Dynamic Fiscal Policies and Endogenous Growth

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Abstract

This paper studies the dynamic properties of an endogenous growth model in which government consumption and production services are financed by capital taxes. I generalize the existence and its stability property of commitment Ramsey equilibria when government spending is productive and taxation is distortionary. I then establish a sufficient condition for uniqueness of the (positive) balanced growth path and determinacy of transitional dynamics. The same sufficient condition ensures growth convergence in Barro-type endogenous fiscal policies. This modeling approach can be used by a large class of endogenous growth models which allow for market imperfections and optimal policies. In particular, a few implications for main results are discussed on economic integration.

- JEL Classifications: D90, H21, O38
- Key words: Optimal tax policy, Transitional dynamics, Determinacy, Growth convergence

I. Introduction

General equilibrium models of endogenous growth have studied the role of fiscal policy in the growth process. The main idea is that a government provides growth-enhancing public capital for the private production processes. The provision of productive government spending can be thought of as education, R&D subsidy, and public infrastructures. For this reason, at the aggregate level, there are
no diminishing returns, and hence the economy is capable of long-run endogenous growth. If government expenditures are financed by distorting taxes, this raises several questions regarding the optimal level of government expenditures and the associated optimal tax rate: For instance, does an optimal tax rate exist to support persistent growth? If it does, is it unique or determinate? Is it optimal to keep the tax rate constant over time, as in the tax-smoothing model? Is the long-run growth path dynamically stable?

The usual framework for studying optimal fiscal policies in a growing economy is the Barro-type public finance model á la Barro [1990]. This is analytically simple to incorporate productive public services and distortionary tax policies. As result, Barro [1990], Barro and Sali-i-Martin [1995], Alesina and Rodrik [1994] and Devereux and Wen [1998] show that the optimal income tax rate is constant over time and there are no transitional growth dynamics. Recently, Benhabib and Velasco [1996] and Benhabib, Rustichini and Velasco [1996] have introduced a more general production functions to ensure that the optimal capital tax rate is always constant over time. It is interesting to investigate the robustness of socially optimal dynamic state-independent fiscal policies in models in which government polices play an important role of long-run growth.

Building on the above studies, the present paper introduces an endogenous growth model, in which the government optimally chooses a path of distorting capital tax rates to finance both consumption and production public services (see also Lee [1992] and Cazzavillan [1996]). A large class of endogenous growth models, which allow for optimal economic policies, can use this modeling approach. It is natural to discuss a few implications for economic integration. This paper makes three contributions to the literature. First, I generalize the properties of the optimal tax policy in Barro [1990]. Second, I establish a sufficient condition for existence and uniqueness of the balanced growth path (BGP), as well as a unique

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1For a survey of the literature on growth and the public sector, see e.g. Glomm and Ravikumar [1997] and Agell et al. [1997]. For empirical evidence see e.g. Devarajan et al. [1996] and Kneller et al. [1999].

2This work differs from Benhabib, Roustichini and Velasco [1996] who focus on the time-consistency issue and the properties of the optimal tax plan under different commitment technologies, i.e. the Chamley-Judd-Lucas result. It also differs from Benhabib and Velasco [1996] who study the special case of a small open economy in which the after-tax return to domestic capital equals the exogenously given world interest rate.

3In contrast with the model in this paper, Lee [1992] and Cazzavillan [1996] consider fixed, constant income tax over time to finance public spending. Hence, they abstract from intertemporal distortionary effects of taxes.