Journal of Economic Dynamics & Control 45 (2014) 289–314

Contents lists available at ScienceDirect

Journal of Economic Dynamics & Control

journal homepage: www.elsevier.com/locate/jedc

Model uncertainty and intertemporal tax smoothing

Yulei Luo [a,*], Jun Nie [b], Eric R. Young [c]

[a] School of Economics and Finance, Faculty of Business and Economics, The University of Hong Kong, Hong Kong
[b] Research Department, The Federal Reserve Bank of Kansas City, United States
[c] Department of Economics, University of Virginia, Charlottesville, VA 22904, United States

ARTICLE INFO

Article history:
Received 13 February 2014
Received in revised form
5 June 2014
Accepted 5 June 2014
Available online 21 June 2014

JEL classification:
D83
E6
H3
H6

Keywords:
Robustness
Model uncertainty
Taxation smoothing

ABSTRACT

In this paper we examine how model uncertainty due to the preference for robustness (RB) affects optimal taxation and the evolution of debt in the Barro tax-smoothing model (1979). We first study how the government spending shocks are absorbed in the short run by varying taxes or through debt under RB. Furthermore, we show that introducing RB improves the model's predictions by generating (i) the observed relative volatility of the changes in tax rates to government spending, (ii) the observed comovement between government deficits and spending, and (iii) more consistent behavior of government budget deficits in the U.S. economy. Finally, we show that RB can also improve the model's predictions in the presence of multiple shocks.

© 2014 Elsevier B.V. All rights reserved.

1. Introduction

Fig. 1 presents the post-war behavior of US government spending, average tax rates, and government debt.[1] In this paper we ask how to rationalize the joint behavior of these fiscal variables; specifically, we ask whether the stochastic properties of the joint behavior of these fiscal variables are consistent with the idea that governments seek to use debt to smooth the taxes needed to finance an exogenous stream of government spending.

Barro (1979) proposed a simple full-information rational expectations (FI-RE) tax-smoothing model with only uncontingent debt in which the government spreads the burden of raising distortionary income taxes over time in order to minimize their welfare losses to address these questions. Specifically, the model predicts that the government should issue debt in order to spread the increases in tax rates over longer periods and minimize the welfare losses when facing a positive government spending shock.[2] Furthermore, the model also predicts that changes in the tax rate are unpredictable,

* Corresponding author.
E-mail addresses: yulei.luo@gmail.com (Y. Luo), jun.nie@kc.frb.org (J. Nie), ey2d@virginia.edu (E.R. Young).

[1] The data are taken from *National Income and Product Accounts* (*NIPA*) and *The Economic Report of President*, 2011. It is worth pointing out that we are using a measure of average tax rates (defined as tax revenues divided by GDP) rather than marginal tax rates. For a detailed description of the data and definitions, see Section 4.2.

[2] The tax-smoothing model is widely used in the literature to address various fiscal policy issues; see Sahasakul (1986), Bohn (1990), Trehan and Walsh (1990), Ghosh (1995), Angeletos (2002), Lloyd-Ellis et al. (2005), and Aiyagari et al. (2002). For the tax-smoothing setting with state-contingent debt, see Lucas and Stokey (1983), and Karantounias (2013).

http://dx.doi.org/10.1016/j.jedc.2014.06.004
0165-1889/© 2014 Elsevier B.V. All rights reserved.

