Discussion of "The Zero Lower Bound and Monetary Policy in a Global Economy: A Simple Analytical Investigation"*

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This is an original, intriguing, and timely paper. Its direct motivation stems from the unprecedented global policy response to the 2007–08 financial crisis. To a large extent, monetary policymakers worldwide have been recently sailing in uncharted waters. Interest rates in several countries have been slashed to exceptionally low levels, and at the time of this writing they are expected to stay near the zero bound for quite a while. At the same time, a multifaceted debate on exit strategies is raising issues regarding timing and speed of interest rate normalization (as well as the dynamics of quantitative easing and asset purchase programs, and the optimal size and composition of central bank balance sheets). Our understanding of cross-country policy spillovers when a generalized liquidity trap affects several trading partners simultaneously is limited at best. In this context this paper is very welcome, as it sheds some light on the interdependencies that arise in a world economy where the monetary stance in a country or regional bloc may affect domestic conditions elsewhere.

Specifically, the paper focuses on the following scenario: (i) all countries are initially in a liquidity trap (the zero interest floor is binding); (ii) the conduct of their monetary policies is designed in a cooperative fashion, either discretionally or under commitment; and (iii) exit from the liquidity trap is anticipated to be asymmetric (some countries are expected to leave the zero interest rate policy earlier than others).

The paper reaches two main conclusions:

(i) Under discretion, the characteristics of monetary policy cooperation depend crucially on structural parameters measuring international spillovers—in particular, the size of the intertemporal elasticity of substitution affecting households' consumption decisions.

(ii) Under commitment, optimal policy cooperation exhibits history dependence. By committing to maintain monetary easing well into the future, central banks worldwide are able to mitigate the global effects of the adverse shocks.

In what follows, I briefly comment on the model in terms of its robustness for policy evaluation and the relevance of its policy conclusions.

The model follows the standard New Open Economy Macroeconomics paradigm, and essentially borrows from Clarida, Galí, and Gertler (2002). This specification has an obvious analytical advantage: the key building blocks of the model are log-linear (and a closed-form solution applies). To revisit the key results of the paper, the following is a quick synthesis of the model.

Consider a two-country global economy. The two countries (home and foreign) have size n and $1 - n$, respectively. Foreign variables are denoted with an asterisk. In each country, output Y is a linear technology of its only input, employment h,

$$Y \propto h,$$

and consumption depends on global output (a result that hinges upon the particular calibration of the intratemporal elasticity of substitution between domestic and imported goods, set to one in the paper):

$$C \propto Y^{n} Y^{*1-n}.$$

Cost minimization by firms implies that real marginal costs MC (relative to domestic prices) depend on the CPI-based real wage W/P and the terms of trade S, defined as the relative price of home imports in terms of exports:

$$MC \propto \frac{W}{P} S^{1-n}.$$

In equilibrium, the terms of trade S is a function of relative output:

$$S \propto \frac{Y}{Y^*}.$$

Optimal labor supply equates the real wage to the marginal rate of substitution between leisure and consumption. Formally, we have the following expression for the real wage:

$$\frac{W}{P} \propto \frac{-U_h}{U_C},$$

where U is the utility of the representative household, a negative function of labor effort h and a positive function of consumption C.

In the paper, it is assumed that preferences are additively separable:

$$U = \frac{C^{1-\sigma}}{1-\sigma} - \frac{h^{1+\omega}}{1+\omega},$$

where σ and ω are positive parameters denoting, respectively, the reciprocal of the intertemporal elasticity of substitution and the reciprocal of the Frisch elasticity. This implies

$$\frac{W}{P} \propto Y^{\omega} C^{\sigma}.$$

Putting together the pieces, we get

$$MC \propto Y^{1+n(\sigma-1)+\omega} Y^{*(\sigma-1)(1-n)}.$$

Interpreting the previous expression, a foreign output expansion lowers home marginal costs (improving its terms of trade for any given real wage) by $-(1-n)$. But a foreign output expansion also increases home marginal costs (by increasing home consumption, which reduces its marginal utility, which raises real wages for any given labor supply) by $\sigma(1-n)$.

If $\sigma > 1$, the income effect prevails. Foreign growth increases domestic marginal costs and (once the dynamics of the model is fully specified) increases home inflation via Calvo adjustment. If $\sigma = 1$, income and substitution effect cancel out, and foreign growth has

no effect on home inflation. If $\sigma < 1$, the substitution effect prevails. Foreign growth lowers domestic marginal costs, thus lowering home inflation via Calvo adjustment. Indeed, in the paper, home inflation π_H is a function of foreign output gap x_F with a coefficient $\gamma_{H,F}$ which is proportional to $\sigma - 1$.

