



# Public debt and optimal taxes without commitment

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## Abstract

Benhabib and Rustichini [Optimal taxes without commitment, *J. Econ. Theory* 77 (1997) 231–259] study the properties of optimal capital taxes in economies without commitment and no government debt. They find that capital taxes may be different from zero at steady state. This note shows that, once governments have the possibility of issuing debt and smoothing taxes over time, optimal steady state capital taxes turn out to be zero.

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## 1. Introduction

The properties of optimal taxation of capital income are well known in environments with full-commitment. Chamley [4] and Judd [5] showed that, when markets are complete, it is optimal to tax capital heavily in the short run when the distortions on capital accumulation are low and not to tax capital income in the long run when those distortions are large. This result is very robust and has been extended to many different scenarios.<sup>1</sup> However, as Chamley [4] suggests, this argument may break down in environments without commitment. This is so because without commitment future governments are tempted to renege on the announced policy plan and take advantage of a capital levy.

This problem is examined by Benhabib and Rustichini [3]. They consider a model with competitive agents and a benevolent government that must tax capital and labor income to finance

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<sup>1</sup> See [2] for a review.

an exogenous stream of government spending in an environment without commitment. This government selects the optimal time-consistent taxes by choosing the policy that maximizes the individual's welfare subject to the standard feasibility and implementability constraints and an incentive compatibility constraint that embeds the future governments' incentives. This constraint says that, for all future governments, the welfare value of continuing with the policy that the current government announces must be at least as large as the welfare value of deviating from that policy. Any policy that satisfies this constraint is clearly time-consistent.

Benhabib and Rustichini [3] characterize the optimal time-consistent capital taxes. To do so, they first consider an economy with government debt. However, for simplification purposes, they restrict attention to economies where governments cannot issue debt. In this context, they obtain that optimal capital taxes may be different from zero at steady state. In particular, they show that capital may be subsidized. The intuition for this result is that a subsidy to capital accumulation leads to a very high stock of capital. This stock of private capital is so high that the fear to lose its productive gains deters future governments from deviating from its policy announcement and taxing its rents.

This notes reexamines the problem of capital taxation without commitment in an economy with government bonds. We obtain that once governments have the possibility of issuing debt and smoothing taxes over time, optimal steady state capital taxes turn out to be zero. The explanation for this result lies in the large distorting effects of a tax/subsidy on capital income in the long run. As Atkinson et al. [2] observe, a positive (negative) tax on capital at steady state is equivalent to an ever increasing tax (subsidy) on consumption. That policy is so distortionary that is not optimal if the government has an instrument to smooth the cost of distortionary taxation over time.

Our results have also an intimate connection with those of [3], we show that the issues of government debt during the transition help build a sufficiently high level of capital so that future governments have no incentive to deviate from the long-run zero capital taxes. Thus, in our economy, the subsidies to capital are substituted by government debt as the central commitment device among governments.

The rest of the note is organized as follows. Section 2 presents the economy at steady state. Section 3 characterizes the optimal time-consistent taxes. Section 4 concludes.

## 2. The economy at steady state

We consider the economy in Benhabib and Rustichini [3].<sup>2</sup> We focus on the equilibrium at the steady state and make the distinction between incentive-constrained steady states (where the incentive compatibility constraints (2.5) bind) and incentive-unconstrained steady states (where those constraints do not bind). The properties of the optimal taxes without commitment depend crucially on this distinction.

The government's problem is defined by the Lagrangian (2.6), which yields the first order conditions (2.7)–(2.13). Since we focus on the role of government debt, it is worth examining the necessary condition for debt<sup>3</sup>:

$$-\xi_{t-1} + \beta r \xi_t = \beta \gamma_t \beta^{-t} V_b^D(k_t, b_t).$$

where  $\xi_t$  and  $\gamma_t \beta^{-t}$  are, respectively, the Lagrange multipliers on the budget constraint (2.3) and the incentive compatibility constraint (2.5). The first multiplier can be interpreted as the cost of

<sup>2</sup> We do not specify the equations of the model and, in consequence, we refer to those in [3] throughout the note.

<sup>3</sup> Eq. (2.9) in [3] has a small typo; the RHS of this equation should be multiplied by the discount factor  $\beta$ .

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