Comments on
M. Bodenstein, C.J. Erceg, and L. Guerrieri
"The effects of Foreign Shocks when U.S. Interest Rates are at Zero"

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Main points of the paper

A very neat paper!

- A simple question: What is the impact of a adverse foreign shock when monetary policy is constrained by the zero lower bound?

- An intuitive qualitative answer: The effect is stronger because monetary policy can't adjust.

- A careful quantitative appraisal: The negative impact of an adverse demand shock when the economy is at the zero lower bound is more than twice what it would be otherwise.

- Excellent discussion of several important methodological points: simulation technique, specification of the benchmark case, sensitivity analysis.

The model

- A standard New Keynesian model inspired by the Sigma model at the Federal Reserve Board
- Money in the utility function;
- Consumption external habits;
- CES production functions: elasticity of substitution between labor and capital is lower than with Cobb–Douglas technology;
- Nominal rigidities *a la Calvo*, for both prices and wages;
- Quadratic investment adjustment costs;
- Interest rate reaction function (Orphanides and Wieland, 1998):

$$i_t = \max \Big(0, \bar{r} + \bar{\pi} + \gamma_i (i_{t-1} - \bar{r} - \bar{\pi})$$
$$+ \gamma_\pi (\pi_t - \bar{\pi}) + \gamma_y (y_t - y_{t-1} - g_y) \Big)$$

The methodological challenge

- The zero lower bound for nominal interest rate implies that the function is not derivable at the kink.
- This precludes the use of local approximation. Even higher order approximation would perform badly.
- Global projection methods can't handle such a large model.
- Nonlinearities are more important in this problem than the stochastic aspects and choosing a deterministic setting is the right choice.
- Authors use LBJ algorithm improved by Anderson by aiming at linear trajectory rather than constant steady state terminal conditions.

Experimental design

- A very specific question: What is the differential response WHEN monetary policy is or isn't constrained by the zero lower bound

- The domestic economy is first put into recession by a *large* and *persistent* internal demand shock (a reduction in the marginal utility of consumption).

- The foreign shock occurs two years after the onset of the recession in the domestic economy.

- The marginal effect of the zero lower bound is interpreted as the difference between the trajectories when is zero lower bound is binding or not.

- This experience is different from the effect of an adverse foreign shock occurring in good times or bad times (with or without the domestic economy being initially in recession).

Main results

- A foreign shock that diminishes by 1% foreign output
  - domestic output diminishes by 0.3% when the ZLB isn't binding;
  - domestic output diminishes by 0.8% when the ZLB is binding.
- The bigger the initial recession, the bigger the marginal effects of the foreign shock.
- The response to positive and negative foreign shocks is asymmetric.
- The activation of the ZLB in the foreign country has little repercussion on the home country.

Discussion (I)

Minor details:

▶ The inflation target is set to zero. A positive inflation target would modify the reaction of the home economy to beneficial foreign shocks.

▶ In the interest rate reaction function, the output gap is defined as actual growth rate, $y_t - y_{t-1}$, minus the steady state growth rate, g_y, but the growth mechanism is not explicit in the paper.

Discussion (II)

What can we say of the effects of stochastic shocks?

- ▶ At the zero lower bound, the conditional expectation of next period nominal interest rate is positive, because of the possibility of large positive shocks that would lift the economy out of the liquidity trap.

- ▶ The expectation is next period real interest rate is probably also above its corresponding value in the deterministic case.

- ▶ A deterministic simulation may therefore underestimate the detrimental effects of an adverse foreign shock.

- ▶ However, in a bad state of the home economy, the probability of positive shocks big enough to pull the economy out of the liquidity trap in next period, may be quite small, and the expected value of next period nominal interest rate only slightly above zero. In that case, the deterministic simulation would not be a bad approximation of the stochastic case.

Conclusion

A very interesting and well executed paper!

We are waiting for the discussion of quantitative easing!