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Exchange rate flexibility under the zero lower bound☆

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ABSTRACT

An independent monetary policy and a flexible exchange rate generally help a country in adjusting to macroeconomic shocks. But recently in many countries, interest rates have been pushed down close to the lower bound, limiting the ability of policy-makers to accommodate shocks, even with flexible exchange rates. This paper argues that when the zero bound constraint on nominal interest rates is binding and policy lacks an effective 'forward guidance' mechanism, a flexible exchange rate system may be inferior to a single currency area. With monetary policy constrained by the zero bound, a flexible exchange rate exacerbates the impact of shocks. Remarkably, this may hold true even if only a subset of countries are constrained by the zero bound, and other countries optimally adjust their interest rate targets. For a regime of multiple currencies to dominate a single currency in a zero bound environment, it is necessary to have effective forward guidance in monetary policy.

1. Introduction

Optimal currency area theory (e.g. Kenen 1969, Mundell 1961) states that a country subject to idiosyncratic macro shocks should have its own independent monetary policy and a flexible exchange rate.A country with flexible exchange rates can reduce interest rates in the face of a negative demand shock, allowing an exchange rate depreciation, which ensures faster adjustment in relative prices. This adjustment mechanism is absent within a single currency area. Much of the criticism of the Eurozone is built on optimal currency area logic. When one country in the Eurozone goes into recession, it cannot offset this through exchange rate depreciation. The lack of independent monetary policy has been identified as one of the biggest hindrances to a faster recovery of economic activity of Southern European countries.

An important feature of the recent crisis in both Europe and elsewhere, however, is that the normal functioning of monetary policy has been severely circumscribed by the zero bound constraint. In the Eurozone, and many other countries, interest rates have been at historically low levels and have been unable to respond adequately to the scale of the downturns in the real economy. Arguably, the Eurozone and many other regions have been stuck in a liquidity trap.

The main aim of this paper is to show that the standard reasoning in favor of multiple currencies and flexible exchange rates may be incorrect in a liquidity trap. When monetary policy is constrained by the zero bound on interest rates and policy-makers lacks effective forward guidance, it may be better to have a single region-wide currency than a regime of multiple floating currencies. Remarkably, this conclusion may still hold even if only a subset of countries in the region are constrained by the zero bound, and the other countries are free to follow optimal monetary policy rules. Equivalently, our analysis says that when a region experiences large a negative demand shock which leads to policy rates being constrained by the zero bound, then it may in fact be better inside the single currency area than if it had its own independent currency and a floating exchange rate.

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To clarify the logic of these results, take a simple New Keynesian open economy model and assume there are country-specific demand shocks. Then under 'normal' times, when nominal interest rates are positive and monetary policy follows an active inflation targeting rule, a disinflationary shock in one region is followed by a relative decline in real interest rates in that region accompanied by an exchange rate depreciation, which limits the impact of the shock.

Now however, take a negative demand shock in the case where monetary policy is constrained by the zero bound. Then, a disinflationary shock raises the real interest rate and leads to an exchange rate appreciation in the most affected region. Rather than off-setting the effect of the shock, the exchange rate moves in the 'wrong direction', *exacerbating* the effects of the shock.

By contrast, a single currency area eliminates the possibility of perverse exchange rate adjustment, and achieves a superior sharing of macro risk among regions. Under flexible exchange rates, unconventional monetary policy which offers guidance about the future path of monetary policy can potentially be used to prevent an undesirable response of the exchange rate at the zero bound. However, this unconventional monetary policy requires central banks to have the ability to credibly commit to future interest rate paths. In a sense, the elimination of independent currencies acts as a commitment technology, removing the possibility of *perverse* adjustment of exchange rates following country specific shocks, whether the zero bound constraint on nominal interest rates is binding or not.

We present the argument in three stages. First we use a stylized 'canonical' two country New Keynesian model where countries may be subject to demand shocks arising from temporary changes in the rate of time preference (savings shocks). In the first case, monetary policy is governed by a simple Taylor rule, which applies so long as nominal interest rates are positive. In a multiple currency, flexible exchange rate version of the model, when the Taylor rule is operative, a country-specific savings shock elicits a compensating nominal and real exchange rate depreciation for the affected country. If, in the same circumstance, the region were governed by a single currency area, a real depreciation would require a relative domestic price deflation, which would be more costly and prolonged.

