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Lack of confidence, the zero lower bound, and the virtue of fiscal rules ☆

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ABSTRACT

In the presence of the zero lower bound, standard business cycle models with a Taylor-type monetary policy rule are prone to equilibrium multiplicity. A drop in private sector confidence can drive the economy into a liquidity trap without any change in fundamentals. I show, in the context of a standard New Keynesian model, that it is possible to design Ricardian fiscal spending rules that insulate the economy from such expectations-driven liquidity traps. In the case of price adjustment costs, desirable fiscal rules ensure that a drop in confidence does not lead to a decline in real marginal costs. In the case of nominal wage adjustment costs, desirable fiscal spending rules ensure that a drop in confidence does not lead to a decline in the ratio of the marginal rate of substitution between private consumption and hours worked relative to the real wage rate.

1. Introduction

In recent years, policy rates in several major industrialized countries such as the U.S. and Japan have essentially been stuck at the lower bound while inflation rates stayed systematically below target.[1] Some policymakers have raised concerns that the prevailing liquidity trap conditions could become an enduring drag on the economy as opposed to a temporary unpleasant phenomenon (see Bullard, 2010).

From a theoretical perspective, the presence of an effective lower bound on nominal interest rates makes economies prone to equilibrium multiplicity, indeed giving rise to the threat of self-fulfilling deflationary expectations and potentially long-lasting, if not permanent, spells at the lower bound (see Benhabib et al., 2001).[2]

☆ The views expressed in this paper are those of the author and do not necessarily reflect those of the European Central Bank.

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[1] See, for instance, Contessi et al. (2014).

[2] Specifically, Benhabib et al. (2001) show that in business cycle models with a Taylor-type interest rate rule and a lower bound on nominal interest rates there typically exists an infinite number of non-explosive perfect-foresight equilibrium trajectories that originate arbitrarily close to the steady state where the inflation rate is stabilized at its target and monetary policy is active, and that converge to another steady state where the lower bound is binding and inflation is below target. See also Hursey and Wolman (2010) and Piazza (2015).

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The question of how to avoid equilibria that leave the economy stuck with deflation and – in the presence of nominal rigidities – a subdued level of private consumption seems therefore highly relevant. This paper addresses this question. I work with a standard New Keynesian rational expectations model. Nominal rigidities enter either in the form of price adjustment costs or in the form of nominal wage adjustment costs. Fiscal policy is Ricardian and monetary policy is characterized by a Taylor-type nominal interest rate rule.[3] In general, the model features two steady states. Besides the intended steady state where inflation and real GDP are stabilized at their target levels, there exists a liquidity trap steady state where the zero lower bound constraint is binding, the inflation rate is negative and private consumption is suppressed. The second steady state is typically a saddle point so that there exists an infinite number of perfect-foresight equilibria where inflation and private consumption, both jump variables, originate away from the liquidity trap steady state and possibly close to the intended steady state and converge to the liquidity trap steady state. The steady state indeterminacy also gives rise to the possibility of equilibria where sunspots matter.[4] A sunspot shock that leads to a transitory drop in agents confidence can drive the economy into a temporary liquidity trap without any change in fundamentals.

The contribution of this paper is to show that – in the presence of some nominal adjustment costs – it is possible to design government spending rules that eliminate expectations-driven liquidity trap equilibria without having to abandon the Ricardian fiscal policy configuration. In the presence of sticky prices, the key feature of any such fiscal rule or target criterion is that when confronted with a drop in confidence it stipulates an endogenous policy response that is sufficiently aggressive to prevent a decline in real marginal costs. This is because in the presence of nominal price rigidities deflationary expectations can only be supported as an equilibrium outcome when real marginal costs are allowed to fall. I then provide an example of a fiscal spending rule that satisfies this requirement, supporting the existence of the intended steady state equilibrium as the unique steady state equilibrium. By eliminating the liquidity trap steady state, the discussed fiscal target criteria also rule out the existence of perfect-foresight equilibrium trajectories that originate arbitrarily close to the intended steady state and converge to the liquidity trap steady state. If the monetary policy rule responds positively to deviations of private consumption from the level consistent with the intended steady state while the fiscal rule is operative, then there exists a unique stable perfect-foresight equilibrium in the dynamic model that converges to a steady state and this steady state is the intended steady state. A similar result is obtained for a stochastic setup where uncertainty arises due to a two-state sunspot shock.

Likewise, in the presence of nominal wage rigidities, deflationary expectations can only be supported as an equilibrium outcome when the ratio of the marginal rate of substitution between private consumption and hours worked relative to the composite real wage rate is allowed to fall. Assuming flexible prices, a fiscal spending rule that is sufficiently elastic to prevent a decline in the marginal rate of substitution between private consumption and hours worked stabilizes wage inflation and avoids the liquidity trap equilibrium.

There is one special case for which the discussed policies do not rule out equilibrium multiplicity, namely when both prices and wages are completely flexible. However, this case is probably neither very realistic nor particular interesting, for in the absence of nominal rigidities deviations of inflation from target have no effect on the real economy in the model and agents might therefore be indifferent between the intended equilibrium and the liquidity trap equilibrium.

Finally, in line with much of the related literature, the paper focuses on non-explosive equilibria. This approach has not been without criticism. Cochrane (2011) points out that Taylor-type nominal interest rate rules that respond more than one-for-one to changes in inflation can be consistent with global equilibria where inflation rates explode so long as private sector optimality conditions are satisfied, and thus fail to ensure equilibrium uniqueness even in the absence of the zero lower bound. Cochrane (2011) also questions the plausibility of proposals to trim equilibria that rely on policy configurations for which private sector optimality conditions cannot hold. This view has not been without opposition. For instance, Del Negro and Sims (2015) argue that a policy configuration whereby explosive equilibrium paths for inflation are eliminated by means of a primary surplus rule that responds linearly with a positive coefficient to inflation is eminently plausible.

My paper is related to several studies that examine how to avoid self-fulfilling liquidity trap equilibria and how to ensure global uniqueness of the intended equilibrium in the presence of an effective nominal interest rate bound.[5] Benhabib et al. (2002) and Woodford (2003) examine non-Ricardian fiscal policies that trigger an off-equilibrium violation of the transversality condition to rule out perfect-foresight equilibria in which the economy converges to the liquidity trap steady state. A potential disadvantage of non-Ricardian monetary-fiscal regimes is, however, that they are associated with a heightened degree of macroeconomic volatility in the wake of fundamental shocks, see, for instance, Bianchi and Melosi (2015). Correia et al. (2013) show in the context of a New Keynesian model how a mix of tax instruments can be used to circumvent the zero nominal interest rate bound problem. Depending on the set of tax instruments the policymaker may even be able to implement the first-best allocation. An advantage of these unconventional fiscal policies is that they ensure global uniqueness of the intended equilibrium and respond optimally to fundamental disturbances. A potential disadvantage is that the implementation requires a set of policy instruments. Other proposals focus on the role of monetary policy. Alstadheim and Henderson (2006) and Sugo and Ueda (2008) propose monetary policy rules that eliminate the liquidity

[3] Following the terminology of Benhabib et al. (2002), fiscal policies are Ricardian if they ensure that the present discounted value of total government liabilities converges to zero under all possible equilibrium or off-equilibrium paths of the endogenous model variables. Accordingly, non-Ricardian fiscal policies are those that do not satisfy this criterion.

[4] Cass and Shell (1983) use the term sunspots to characterize random phenomena that do not affect fundamentals such as tastes and endowments.

[5] The related studies that work with rational expectations models focus on non-explosive equilibria.