Journal of Development Economics
Vol. 62 (2000) 131–147

JOURNAL OF
Development
ECONOMICS

www.elsevier.com/locate/econbase

Public debt sustainability and endogenous seigniorage in Brazil: time-series evidence from 1947–1992

João Victor Issler *, Luiz Renato Lima

Graduate School of Economics-EPGE, Getulio Vargas Foundation, P. de Botafogo 190 s. 1125-8, Rio de Janeiro, RJ 2253-900, Brazil

Abstract

In this paper, we investigate three central issues in public finance. First, was the path of public debt sustainable during 1947–1992? Second, how has the government balanced the budget after shocks to either revenues or expenditures were observed? Third, are expenditures exogenous? The results show that (i) debt is sustainable in econometric tests, with the budget being balanced almost entirely through changes in taxes, regardless of the cause of the initial imbalance. Expenditures are weakly exogenous; (ii) the behavior of a ''rational'' Brazilian consumer may be consistent with Ricardian Equivalence; (iii) seigniorage revenues are critical in restoring intertemporal budget equilibrium. © 2000 Elsevier Science B.V. All rights reserved.

JEL classification: H6; H3; C3
Keywords: Government-debt sustainability; Unit-root and co-integration tests

1. Introduction

At least since the end of WWII, the Brazilian economy has been plagued with chronic public deficits and relatively high inflation — a typical example of seigniorage-financed deficits. However, there have been very few episodes when a sharp increase in public debt was observed. Using national account data for the

* Corresponding author.
E-mail address: jissler@fgv.br (J.V. Issler).

PII: S0304-3878(00)00078-X

revenue-GDP and the expenditure-GDP ratios from 1947 to 1992, this paper studies three central issues in public finance. First, was the path of public debt sustainable during this period? Second, if debt is sustainable, how has the government historically balanced the budget after shocks to either revenues or expenditures were observed? For example, given an unpredictable increase in expenditures, there are two polar forms of balancing the budget. One is to increase the present value of taxes and the other is to decrease the present value of expenditures. From the point of view of a rational Brazilian taxpayer, it is important to learn as to what extent these two forms of balancing the budget have occurred. Third, what are the results of exogeneity tests for government expenditures and tax revenues? This last issue is motivated by the fact that models of seigniorage-financed deficits such as Bruno and Fischer (1990), and the extension in Ruge-Murcia (1999), assume, respectively, that the fiscal deficit and that government expenditures are exogenous; the latter is also present in the tax-smoothing model of Barro (1979). Moreover, in a more flexible framework than Barro (1974), Bohn (1992) shows that the exogeneity of expenditures is a necessary condition for Ricardian Equivalence. Given that post-war Brazil seems to fit the seigniorage-financed deficit model, and that it is desirable to discuss Ricardian Equivalence here, we find it useful to apply exogeneity tests to Brazilian fiscal figures. As far as we know, this paper is the first work to do it in this context.

Following Hamilton and Flavin (1986) and Bohn (1991), the first two issues are investigated using unit-root tests, co-integration tests, and calculating ''unconventional impulse–response functions.'' The latter are based on Vector Error-Correction Model (VECM) estimates, where a balanced-budget restriction is imposed after appropriate testing. The search for a sensible test of exogeneity has lead us to use the definitions of weak-, strong- and super-exogeneity in Engle et al. (1983). They propose likelihood-based definitions that can be tested, showing why the previous concepts (pre-determinedness and strict exogeneity) were incomplete or misleading. Exogeneity tests were conducted using the framework proposed in Johansen (1992, 1995).

This paper has three main findings. First, debt is sustainable, with the budget in Brazil being balanced almost entirely through changes in taxes, regardless of how the initial imbalance was generated. Expenditures are weakly exogenous in the sense of Engle et al. (1983). Second, the behavior of a rational Brazilian consumer with Ricardian preferences is consistent with the Ricardian Equivalence result (Barro (1974)). Given, for example, a tax break today, since his/her best forecast for restoring fiscal balance is that the current imbalance will be fully reversed by future tax increases, consumption and welfare will be unchanged.[1] Third, we

[1] As pointed out by Bohn (1992, footnote 7), this argument relies on our estimates not being subject to the Lucas (1976) critique. We return to this issue on the discussion of exogeneity tests.