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Is there a case for domestic inflation target?

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Abstract

This paper evaluates the consequences of a central bank stabilizing alternative measures of inflation in a model with several exchange rate channels of transmission for the monetary policy. The real exchange rate affects the equilibrium conditions and the utility-based welfare objective places higher weight on output gap stabilization. There is an endogenous stabilization trade-off and policy rules derived from private agents' optimizing behavior perform better than alternative monetary policy arrangements. The optimal policy is PPI inflation target, under which the exchange rate follows a controlled floating. Contrary to central bank practices, CPI target should be considered only by highly open economies.

JEL classification: E52; F41

Keywords: Open economy; Monetary policy regimes; Transmission channels; Exchange rate

1. Introduction

Recent years have witnessed a remarkable convergence of central bank practices and academic research conclusions on the idea that there are important macroeconomic benefits obtained by adopting monetary policy rules that lead to small variations in an inflation target. However, for a small open economy, there is an important unanswered question: which measure of inflation should the central bank stabilize? The literature provides no coherent explanation as to whether a central bank should stabilize consumer price inflation or producer price inflation. The former might be more sensitive to exchange rate movements due to the share of imported goods in the typical consumer's budget. The latter is expected to be less directly affected by variations in the exchange rate because it depends only on the price of domestically produced goods.

To address that question, it is important to use a model that builds in a variety of channels by which the exchange rate can affect aggregate activity in a small open economy. This paper extends the model by [16,17] to allow for a variety of exchange rate channels of transmission for the monetary policy. The model follows the tradition of the New Open Economy Macroeconomics, which includes private agents' optimizing behavior, general equilibrium, and price stickiness in the production sector. The real exchange rate affects the firm's real marginal cost, aggregate supply, and

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aggregate demand. As a result, the optimal interest rate rule, derived from a constrained welfare optimization problem, has a specific form in order to account for all exchange rate transmission mechanisms.

In this model, it turns out that there is a case for PPI inflation target rather than CPI inflation target. The main reason is that, for a typical small open economy, PPI inflation target generates smaller variabilities in most of the policy variables. Alternative monetary policy arrangements, represented by discretionary policies, simple and flexible Taylor rules, and exchange rate pegs, displayed poor performances when compared to the optimal policy. The Gali and Monacelli [16,17] canonical representation is also inferior, essentially because it misses the exchange channels of transmission for the monetary policy.

Other findings of this paper are that the monetary authority should place a higher weight on output gap stabilization due to the terms of trade distortion, the inflation–output stabilization trade-off is endogenously generated by the real exchange rate, and the exchange rate regime under the optimal policy is a controlled floating. These results differ from previous researches that have also used sticky-price models to study optimal monetary policy in small open economies, including [1,22,12,28]. In [1] there is no stabilization trade-off and the optimal policy is a complete stabilization of PPI inflation, which is sufficient to keep exchange rate at his optimal level at all times. Kollmann [22] assumes a Taylor type of policy rule and finds that PPI inflation stabilization is also the optimal policy when prices are set in local currency and the law of one price does not hold. He assumes a variety of shocks, and the optimal policy implies significant exchange rate volatility. According to [12], prices set in producer's currency (PCP) lead to fully flexible exchange rate. This result also does not hold in the present model, where there is PCP but a controlled exchange rate regime under the optimal policy. The determinants of this finding are the terms of trade distortions and exchange rate channels of transmission, which are not considered by [12]. Svensson [28] also analyses alternative monetary policy regimes for a small open economy and suggests that CPI inflation target is a better choice because it produces small-to-moderate variability in inflation, output and exchange rate. The different policy recommendation, in this case, is explained by the *ad hoc* structure of Svensson's model, where alternative objective functions come from weighted averages of inflation, output gap, exchange rate, and nominal interest rate. The policy rule here derived from optimizing agents and a utility-based loss function imposes PPI inflation target as the optimal monetary policy.

In the context of the financial crisis that started in U.S. late 2008 and spread worldwide afterwards, knowledge of optimal monetary policy rules play a central role for policy effectiveness. As stressed by [23], monetary policy is more potent during financial crises because aggressive monetary policy easing can make adverse feedback loops less likely. That policy, adopted by several central banks around the world, has been able to avoid both higher interest rates on default-free bonds and increase in macroeconomic risk due to higher credit spreads. Thus, aggregate spending has been kept from going down even further and current recession from being far more severe. In general, as shown by [6], when there are no frictions in adjusting the level of output, a cut in the interest rate rises welfare in a small open economy when it is in the midst of a financial crisis. Once calibrated to the data, optimal interest rate rules can offer the exact amount by which a central bank should cut interest rates in a period of crisis.

The paper is organized as follows: the next section presents the benchmark model economy, where the structural equations are derived. Section 3 discusses the rational expectations equilibrium. Section 4 derives the welfare objective by a second-order approximation of the utility function. Optimal monetary policy rules and alternative monetary policy arrangements are presented in Section 5. The model's calibration and simulations are reported in Section 6. Finally, Section 7 is dedicated to the concluding remarks.

2. The model

There are two asymmetric countries, represented by a small open economy (hereafter, SOE) and a foreign country, or the rest of the world (hereafter, ROW) economy. Infinitely lived consumer–producer agents produce $j \in [0, 1]$ imperfect substitute goods in a monopolistic competitive basis. The representative agent earns utility from consumption and real money holdings, and disutility from working.[1] The separable utility function is given by:

$$E_t \left\{ \sum_{k=0}^{\infty} \beta^k \left[U\left(C_{t+k}, \frac{M_{t+k}}{P_{t+k}} \right) - V(N_{t+k}) \right] \right\} \tag{1}$$

[1] The benchmark model follows the tradition of [24,25]. Similar versions include [16,17,9,2,3].