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Optimal fiscal and monetary policy with sticky prices ☆

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Abstract

In this paper I consider the role of state-contingent inflation as a fiscal shock absorber in an economy with nominal rigidities. I study the Ramsey equilibrium in a monetary model with distortionary taxation, nominal non-state-contingent debt, and sticky prices. With sticky prices, the Ramsey planner must balance the shock absorbing benefits of state-contingent inflation against the associated resource misallocation costs. For government spending processes resembling post-war experience, introducing sticky prices generates striking departures in optimal policy from the case with flexible prices. For even small degrees of price rigidity, optimal policy displays very little volatility in inflation. Tax rates display greater volatility compared to the model with flexible prices. With sticky prices, tax rates and real government debt exhibit behavior similar to a random walk. For government spending processes resembling periods of intermittent war and peace, optimal policy displays extreme inflation volatility even when the degree of price rigidity is large. As the variability in government spending increases, smoothing tax distortions across states of nature becomes increasingly important, and the shock absorber role of inflation is accentuated.
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1. Introduction

An important result of the optimal policy literature is the prescription of policies which smooth tax distortions over time and across states of nature. When governments finance stochastic government spending by taxing labor income and issuing one-period debt, state-contingent returns on that debt allow tax rates to be roughly constant (see Lucas and Stokey, 1983; Chari et al., 1991). In monetary models, this tax smoothing can be achieved even when nominal returns on debt are not state-contingent; varying the price level in response to shocks allows the government to achieve appropriate state-contingent, ex-post real returns (see Chari et al., 1991). Generating inflation in the period of a positive spending shock allows the government to decrease its real liabilities by reducing the value of its outstanding nominal claims. In this way, the government is able to attenuate the increase in taxes required to maintain present value budget balance. Similarly, a deflation in response to a negative spending shock attenuates the required fall in tax revenues.

Clearly, inflation plays an important policy role when nominal returns to debt are not state-contingent, since it can generate real returns which are.[1,2] A quantitative property of these models is that when calibrated to post-war US data, optimal policy displays extreme inflation volatility (see Chari et al., 1991; Chari and Kehoe, 1999). This is due to the fact that inflation is costless in these models.

The aim of this paper is to determine the optimal degree of volatility when inflation is no longer costless, but still has shock absorbing benefits. This is an important consideration since studies that consider optimal monetary policy devoid of fiscal considerations prescribe stable inflation when nominal rigidities are present (see King and Wolman, 1999; Erceg et al., 2000; Khan et al., 2000).

To study this question I introduce sticky prices into the standard cash–credit good model. When some prices in the economy are set before the realization of government spending, unanticipated inflation causes relative price distortions. This distortion generates costly misallocation of real resources. Optimal policy on the part of the government must balance the tax smoothing benefits of state-contingent inflation against these misallocation costs.

To see this trade-off, consider an economy with a complete set of tax instruments, as in Lucas and Stokey (1983) or Chari et al. (1991). With both sticky price and flexible price firms, this can be achieved by providing the government with an additional state-contingent tax on the output of sticky price firms. In this complete instruments case, ex-post variation in the price level generates state-contingency in the real value of government liabilities, keeping tax distortions smooth. At the same

[1] Sims (2001) extends this analysis to address the debate on dollarization. Replacing debt denominated in domestic currency with debt denominated in foreign currency eliminates the feasibility of state-contingent returns generated through inflation.

[2] For discussion of these results in relation to the literature on the Fiscal Theory of the Price Level, see Woodford (1998) and Christiano and Fitzgerald (2000). These papers, as well as Sims (2001), leave as an open question the optimal degree of inflation volatility when inflation is costly.

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