

Discussion of “The Global Factor in Neutral Policy Rates ...”

by R. Clarida

BIS Annual Conference 2017

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June, 2017

My Discussion

- Clarida's paper abstracts from interest rate lower bounds (IRLB).
- My discussion asks: given central banks face (nominal) IRLBs, what are the implications of a permanently lower global r^* on the desirability of monetary policy co-ordination?
- Answer: co-ordination is more likely to be desirable when r^* is low because binding IRLBs create an externality.
- Intuition: Central banks that are unconstrained by their IRLB should ease further in order to provide more stimulus for central banks that are constrained by their IRLB.

Outline

1. Model
2. Without an Interest Rate Lower Bound
3. With an Interest Rate Lower Bound
4. Wrap-Up

Model

Assume: Nominal = Real Interest Rates

- Motivated by empirically flat Phillips curves, I abstract from the effects of monetary policy on:
 - inflation expectations
 - expectations about exchange rate appreciation or depreciation
- This means that central banks can control short-term *real* interest rates through their control of short-term *nominal* interest rates.
- Similar to Farhi-Werning (Ecta, 2016).

Multi-Country Model: Basics

- There are N countries.
- A central bank in each country determines that country's nominal interest rate.
- (As in New Keynesian model), equilibrium output is demand-determined.
- Aggregate global demand for country n 's output is a strictly decreasing function of *all* global nominal interest rates.

Multi-Country Model: Math

- To summarize mathematically:

$$Y_n = AD_n(R_n, R_{-n}, \theta_n), n = 1, \dots, N$$

where AD_n represents the *global* demand for country n 's outputs.

- AD_n is a strictly decreasing function of its first N arguments and θ_n is some random shifter.
- I treat $\Theta = (\theta_1, \dots, \theta_N)$ as common knowledge (this is like assuming all countries' r^* s are common knowledge).
- The central bank in country n has a target level of output Y_n^{target} and the central bank n 's objective function is to maximize:

$$V_n = -(Y_n - Y_n^{target})^2$$

Global Objective

- I examine the extent to which *decentralized* central bank choices maximize *global welfare*.

- I represent global welfare as:

$$W(V_1, \dots, V_N)$$

where W is strictly increasing in all arguments.

- This can be motivated as ex-ante utility, given some subjective risk of being located in any of the N countries.

Without an Interest Rate Lower Bound

Game

- I consider a game in which all countries simultaneously choose their interest rates.
- Regularity: $\lim_{R_n \rightarrow -1} AD_n(R_n, \cdot) = \infty$ and $\lim_{R_n \rightarrow \infty} AD_n(R_n, \cdot) = 0$.
- Then, the country n central bank's best response function in this game is $\hat{R}_n(R_{-n}, \theta_n)$ that generates target output given other countries' choices:

$$AD_n(\hat{R}_n(R_{-n}, \theta_n), R_{-n}, \theta_n) = Y_n^{target}$$

Nash Equilibrium

- What is a Nash equilibrium (NE) outcome, as a function of the aggregate demand shocks $\Theta = (\theta_1, \dots, \theta_N)$?
- It is an interest rate vector $R^*(\Theta)$ that solves the N equations:

$$AD_n(R_n^*(\Theta), R_{-n}^*(\Theta), \theta_n) = Y_n^{target}, n = 1, \dots, N$$

Global Welfare Optimum

- In any Nash equilibrium, every country's objective is maximized.
- Since every country's objective is maximized, the NE outcome also maximizes global welfare.
- There is no need for global co-ordination of any kind.
- NOTE: depending on Θ , some countries might have high interest rates and some might have low interest rates.

With an Interest Rate Lower Bound

Game and Best Response

- Now suppose that each country n faces an IRLB \bar{R}_{LB}^n .
- Again, consider the same game in which they choose interest rates simultaneously.

Global Optimality of Nash Equilibrium Outcome

- The NE outcome is:

$$R_n^*(\Theta) = \max(\hat{R}_n(R_{-n}^*(\Theta), \theta_n), \bar{R}_n^{LB}), n = 1, \dots, N$$

- The NE outcome maximizes global welfare, given Θ , if all central banks are unconstrained so that:

$$R_n^*(\Theta) > \bar{R}_n^{LB}$$

for all n . (All countries hit their output targets).

- The NE outcome also maximizes global welfare if all central banks are constrained so that:

$$R_n^*(\Theta) = \bar{R}_n^{LB}$$

for all n . (It's not possible to improve welfare because no interest rate can be lowered.)

Asymmetric ELB in a NE Outcome

- But suppose that the Nash equilibrium is such that, for some realizations of Θ :
- There is at least one country for which $R_n^*(\Theta) > \bar{R}_n^{LB}$ and at least one country for which $Y_m^*(\Theta) < Y_m^{target}$ (because of binding lower bound).

Improving on an Asymmetric NE Outcome

- Suppose a global planner changes the NE outcome by lowering $R_n^*(\Theta)$ slightly for some country with a non-binding IRLB. What happens?
 - Any country not at its lower bound loses.
 - Any country with below-target output benefits.
- BUT: all benefits are **first-order**. All losses are **second-order**.
- When IRLBs constrain some and not others, there is a gain to global co-ordination.
- In this situation: unconstrained central banks should run “too hot” to help out constrained ones.

Wrap-Up

Main Conclusion

- The fall in global r^* increases the probability of all central banks' being at their lower bounds simultaneously. Global co-operation can't help in this situation.
- But (as Clarida emphasizes), there are idiosyncratic differences in r^* across countries.
- The fall in global r^* increases the probability of an **asymmetric** situation in which some central banks are constrained and others aren't.
- An ex-ante commitment to ex-post global co-operation in these situations could increase overall ex-ante welfare.