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Which exchange rate regime provides the best protection against the unsuitable effects of a liquidity trap?

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Policy recommendations

The monetary union outweighs the independent floating regime in dealing with shocks that constrain the interest rate to its zero bound. Therefore, compared to the independent floating regime, the currency area provides additional protection to its member countries when faced with deflationary shocks that generate a liquidity trap. However, an independent policy regime with managed exchange rate would be even more protective, constituting the best option for countries that do not belong to a monetary union.

A two-sector two-country DSGE model was used to study the performance of alternative exchange rate regimes in a liquidity trap caused by a large deflationary shock. Contrary to common belief during the recent euro crisis, the current study shows that the currency union can outweigh the independent floating regime in dealing with the duration and depth of a liquidity trap. This result suggests that being member of the euro area represented an advantage rather than a drawback for countries which were most affected by the recent crisis. However, we also show that targeting the exchange rate as a monetary policy rule allows an independent policy to outperform the monetary union. This would be the best option for countries that are not concerned with a monetary union. This study clearly highlights the importance of the exchange rate regime as a preventive strategy to avoid the negative effects of deflationary and recessionary shocks.

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Introduction

This study was conducted in the context of the recent crises that hit countries all over the world (see United States, Euro area, United Kingdom or Japan). The main feature of these crises was that the central banks' policy interest rates were reduced to unprecedentedly low levels due to a large negative demand shock. Such a context, where the nominal interest rate is very close to its zero bound, is known as a liquidity trap situation. The monetary policy loses its ability to stimulate the economy or respond to shocks via its standard instrument.

By ignoring this particular environment and using traditional arguments of the theory on the optimum currency area (Mundel, 1961, Kenen, 1969), many policymakers indicated that the lack of independent monetary policy was one of the biggest drawbacks to the economic recovery in the southern euro area countries following their debt crisis. Indeed, an independent monetary policy can use interest rate cuts and currency depreciation to dampen the impact of asymmetric shocks on aggregate demand, but not in a liquidity trap. When countries are hit by asymmetric recessionary shocks that constrain interest rates to their zero bound, it is unclear if currencies would depreciate under independent monetary policy. Thus, the independent monetary policy may lose its comparative advantage. The economic adjustments will mainly depend on expected inflation dynamics and the nominal interest rate. The Swiss franc (resp. the Japanese yen), for example, appreciated rather than depreciated against the euro (resp. the US dollars) during the 2008 episodes of the liquidity trap.

The present study aims to identify the best exchange rate regime when the liquidity trap occurs. Is it really unsuitable to be part of a monetary union when a deflationary shock constrains the policy rate to its zero lower bound (ZLB)? What would be the best exchange rate regime that could alleviate the adverse effects of a liquidity trap for countries that are not involved in a monetary union?

Several studies have already analyzed the zero bound environment, but have mainly focused on exit strategies from a liquidity trap, underlining the role of fiscal policy to stimulate the economy (see among others Christiano et al., 2011; Eggertsson, 2011; Correia et al., 2013; Erceg and Lindé, 2014). Another solution to escape from the liquidity trap comes from the currency depreciation induced by two distinct policy measures: 1) a direct intervention in the foreign-exchange markets (Coenen and Wieland, 2003; Orphanides and Wieland, 2000) or 2) switching to a peg with a substantially devaluated exchange rate and announcing a price-level target path (Svensson, 2001).

Contrary to the previously reported studies on the exit strategies from a liquidity trap, the present work focuses on the preventive role of exchange rate regimes (i.e. in limiting the high deflationary effects of large shocks able to generate a liquidity trap).

The preventive role of exchange rate regimes in a liquidity trap

The role of exchange rate regime as preventive strategy to protect the economy from negative and prolonged effects of a liquidity trap is rarely discussed in the literature. To the best of our knowledge, only Cook and Devereux (2016) have previously addressed a similar question, by comparing the monetary union regime (MU) to an independent floating exchange rate regime (IF). Their simplified model involves two countries and is limited to one-sector, under the assumptions of complete markets and producer currency pricing (i.e. complete exchange rate

pass-through to import prices). This ignores potential wealth effects induced by incomplete

> *A monetary union, by committing to high expected inflation and achieving a risk sharing among countries, favors a lower recessionary impact of the liquidity trap compared to an independent floating regime.*

markets structure. It also creates a tight dependency between relative consumption and the real exchange rate, which overstates the sensitivity of the real exchange rate and of the terms of trade to the relative consumption.

The present study proposes to generalize their model in order to provide a performance grid of different exchange rate regimes under the ZLB constraint depending on the countries specifications.

