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Central bank reputation in a forward-looking model

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This paper examines whether reputation concerns can induce the central bank to implement the time-inconsistent optimal monetary policy in the standard New Keynesian model. Interestingly, the forward-looking nature of this model enables us to account for the coordination of the private agents on the punishment length of their trigger strategy. Our results suggest that both the inflation bias and the stabilization bias can be overcome by a reputation-concerned central bank for the calibrations used in the literature. These results enable us to endogenize Woodford's timeless perspective and tend to weaken the case for recent monetary policy delegation proposals.

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0. Introduction

Optimal monetary policy is known to be potentially time-inconsistent since the seminal work of Kydland and Prescott (1977). The best known illustration of this time-inconsistency problem is Barro and Gordon's (1983a) inflation bias which arises when the central bank seeks to stabilize output above its potential level. Barro and Gordon (1983b) show, however, that reputation considerations can then make the optimal monetary policy sustainable under a simple trigger-strategy assumption. An alternative way to overcome this inflation bias, proposed by Rogoff (1985), is to delegate monetary policy to a conservative central banker. Now whether because they are conservative or concerned for their reputation, nowadays central bankers do not seem in practice to aim at stabilizing output above its potential level, so that the inflation bias is arguably no longer a relevant issue in the current low-inflation environment.

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The time-inconsistency problem of optimal monetary policy has, however, aroused renewed interest in recent years with the development of stochastic forward-looking models. As first shown by Clarida et al. (1999) and Woodford (1999), these models give indeed rise to a 'stabilization bias'[1] by making optimal monetary policy time-inconsistent even when the central bank does not seek to stabilize output above its potential level. In the standard New Keynesian model for instance, the Phillips curve makes the current inflation rate depend on the current output gap, the expected future inflation rate and the current cost-push shock. The occurrence of cost-push shocks therefore prevents the central bank from achieving the complete and permanent stabilization of both the inflation rate and the output gap. In this context, the optimal monetary policy reaction to a one-off cost-push shock lasts actually longer than the shock itself, so as to make the expected future inflation rate depend on the current cost-push shock, in order to improve the trade-off between stabilizing the current inflation rate and stabilizing the current output gap. This inertial or history-dependent monetary policy is optimal because it enables the central bank to spread the burden of the adjustment to the shock over time, but time-inconsistent because the central bank will want to revert to a neutral stance as soon as the shock disappears.

The literature has already come up with a number of monetary policy delegation schemes as remedies for this stabilization bias: Jensen (2002b) proposes to introduce a nominal income growth stabilization objective, Söderström (2005) a money growth stabilization objective, Svensson and Woodford (2005) a state-contingent linear inflation contract, Vestin (2006) a price level stabilization objective, Walsh (2003b) an output gap smoothing objective and Woodford (2003b) an interest-rate smoothing objective, into the loss function assigned to the central bank. All these monetary policy delegation schemes are designed in such a way that the central bank minimizing its assigned loss function under discretion conducts a monetary policy that coincides, or is close to, the time-inconsistent socially optimal monetary policy described above. But to our knowledge there is so far no study on central bank reputation as a way to overcome the stabilization bias (except Kurozumi, 2007, discussed below). Such a study would, however, be welcome since these monetary policy delegation proposals might prove unnecessary if reputation concerns alone could induce the central bank to implement the time-inconsistent socially optimal monetary policy.[2]

This paper aims at filling this gap in the literature by considering the issue of central bank reputation in a forward-looking model, namely the standard New Keynesian model chosen for its popularity and analytical tractability. We define the reputation of the central bank as its ability to influence the private agents' expectations and make this ability depend on the central bank's monetary policy track record through a simple trigger-strategy assumption (i.e. credibility is gained by matching deeds with words), thus explicitly modelling a simple argument expressed e.g. by Walsh (2006).[3] The consideration of trigger strategies is particularly interesting in the standard New

[1] A pedagogical exposition of this bias can be found in Dennis (2003), Walsh (2003a, Chapter 11) and Woodford (2003a, Chapter 7).

[2] Moreover, although this alternative way to overcome the stabilization bias may of course have shortcomings of its own, it would at least not have the same shortcomings as monetary policy delegation, whose effectiveness has sometimes been questioned on the following two grounds. First, as argued by McCallum (1995), monetary policy delegation may merely relocate the time-inconsistency problem. Second, as acknowledged by Woodford, monetary policy delegation would be counterproductive if reputation concerns induced the central bank to implement the time-inconsistent monetary policy that is optimal with respect to its assigned loss function but non-optimal with respect to the social loss function: 'Of course, the assignment to the central bank of an objective different from the true social loss function, in the expectation that it will pursue that objective with discretion, is not the only possible approach to the achievement of a desirable pattern of responses to disturbances. One defect of the 'optimal delegation' approach considered here is that it presumes that the stationary Markov equilibrium associated with a particular distorted objective will be realized. Yet there may well be other possible rational-expectation equilibria consistent with discretionary optimization by the central bank, 'reputational' equilibria in which the bank may do a *better* job of minimizing the objective it has been assigned, but as a consequence bring about a pattern of responses that is *less* desirable from the point of view of the true social objective' (Woodford, 2003b, p. 885). [Woodford's emphasis.]

[3] As put by Walsh (2006): 'forward-looking behaviour by the private sector leads optimal monetary policy to be backward-looking. This introduces an inertia into policy that would be absent in a discretionary environment. Conditioning current policy on the past is a means of honouring past commitments. Private agents will believe the central bank's promises about future policies only if it has delivered on past promises'.

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