Central bank learning, terms of trade shocks and currency risk: Should only inflation matter for monetary policy?

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Abstract

This paper examines the role of interest rate policy in a small open economy, subject to terms of trade shocks and time-varying currency risks. The private sector makes optimal decisions in an intertemporal, non-linear setting with rational, forward-looking expectations. In contrast, the monetary authority chooses an optimal interest rate reaction function, given a loss function that is conditional on the state of the economy and given its “least squares learning” about the evolution of inflation and exchange-rate depreciation. The simulation results of the effects of different policy scenarios on welfare show that, on balance, the preferred stance should be strict inflation targeting.

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1. Introduction

This paper examines the role of interest rate policy in a small open economy subject to terms of trade shocks and time-varying currency risks. A central bank committed to low inflation
controls neither the terms of trade nor the evolution of currency risk, both of which condition
the response of inflation to its policy instruments. In this context, the best the central bank can
do is to learn the effects indirectly by frequently updating estimates of inflation dynamics and
re-adjusting its policy rules accordingly.

However, when an economy is subjected to large adverse external shocks and the exchange
rate depreciates rapidly, it should not be surprising if a central bank also comes under strong
pressure to incorporate exchange-rate volatility targets in its policy objectives. Should ex-
change-rate changes then be included as one of the monetary policy targets along with inflation
targets?

Much of the discussion of monetary policy is framed by the well-known Taylor (1993, 1999)
rule, whereby interest rates respond to their own lag, as well as to deviations of inflation and
output from respective targets. Taylor (1993) points out that this rule need not be a mechanical
formula, but something which can be operated informally, with recognition of the “general in-
strument responses which underlie the policy rule.” Not surprisingly, the specification of this
rule, which reflects the underlying objectives of monetary policy, has been the subject of con-
siderable controversy.¹

In a closed economy setting, Christiano and Gust (1999), for example, argue that only the
inflation variable should appear as a target. Rotemberg and Woodford (1998) concur, but
they argue that a higher average rate of inflation is required for monetary policy to be effective
over the medium to long term. They base their argument on the zero lower bound for the nom-
inal interest rate, since at very low inflation rates there is little room for this instrument to
manoeuvre.²

In an open economy setting, McCallum (2000) takes issue with the Rotemberg and Woodford
policy ineffectiveness argument under low inflation and zero lower bounds for nominal interest
rates. McCallum argues that the central bank always has at its disposal a second tool, the ex-
change rate, so if the economy is stuck at a very low interest rate, there is the option of currency
intervention. Christiano (2000) disagrees: McCallum’s argument rests on the assumption that
currency depreciation is effective. Furthermore, the central bank must be willing to undermine
public confidence that it stands ready to cut interest rates in the event of major adverse shocks.

For small emerging market economies, Taylor (2000) contends that policy rules that focus
on a smoothed inflation measure and real output, and which do not “try to react too much”
to the exchange rate might work well. However, he leaves open the question of a role for the
exchange rate. Ball (1999) argues that inflation targeting “can be dangerous” in an open

1 Recent technical papers on all aspects of the Taylor rule may be found on the web at http://www.stanford.edu/~
johtayl/PolRulLink.htm#Technical%20articles.

2 Erceg et al., 2000 argued that output deviations should also appear in the Taylor rule, but the output measure should
be deviations of actual output from the level of output generated by a flexible-price economy.
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