First, we provide a more realistic two-sector two-country model with complete markets and producer currency pricing. The model is further developed by incorporating incomplete international asset markets and the local currency price-setting behavior of firms (LCP).

Second, our analysis incorporates a third independent policy regime with managed exchange rate (IMF).

Third, we relax the hypothesis made by Cook and Devereux (2016) on the absence of the role of expectations for their IF regime. We thus allow for endogenous duration of the liquidity trap in both IF and MU regimes, by using non-linear equilibrium conditions in the piecewise solution method developed by Guerrieri and Iacoviello (2015).

In order to compare the performance of different exchange rate regimes, as Cook and Devereux (2016), we assume that the liquidity trap is caused by an adverse preference shock,

sufficiently large to generate a liquidity trap in both countries.

The main results are summarized in the performance grid below and depend on the model specification:

Performance grid for exchange rate regimes in a liquidity trap

Model assumptions	Performance measure	Performance grid
Complete Markets with PCP	Economic stabilization Domestic welfare costs Joint welfare costs	IF<MU<IMF IF>MU>IMF IF<MU<IMF
Incomplete Markets with PCP	Economic stabilization Domestic welfare costs Joint welfare costs	IF<MU<IMF IF>MU>IMF IF<MU<IMF
Incomplete Markets with LCP	Economic stabilization Domestic welfare costs Joint welfare costs	IF<MU<IMF IF<MU<IMF IF<MU<IMF

Note: PCP=Producer Currency Pricing, LCP=Local Currency Pricing, IF=Independent Floating, MU=Monetary Union, IMF=Independent Managed Floating, IF<MU<IMF means that the MU overweighs the IF but is less performant than IMF.

From a macroeconomic stabilization perspective, as in the particular case of complete asset markets and PCP considered by Cook and Devereux (2016), we also find that the traditional ranking between the IF regime and the MU regime is reversed when the ZLB is binding. Indeed, the MU outperforms the IF regime in dealing with shock effects under a binding zero bound, reflecting the real exchange rate depreciation that occurs under the former regime while the latter faces an appreciation of exchange rate. The IF prolongs the duration of the liquidity trap compared to the MU due to the harmful adjustment of nominal and real exchange rates.

By taking into account the third independent policy regime with a managed exchange rate (IMF), we show that it is more resilient than the MU and the IF in dealing with a demand shock that constrains the interest rate to its zero bound.

All these findings are broadly consistent in the most realistic model with incomplete financial markets and LCP. Moreover, the sensitivity analysis based on model parameters does not qualitatively change the results.

When using as performance measure the joint welfare, i.e. the welfare computed for the two countries as a group, the ranking among regimes remains unchanged. The domestic welfare calculated for the country hit by the shock also confirms this ranking in the most plausible model with incomplete markets and local currency pricing. What it is also interesting to point out is that, whichever the model's assumptions, if the two countries are asymmetrically affected by the shock in terms of welfare, the monetary union always provides greater joint welfare in a liquidity trap compared to the independent floating regime. This suggests that the currency area insures additional protection to its member countries faced with deflationary shocks compared to the case where countries would opt for separated currencies and independent floating regime.

Conclusions and Policy Implications

The theory on optimum currency areas traditionally argues in favor of an independent flexible exchange rate, since this is able to deal with country-specific shocks through currency depreciation.

The current study analyses this recommendation in the context of a liquidity trap, using a two-sector two-country model. A large preference shock affecting one country is chosen to generate the liquidity trap.

It is shown that the traditional ranking in terms of macroeconomic stabilization between the independent floating exchange rate regime and the monetary union is reversed when the nominal interest rate is constrained at the zero bound. Indeed, the monetary union outperforms the independent floating regime under a binding zero bound, reflecting the real exchange rate (and the terms of trade) depreciation that occurs under the former regime while the latter faces an appreciation of exchange rate. The results show also that the duration of the liquidity trap varies across monetary regimes and it is shorter in the monetary union than in the independent floating regime.

By showing that the intensity of the ZLB constraint is endogenous to the monetary policy regime, the present study recommends central banks to adopt a policy regime that anchors inflation expectations to a higher level when the liquidity trap lasts. Thus, central banks should prefer the monetary union regime to the independent floating. Indeed, this option outperforms the independent floating in terms of macroeconomic stabilization.

Furthermore, for countries that are not involved in a monetary union, the best policy to adopt is the independent managed floating, which stabilizes the economy even more than the monetary union in the short-term. This occurs because the managed floating, by depreciating the nominal exchange rate, anchors agents' expectations for high inflation at the end of the ZLB period.

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