



Optimal taxation with endogenously incomplete debt markets[☆]

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Abstract

Empirical analyses of labor tax and public debt processes provide prima facie evidence for imperfect government insurance. This paper considers a model in which the government's inability to commit to future policies or to report truthfully its spending needs renders government debt markets endogenously incomplete. A method for solving for optimal fiscal policy under these constraints is developed. Such policy is found to be intermediate between that implied by the complete insurance (Ramsey) model and a model with exogenously incomplete debt markets. In contrast to optimal Ramsey policy, optimal policy in this model is consistent with a variety of stylized fiscal policy facts such as the high persistence of labor tax rates and debt levels and the positive covariance between government spending and the value of government debt sales.

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1. Introduction

This paper considers the optimal design of fiscal policy under two sets of restrictions. The first set is exogenous; it describes the technology by which the government can extract resources from agents. We follow the conventional Ramsey approach and suppose that resources can be obtained by levying linear taxes or selling state contingent debt. We also assume that the government cannot lend. The second set of restrictions stem from incentive problems on the side of the government which we assume can neither commit to repaying its debt nor to truthfully revealing private information about its spending needs. These frictions impede the government's ability to use asset markets to hedge fiscal shocks. They endogenously restrict the set of asset trades the government can make and this, in turn, has implications for the optimal setting of taxes. To analyze fiscal policy design in such settings, we embed the government's policy problem into a repeated game. We provide an equilibrium concept that extends Chari and Kehoe's [15,16] sustainable equilibrium to environments with private government information. We then give necessary and sufficient conditions for an allocation to be an equilibrium outcome of this game. These conditions are recursive and we obtain a dynamic programming method for finding optimal equilibrium allocations that exploits this recursivity. We back out the supporting fiscal policies from these allocations and analyse optimal fiscal policy in this limited commitment-private information environment.

Our immediate motivation is a contrast between the benchmark Ramsey model of fiscal policy (as developed by Lucas and Stokey [22]) and the data. The former implies that fiscal policy variables should depend only upon the current realization of the shocks perturbing the economy and, consequently, should inherit their stochastic properties from these shocks. In contrast, empirical evidence on labor tax rates and the public debt suggest that these variables exhibit considerable persistence, much more than that for government spending and other candidate shock processes.¹ To paraphrase Aiyagari, Marcet, Sargent and Seppälä (AMSS) [2], the empirical labor tax rate process is smooth in the sense of being highly persistent, rather than smooth in the sense of having a small variance.

The data are suggestive of considerable intertemporal, but limited interstate smoothing of taxes. Thus, they provide prima facie evidence for incomplete government insurance. The papers of AMSS, Marcet and Scott [23] and Scott [27], which assume exogenously incomplete government debt markets, corroborate this view and suggest that a limited ability to hedge against fiscal shocks may have significant implications for the design and conduct of fiscal policy. Given this, it becomes important to understand why this ability is limited and in what circumstances it might be more or less restricted.

Many commentators have informally suggested that moral hazard problems of one sort or another might underpin incomplete government insurance (e.g. [9,10,25]). The private information and limited commitment frictions that we incorporate into our model formalize these ideas. Both are linked to familiar time consistency considerations. The repayment of debt requires the levying of distortionary taxes. Ex post the government, and all households, would be better off if the debt were cancelled, but if such cancellation is anticipated ex ante,

¹ Marcet and Scott [23] show that even after capital, which is absent from the Lucas and Stokey model, is incorporated, the empirical processes for fiscal variables remain too persistent relative to those implied by the Ramsey model.

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