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Monetary and fiscal policy interactions in a New Keynesian model with capital accumulation and non-Ricardian consumers

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Abstract

The paper examines simple monetary and fiscal policy rules consistent with determinate equilibrium dynamics in the absence of Ricardian equivalence. Under this assumption, government debt turns into a relevant state variable which needs to be accounted for in the analysis of equilibrium dynamics. The key analytical finding is that without explicit reference to the level of government debt it is not possible to infer how strongly the monetary and fiscal instruments should be used to ensure determinate equilibrium dynamics. Specifically, we identify bifurcations associated with threshold values of steady-state debt, leading to qualitative changes in the local determinacy requirements.
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1. Introduction

The literature on the desirable design of macroeconomic policies typically concludes that operational policy rules should not be a source of non-fundamental fluctuations in economic activity, implying that the induced rational expectations equilibrium should be at least locally

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unique. While this criterion for good policy design is widely shared, the literature exhibits a remarkable asymmetry with respect to the analysis of monetary and fiscal aspects of policy rules. Monetary policy rules, typically specified as interest rate rules with feedback from endogenous variables like inflation or output, have been analysed in great analytical detail. [2] But there is no similarly rich literature on the appropriate use of fiscal instruments.

This asymmetric treatment is adequate in many commonly used models in which fiscal policy acts through variations in lump-sum taxes in an environment of Ricardian equivalence. In line with the logic spelled out in Leeper [24], the joint design problem of monetary and fiscal policy-making then essentially reduces to two separable problems which can be recursively addressed. First, isolated from fiscal aspects, there are monetary aspects, as witnessed by the large literature on the Taylor principle [32], which typically establishes solely in terms of monetary policy parameters conditions for local equilibrium determinacy. Second, if the monetary dynamics are determinate, there is no 'active' role for fiscal policy, i.e. the determinacy feature remains preserved if government debt dynamics evolve 'passively' in a stable manner. If, however, the dynamic system without fiscal policy exhibits one degree of indeterminacy, then potentially unstable debt dynamics are needed to restore equilibrium determinacy, consistent with Leeper's notion of 'active' fiscal policy or, alternatively, with the view of the 'fiscal theory of the price level' expressed in [34,31,35].

The main contribution of this paper is to show how this logic needs to be modified in an environment which departs from Ricardian equivalence, implying that equilibrium dynamics are driven by a genuine interaction of monetary and fiscal policy. To this end, we develop a tractable New Keynesian model in which wealth effects of government debt are not restricted to the intertemporal budget constraint of the government but fully interact with all remaining equilibrium conditions of the economy. This implies that government debt turns into a relevant state variable which needs to be accounted for in the analysis of local equilibrium dynamics. [3] In our analysis, the 'relevance' of government debt translates into two findings. First, without explicit reference to the steady-state level of government debt it is not possible to infer how strongly the monetary and fiscal instruments within simple feedback rules should be used to ensure locally determinate equilibrium dynamics. Second, the determinacy regions depend on the underlying level of debt in a discontinuous way such that the determinacy conditions undergo qualitative changes at certain threshold values of steady-state debt. Reflecting the assumed non-neutrality of fiscal policy, these two features overturn the logic of separable monetary and fiscal dynamics as sketched above and lead overall to a more symmetric treatment of monetary and fiscal policy aspects.

To make this reasoning precise, the analysis builds on a New Keynesian version of the model of Blanchard [8] in which, assuming that all taxation is lump sum, departures from Ricardian equivalence can be conveniently modelled through a change in a single parameter, the probability of death of consumers. Specifically, Ricardian equivalence ceases to hold whenever this probability is assumed to be strictly positive, i.e. if consumers are 'non-Ricardian'. [4] Because of the short-sightedness of non-Ricardian consumers, government debt affects aggregate consumption dynamics via the Euler equation, and government debt dynamics are no longer separable from the remaining equilibrium conditions. Monetary and fiscal policy are assumed to follow two stylised

[2] For representative treatments, see [32,23,6,15,16,4,5,35].

[3] We do not address dynamic properties from a global perspective. Moreover, to allow for an exclusive focus on government debt, real balances are assumed to be a negligible fraction of government liabilities.

[4] Alternative specifications of non-Ricardian behaviour are discussed in Section 6.

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