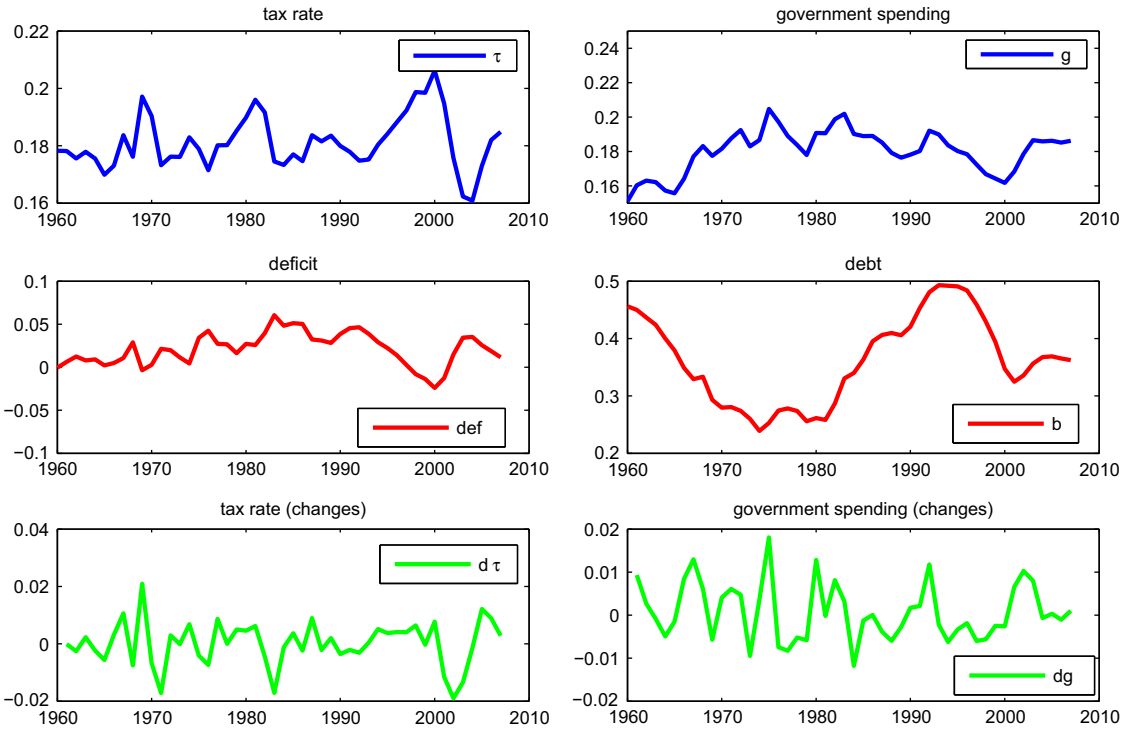

Fig. 1. US fiscal policy.

i.e., the tax rate should follow a random walk.[3] It is worth noting that the tax-smoothing hypothesis (TSH) model is analogous to the permanent income hypothesis (PIH) model in which consumers smooth consumption over time; tax rates respond to permanent changes in the public budgetary burden rather than transitory changes.[4]

Huang and Lin (1993) and Ghosh (1995) went beyond the random-walk tests and use the analysis of saving in Campbell (1987) to test the restrictions on the joint behavior of budget deficits and government spending implied by the tax-smoothing hypothesis.[5] They found mixed empirical evidence for the TSH. For example, Huang and Lin (1993) applied a log-linearized TSH model to the U.S. data from 1929 to 1988 and found that the TSH is rejected for the full sample period, but it is not rejected for the sub-sample period from 1947 to 1988. Ghosh (1995) used the US data from 1961 to 1988 and Canadian data from 1962 to 1988 and found that the TSH model cannot be rejected for either country. Cashin et al. (2003) found that the TSH is rejected by Pakistan data for the period 1954–1995.[6] Adler (2006) tested the TSH using the Swedish central government data and found that it is not possible to statistically reject the TSH for the full period 1952–1999, but the TSH is rejected using the sub-sample period from 1970 to 1996. Olekalns (1997) investigated Australian data, and again rejected the TSH.

However, as shown in Table 3 in the next section, the standard FI-RE TSH model cannot generate two key stochastic properties of the joint behavior of government deficits, tax rates, and spending: (i) the relative volatility of changes in tax rates and spending and (ii) the contemporaneous correlation between government deficits and spending, in the U.S. economy. Specifically, the model generates too low relative volatility and too high contemporaneous correlation. As a result, we also find that the TSH is rejected in this standard full-information RE framework using the US data.

In this paper, we show that model uncertainty due to the preference for robustness (RB) significantly improves the model's ability to fit the data discussed above. Hansen et al. (1999) and Hansen and Sargent (2007) introduced the preference for robustness (a concern for model misspecification) into economic models. In robust control problems, agents are concerned about the possibility that their true model is misspecified in a manner that is difficult to detect statistically; consequently, they choose their decisions as if the subjective distribution over shocks was chosen by an evil agent in order

[3] Although Barro (1979) and Barro (1981) report that in the US data the prediction that the tax rate is a random walk is difficult to reject statistically, Sahasakul (1986) is able to reject it.

[4] For a statement of this equivalence, see Sargent (2001).

[5] It is well known that it is often difficult to reject the null hypothesis of a random walk for many macroeconomic time series given the length of the data. Moreover, as argued in Ghosh (1995), the TSH might be only one of many potential explanations for unpredictable tax rate changes.

[6] More precisely, the tax-smoothing hypothesis is rejected by a Wald test of the parameter restriction at the 5 percent level (as reported in their Table 3); the statements in the paper that suggest that the TSH is not rejected are not consistent with this test; they also explicitly reject the TSH for Sri Lankan data. Relatedly, Cashin et al. (1998) do not reject tax-smoothing by the central Indian government but do for regional governments.

Download English Version:

https://daneshyari.com/en/article/5098513

Download Persian Version:

https://daneshyari.com/article/5098513

Daneshyari.com