

Fiscal sustainability test: The case of Turkey

Mücahit Aydın*, Department of Financial Econometrics, Faculty of Political Sciences, Sakarya University, Sakarya 54187, Turkey.

Veli Yılandı, Department of Financial Econometrics, Faculty of Political Sciences, Sakarya University, Sakarya 54187, Turkey.

Suggested Citation:

Aydın, M. & Yılandı, V. (2016). Fiscal sustainability test: The case of Turkey, *Global Journal on Humanities & Social Sciences*. [Online]. 04, pp 209-212. Available from: <http://sproc.org/ojs/index.php/pntsbs>

Received June 15, 2015; revised August 27, 2015; accepted September 19, 2015.

Selection and peer review under responsibility of Prof. Dr. Andreea Iluzia IACOB

©2016 SciencePark Research, Organization & Counseling. All rights reserved.

Abstract

The main purpose of the study is to test the sustainability of fiscal policies for Turkish economy using quarterly series over the period 2000:1 to 2015:2. By considering Kremers (1989) sustainability condition we test the debt-income ratio by using Lee-Strazicich unit root test which allow structural breaks under both null and alternative hypothesis. The test results we obtained show that the series has a unit root which indicates the unsustainability of public debt.

Keywords: Fiscal policies, Fiscal Sustainability, Unit root test

* ADDRESS FOR CORRESPONDENCE: **Mücahit Aydın**, Department of Financial Econometrics, Faculty of Political Sciences, Sakarya University, Sakarya 54187, Turkey. *E-mail address:* aydinm@sakarya.edu.tr / Tel.: : +90 0264 295 7108

1. Introduction

The sustainability of economic policies can be evaluated as important as the implemented policies. Therefore, the investigation of the lifetime of the implemented economic policies has been one of the important topics in literature. Although there are various definitions of sustainability in terms of fiscal policy there is no clear definition. In general, fiscal sustainability is defined as the sustainability of the debt. Marks (2004) defined the fiscal sustainability as providing financial proficiency of government without making any arrangements and maintaining their current financial situation to ensure that the budget constraint. In other words fiscal deficit defined as sustainable as long as a government raises the necessary funds by borrowing Chen (2014).

Fiscal sustainability which is one of the important issues in the literature are heavily tested by using unit root and cointegration tests. According to the sustainability condition which introduced to the literature by Kremer, if the dept stock-GDP ratio stationary then the fiscal deficit is said to be sustainable. In this study by following this condition we test the fiscal sustainability for Turkey.

The studies in the literature on fiscal sustainability can be summarized as follows. Yol (2009) investigated the fiscal sustainability for Egypt, Tunisia, and Morocco for the 1972-2005 period and find as not sustainable. By using quarterly data Hepsağ (2011) investigated the same issue for Turkey testing the stationarity of debt stock/GDP ratio in the 1990:1-2008:4 period allowing structural breaks and find it as not sustainable.

While, Ehrhart & Llorca (2008) conclude that fiscal deficits are sustainable for South Mediterranean countries for the 1975-1999 period using unit root tests. Joseph (2010) investigated the same issue for East Caribbean countries and found the fiscal deficits as unsustainable. Aslan (2009) test the fiscal sustainability by using unit root and cointegration tests for Turkey. His empirical findings show the fiscal deficits as sustainable when he use monthly data and un-sustainable when he use yearly data.

2. Econometric Methodology and Empirical Results

The milestone study of Perron (1989) showed that in the case of existence of structural breaks in the data ignoring them can cause misleading results. Since this study several unit root tests which allow for structural breaks has been introduced to the literature (Zivot & Andrews (1992), Lumsdaine & Papell (1997) e.g.)

In this study we employ a recently introduced unit root test which allow structural breaks for both the null of unit root and the alternative. By following the Lee & Strazizch (2003) the unit root test statistic can be computed from the following regression:

$$\Delta g_t = \delta' \Delta Z_t + \phi \bar{S}_{t-1} + u_t \quad t = 2, \dots, T \quad (1)$$

Where $\bar{S}_{t-1} = g_t - \bar{\psi}_x - Z_t \bar{\delta}$. For testing the unit root by allowing the breaks in the intercept we replace the Z with, $Z_t = [1, t, D_{1t}, D_{2t}]$ to allow the breaks in the intercept and trend we use $Z_t = [1, t, D_{1t}, D_{2t}, DT_{1t}, DT_{2t}]$. On the other hand we test the null unit root with structural breaks by testing. $\phi = 0$. The structural breaks in data determined by choosing the dummy variables which minimizes this test statistic.

