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Incomplete exchange rate pass-through and simple monetary policy rules

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Abstract

This paper investigates the performance of various monetary policy rules in an open economy with incomplete exchange rate pass-through. Implementing monetary policy through an exchange rate augmented policy rule does not improve social welfare compared to using an optimized Taylor rule, irrespective of the degree of pass-through. A direct exchange rate response improves welfare only if the other reaction coefficients, on inflation and output, are sub-optimal. However, an indirect exchange rate response, through a policy reaction to Consumer Price Index (CPI) inflation rather than to domestic inflation, is welfare enhancing. This result is independent of whether society values domestic or CPI inflation stabilization.
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1. Introduction

In a small open economy, where the exchange rate influences inflation and output via import prices and relative prices, the exchange rate will transmit monetary policy in addition to the traditional (i.e., closed economy) interest rate channel. If the exchange rate contains information about, for example, inflationary impulses, the policy maker might improve social welfare by extending her simple monetary policy rule to include a direct reaction to the exchange rate. The reason for this is multifaceted; first, augmenting the policy rule with an exchange rate term

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does, to some extent, internalize the 'total' effects interest rate adjustments have on the economy, since movements in the interest rate (i.e., the policy instrument) also influence the exchange rate. Hence, there might be an informational advantage to such a policy rule, measuring the overall position of the policy (see, e.g., Ball, 1999). Second, a policy rule that includes an exchange rate reaction is less restrictive than a rule that just contains a response to the result of the exchange rate movement (i.e., subsequent changes in inflation and output). The exchange rate augmented rule incorporates a direct feedback from the inflationary impulse (i.e., the cause of instability), which implies a possibility to quickly adjust the interest rate and offset the exchange rate effects. This might, consequently, reduce the sub-optimality of the simple policy rule. Third, if a financial disturbance is the cause underlying an exchange rate misalignment, a direct exchange rate reaction may prevent such shocks to have destabilizing effects on the real side of the economy (see Cecchetti et al., 2000).

Prior literature analyzing open economies and simple monetary policy rules has explored a broad set of exchange rate augmented policy rules, without attaining complete consensus of whether or not it is beneficial to include some feedback from an exchange rate variable in the central bank's instrument rule.[1] The purpose of this paper is to study and describe an appropriate simple policy rule in an open economy with incomplete exchange rate pass-through. In particular, the analysis focuses on the importance of the degree of pass-through. If the open economy-policy maker implements her policy through an instrument rule, should the nominal or real exchange rate be incorporated into this rule, and is this affected by whether the exchange rate pass-through is incomplete? That is, can inclusion of an exchange rate response among the policy maker's reactions mitigate the sub-optimality of the instrument rule? The analysis is pursued in a simple aggregate demand–aggregate supply model, where incomplete exchange rate pass-through is included in the model via nominal import price rigidities. This, consequently, implies short-run deviations from the law of one price.

The main results obtained in the paper are as follows: (i) the social welfare improvement of incorporating an exchange rate term in the *fully optimized* policy rule is practically zero, irrespective of the degree of pass-through. However, adding a real exchange rate term to the *non-optimized*, Taylor (1993) rule does enhance social welfare somewhat, since it reduces the sub-optimality of the overall policy response. (ii) An indirect exchange rate response, attained through a policy reaction to CPI inflation rather than domestic inflation, is welfare enhancing. This result holds independent of the degree of pass-through. Moreover, this result is not contingent upon society's preferences for CPI inflation stabilization or domestic inflation stabilization.

[1] Among the previously evaluated policies are, for example, rules incorporating the (current and/or lagged) real exchange rate, the change in the real exchange rate, or the level or change in the nominal exchange rate. In a backward-looking model, Ball (1999, 2000) shows that a simple rule encompassing the current and lagged real exchange rate generates a social welfare enhancement. On the other hand, in forward-looking models the evidence regarding the possible welfare improvements of various exchange rate augmented policy rules are mixed. Batini et al. (2001), Kollmann (2002), and Leitemo and Söderström (2005) assume limited exchange rate pass-through and find that the welfare performance is only marginally improved (if at all) by including a direct feedback from an exchange rate term in the instrument rule. The same result applies to McCallum and Nelson (1999), and Taylor (2001), although they employ full pass-through models. In contrast, Cecchetti et al. (2000), and Monacelli (1999), display models where there are welfare improvements of using policy rules that incorporate some exchange rate term. Cecchetti et al. (2000) look into forecast based rules for implementing policy, while Monacelli assumes incomplete exchange rate pass-through. Further, using two-country models, Benigno and Benigno (2001) and Weerapana (2000) record substantial (world economy) welfare improvements of interest rate rules including an exchange rate reaction.

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