Consider now what happens when the two countries cooperate under discretion. Assume for instance that $\sigma = 0.5 < 1$. As long as the liquidity trap is in place, the monetary stance in both countries is too tight: there is deflation in both countries, and real interest rates are positive while the natural rate is negative. Output is below potential. Suppose the foreign economy exits the liquidity trap early (the foreign natural rate becomes positive). What to do? The best policy is for foreign to raise its real interest rate by less than the natural rate of interest: domestic and foreign output gaps narrow, significantly so abroad. The foreign output expansion increases inflation abroad, but helps close the home output gap without inflationary pressure at home.

Opposite considerations hold when σ is sufficiently high. Indeed, from an empirical vantage point, $\sigma \geq 1$ is probably the relevant case. In this case, in a coordinated exit strategy under discretion, the countries that exit first should quickly focus on inflation and raise their real interest rates by more than the natural rate. By limiting the degree of output expansion, they help reduce inflationary pressures worldwide (even though the output gap in the countries that remain in a liquidity trap opens further).

This analysis holds if countries act in a discretionary fashion. If instead they can credibly commit to a history-dependent stance, they will refrain from raising rates even once the liquidity trap is no longer binding. This expected behavior helps ease the monetary stance even when the liquidity trap is still binding and policy rates are at the zero floor, regardless of the specific values of structural parameters such as consumption elasticities.

How comfortable should we feel about these policy recommendations? Are they robust enough to hold for a relatively large class of models, or do they instead stem tightly from the specific assumptions of the paper, living and dying with its particular characteristics and parameterization?

The fact that the solution under commitment welfare-dominates the solution under discretion does not come as a surprise, and is

probably a robust feature across model classes. But the results under discretion do not promise to be very general, and in fact we may expect them to be highly model dependent.

To make this point in a quick fashion, modify the model above in one small dimension. For instance, suppose that utility is not additively separable, but rather is parameterized as

$$U = \frac{1}{1-\sigma}\left(C - \frac{h^{1+\phi}}{1+\phi}\right)^{1-\sigma}.$$

This is a simple utility function in the spirit of Greenwood, Herkowitz, and Huffman (1988). There is some evidence that open-economy models that adopt this specification perform better from an empirical viewpoint. Note that σ is still the reciprocal of the elasticity of intertemporal substitution, and ω is still the inverse Frisch elasticity.

However, now optimal labor supply decisions yield

$$\frac{W}{P} \propto Y^{\omega}$$

so that the expression for the home marginal cost as a function of output gaps worldwide is

$$MC \propto Y^{1-n+\omega} Y^{*-(1-n)}$$

for any level of σ. Different from above, only the terms-of-trade effects now work, and the key results on the international transmission no longer depend on σ. In fact, foreign growth always *lowers* home marginal costs, even when $\sigma > 1$.

The bottom line of this simple exercise is that an apparently innocuous modification in the parameterization of preferences can have crucial implications for the underlying policy recommendation (even if all the relevant elasticities remain the same!). This suggests some caution in drawing lessons from the model of the paper under discretion without further robustness analysis.

Let's consider now a different aspect of the model. At the very core of the paper is the design of a global monetary policy stance under coordination despite the fact that the different countries are able to pursue asymmetric exit strategies. How relevant is such an approach in practice?

Probably not too much. Global policymaking during the recent crisis appears likely to be best described as coordinated entry, uncoordinated exit. The experience of 2008 shows that obstacles to effective coordination disappear to the extent that shocks hit simultaneously and symmetrically across financial markets and national economies. It is not clear that similar conditions characterize the exit scenarios, when shocks (and national priorities) are perceived as highly asymmetric. To the extent that the design of a coordinated approach is still (marginally) part of the policy debate at the time of this writing, it seems to be mostly relegated to the possibility of engineering a synchronized exit—not the scenario considered in the paper, which focuses on a coordinated but uncorrelated exit. The open question is whether such a coordinated approach would yield significant benefits. In fact, several observers have openly called into question whether a "need for an orderly queue to exit" even exists. For a representative quote, see for instance Jim O'Neill of Goldman Sachs:

> In so far as many countries, especially the smaller open ones, have benefited from the stimulative policies of the large economies, it is reasonable to ask whether they should exit earlier than others. . . . Virtually every day we hear from policymakers that they will, somehow, prevent financial bubbles in future. If policymakers really want to prevent bubbles, it will mean that setting interest rates by inflation and output targeting will need to be augmented by something else, perhaps indices of financial conditions, similar to the European Central Bank's approach. For some countries where the financial system remains intact this suggests an earlier exit strategy. On the other hand, for those mired in the meltdown of their financial sectors, especially where the taxpayer has funded bailouts, the recovery is fraught with unpredictability. Early exits here make little sense. (O'Neill 2009)

Regardless of whether or not one agrees with these kinds of considerations, they suggest that more work is needed to understand if there exists a solid welfare-based case for coordinating the post-crisis exit strategies. It is fair to argue that such new research agenda should bring center stage those elements (global demand for

liquidity, collateral constraints and cyclical deleveraging, credit market imperfections, and possibly the role of securitization) that have played a key role in the crisis but appear nowhere in the class of models considered in this paper and in related contributions.

References

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