We obtain the quarterly data of net total public debt from the under secretariat of treasury of Republic of Turkey Prime Ministry over the period 2000:1 to 2015:2.

To make a comparison we first employ ADF and DF-GLS unit root test which do not allow structural breaks:

Table 1. ADF and DF-GLS Test Results

	Test Stat.	CV %1
ADF Unit Root Test	-1.741897	-3.560019
DF-GLS Unit Root Test	-1.351298	-2.609324

The test results of two unit root tests indicate the debt series have a unit root. To analyze whether ignoring structural breaks cause the non-rejection of the null we next use LS unit root test. The following table includes the test results:

Table 2. Lee-Strazicich Test Results

Test Stat.	TB1	TB2	k
-3.6644	2003Q2	2012Q1	4

The test results show the structural breaks occurred in 2003Q1 and 2012Q1. On the other hand the comparison of the test statistic with the critical values of Lee-Strazicich indicates a unit root in the series. This result implies that fiscal sustainability of Turkey is not sustainable in the analysis period even we allow the structural breaks.

3. Conclusion

In this study we test the fiscal sustainability of Turkey by considering the Kremers (1989) sustainability conditions. For this purpose, we test the net total public debt of Turkey over the period from 2000:1 to 2015:2. By employing unit root test which allow two endogenous structural break in data. The test results we obtained show that the debt series has a unit root which indicates the unsustainability of public debt.

References

- Aslan, A. (2009). Bütçe Açığı Sürdürülebilirliğinin Dinamik Analizi: Türkiye Örneği. *Maliye Dergisi*, 157, 227-234.
- Shyh-Wei Chen, (2014). Testing for fiscal sustainability: New evidence from the G-7 and some European countries, *Economic Modelling*, 37, 1-15.
- Ehrhart, C. & Llorca, M. (2008). The Sustainability of Fiscal Policy: Evidence from a Panel of Six South-Mediterranean Countries. *Applied Economics Letters*, 15, 797-803.
- Hepsağ, A. (2011). Mali Politikaların Sürdürülebilirliğinin Yapısal Kırılmalı Periyodik Birim Kök Testi ile Analizi: Türkiye Örneği. *Doğuş Üniversitesi Dergisi*, 12(1), 32-45.
- Joseph, S. A. (2010). Financing Recovery: Implications of Natural Disaster Expenditure on the Fiscal Sustainability of the Eastern Caribbean Currency Unit (ECCU) States. *Journal of Business, Finance and Economics in Emerging Economies*, 5(2), 39-80.
- Kremers, J.J.M., (1989). U.S. Federal Indebtedness and the Conduct of Fiscal Policy. *Journal of Monetary Economics*, 23, 219-238.
- Lumsdaine, R.L., & Papell, D.H. (1997). Multiple Trend Breaks And The Unit Root Hypothesis. *The Review Of Economics And Statistics*, 79(2), 212- 218.

Aydın, M. & Yılancı, V. (2016). Fiscal sustainability test: The case of Turkey, *Global Journal on Humanites & Social Sciences*. [Online]. 04, pp 209-212. Available from: <http://sproc.org/ojs/index.php/pntsbs>

Lee, J., & Strazicich, M.C. (2003). Minimum Lagrange Multiplier Unit Root Test With Two Structural Breaks. *The Review Of Economics And Statistics*, 85(4), 1082-1089.

Marks, V.S. (2004). Fiscal Sustainability and Solvency: Theory and Recent Experience in Indonesia. *Bulletin of Indonesia Economic Studies*, 40(2), 227-242.

Perron, P. (1989). The Great Crash, The Oil Price Shock, And The Unit Root Hypothesis, *Econometrica*, 57(6), 1361-1401.

Yol, M.A. (2009). Testing the Sustainability of Current Account Deficits in Developing Economies: Evidence from Egypt, Morocco, and Tunisia. *The Journal of Developing Areas*, 43(1), 177-197.

Zivot, E., Andrews, D. (1992). Further Evidence On The Great Crash, The Oilprice Shock, And The Unit Root Hypothesis. *Journal Of Business & Economic Statistics*, 10(3), 251-270.