Now, however, assume that interest rates are constrained by the zero bound. In this case, the country experiencing the large savings shock will experience relative price deflation, pushing up its relative real interest rate[1] , and generating a nominal and real exchange rate *appreciation* . This appreciation exacerbates the effect of the original shock. By contrast, the *relative* real interest rate and real exchange rate adjustment process under a single currency area is the same, whether or not the zero bound constraint applies. As a result, in a zero bound environment, adjustment to country-specific shocks is more efficient in a single currency area than under multiple currencies with flexible exchange rates. With flexible exchange rates, the endogenous movement in the exchange rate acts as a destabilizing mechanism at the zero lower bound.

We then extend this analysis to the case where monetary policy is chosen optimally in a cooperative framework, and some countries may not be constrained by the zero bound. Remarkably, we find that the same argument applies. That is, it may be better to have a single currency area than a system of multiple currencies with flexible exchange rates, even when only one of the two countries is in a liquidity trap, and the other country follows an optimal monetary policy to maximize a weighted sum of each country's welfare. The logic here is, in fact, the same as in the previous case. While an optimal monetary policy can alleviate the impact of perverse movements in the exchange rate, it may still be better not to have had any exchange rate adjustment at all, when the affected country is at the zero bound.

Finally, we extend the model to allow for 'forward guidance' in monetary policy. Here, both countries have full commitment to determine the path of interest rates both during the life of the shock and after the expiry of the shock. In this case, we find that the traditional logic is restored. Optimal forward guidance can ensure that the country affected by the shock promises highly accommodative monetary policy in the future, after the shock ends, and if this promise is credible, it achieves an immediate contemporaneous movement of exchange rates in the right direction. By doing so, it can improve the adjustment process, compared with that in a single currency area. An optimal policy, with effect forward guidance, multiple currencies, and flexible exchange rates, is in general better than an equivalent policy under a single currency area.

Hence, a key message of the paper is that forward guidance is a particularly critical element in monetary policy making in open economies with flexible exchange rates, when the zero bound constraint is likely to be binding. By contrast, without effective forward guidance, a single currency area acts as an in-built commitment mechanism guaranteeing that a country pushed into a liquidity trap will experience future inflation, reducing the impact of the shock on current inflation. With multiple currencies, flexible exchange rates, and no commitment, there is no such ability to guarantee future inflation for the affected country.

The commitment potential of pegged exchange rates is highlighted in a previous paper by Corsetti et al. (2011). While their paper is concerned with the effects of fiscal policy in a small open economy, their mechanism is similar to the one implicit in our paper. They note that if exchange rates are fixed, and temporary shocks do not affect the long run real exchange rate, any current disinflation must be matched by future inflation as relative prices return to PPP. Therefore, a fixed exchange rate is a form of price level of targeting. It has been noted in previous literature that price level targeting is in fact a way to establish a degree of commitment at the zero lower bound (see Eggertsson and Woodford, 2003).

The paper is also closely related to the recent literature on monetary and fiscal policy in a liquidity trap. In particular, with the experience of Japan in mind Krugman (1998), Eggertsson and Woodford (2003, 2005), Jung et al. (2005), Svensson (2003), Auerbach and Obstfeld (2005) and many other writers explore how monetary and fiscal policy could be usefully employed even when the authorities have no further room to reduce short term nominal interest rates. Recently, a number of authors have revived this literature in light of the very similar problems recently encountered by the economies of Western Europe and North America. Papers by Christiano et al. (2011), Devereux (2010), Eggertsson (2011), Cogan et al. (2009) have explored the possibility for using government spending expansions, tax cuts, and monetary policy when the economy is in a liquidity trap. Bodenstein et al. (2009) is an example of a fully specified two country DSGE model which examines the international transmission of standard business cycle shocks when one country is in a liquidity trap. In addition, Werning (2012) explores optimal monetary and fiscal policy in a continuous time model in face of zero lower bound constraints. Correia et al. (2013) explore a set of alternative fiscal instruments that can be used as a substitute for monetary policy in a zero lower bound situation.

The counterintuitive implications of the zero lower bound outlined in this paper parallel in part the surprising results that in a closed economy, some typically expansionary policies may be contractionary. An example is given of the contractionary effects of tax cuts in Eggertsson (2011).

Some recent papers consider international dimensions of optimal policy in a liquidity trap. Jeanne (2009) examines whether either monetary policy or fiscal policy can implement an efficient

[1] This response of real interest rates is very similar to those identified in the closed economy literature on the zero bound constraint (see in particular, Christiano et al., 2011, and Eggertsson, 2011).