencies. Causing imported goods to become cheaper, this will increase current deficit with a negative impact on export. For a lower current deficit, either export will be increased rapidly or import will be reduced. The most conventional way to reduce import includes customs duty and measures to block import. However, the special consumption taxes, which can be imposed on largely imported goods such as petroleum products, fuel, tobacco, motor vehicles, alcohol, solvent products and electronics, are also used to reduce domestic demand to minimize import. The special consumption taxes (OTV) that were first adopted with law no. 4760 on 06.06.2002 were intended to collect public revenues and also change patterns of expenses made by consumers. Being used effectively on the commonly used goods and services, OTV is an important instrument to reduce current deficit in Turkey.

This study also addresses the relation between special consumption taxes and foreign trade deficit. However, majority of the empirical studies on economic impact of the special consumption tax revenues does not take into account the structural breaks experienced throughout the period. Using the tests that take into account structural breaks in the series an cointegrated vector, this study concluded that there is no long-term relation between the first-degree static foreign trade deficit and special consumption tax revenues, but a bidirectional causality relation was determined in between them. Bidirectional causality indicates that past values of either foreign trade deficit or special consumption tax values could explain the change in the other value. It is observed that the special consumption tax revenues are effective in explaining future values of foreign trade deficit in economic terms. Consequently, increasing the special consumption tax revenues will have an impact on foreign trade deficit.

Turkey's import amounts have always been higher than export amounts. This makes foreign trade deficit inevitable. The fact that OTV revenues are earned substantially from imported goods and the high share of imported intermediate goods in export goods increases the OTV rates. Hence, if Turkey is able to produce and sell technological and electronic products will contribute greatly to the reduction of foreign trade deficit.

Turkish economy has a capacity of USD 800 billion with the average growth rate of about 5.5% after 2002. Even if the growth rate remains the same, Turkey will become one of the major actors in the world economy in near future. However, Turkish economy should pay attention particularly to current deficit and foreign trade deficit as its determinant. The special consumption taxes that are imposed to reduce foreign trade and domestic demand should be revised structurally and the required legal framework should be prepared. Policy makers can reduce foreign trade deficit, and thus current deficit, by increasing special consumption tax revenues during policy making. However, OTV as an important source of public revenue is one of the main issues that make consumers upset. OTV should be revised according to demand elasticity, and adjusted to a level to be accepted by the majority of consumers. This will ensure to continue generating public revenue, alleviate the displeasure in society, and contribute to the reduction of foreign trade deficit. In other words, OTV level of the goods should be revised based on its effect on income and price, because the level of OTV will determine how tax rates will be reflected on the prices.

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