MONETARY POLICY IN A GLOBAL RECESSION

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RESEARCH AND POLICY

- Take this opportunity to try to merge:
  1. Some frontier research ...
  2. ... with some pressing policy problems associated with the current crisis.

- We cannot solve all these problems today.

- But good research ideas can help us think about pragmatic policy options.
GLOBAL RECESSION

- We are in a sharp recession in the U.S. and globally.
- Global aspects unprecedented in the postwar era.
- Financial market turmoil continuing.
- Macroeconomic expectations unsettled, fluid.
- Suggests many possible outcomes.
- The global policy response may be critical.
The Federal Reserve moved the U.S. policy rate close to zero in December 2008.

ECB lowering rates.

Bank of England moving closer to zero.

Bank of Japan near zero.

Global zero interest rate policy?
MONETARIST EXPERIMENTS, THEN AND NOW

- Taylor rule calling for −6% U.S. nominal interest rate (!)
- To keep stabilization policy active requires a shift in thinking.
- Previous similar shift in thinking: Volcker 1979.
- More emphasis on monetary quantities.
  - 1979: A choice to implement policy in a way that would get inflation under control.
  - 2008: Thrust upon the Fed by events.
- But what is the nature of this new policy?
Volcker’s monetarist experiment won the early 1980s battle against inflation.

1980s monetary theory referred always to money.

Two intellectual developments since then have left the economics profession largely unprepared for current circumstances.

- Kydland, Prescott, Lucas: allow the economy to optimally react to shocks. Don’t worry too much about business cycles. Monetary policy ‘over-emphasized.’
- Rotemberg, Woodford, Taylor: to the extent we can use monetary stabilization policy effectively, interest rate rules are a sensible tool.

Result: With ZIRP ...

... stabilization policy runs aground intellectually.
Near-zero policy rates have led to much discussion of “quantitative easing.”

Goals for this address:
- Try to offer some clarity and perspective on these issues.
- Prepare for the coming era of near-zero policy rates globally.

Themes:
1. Little *intrinisic* difference between nominal interest rate targeting and monetary targeting.
2. Avoiding deflationary trap dynamics may depend on fiscal policy.
3. Global aspects of policy coordination: what to think?
Because of ZIRP, there is currently a lot of discussion about quantitatively-based monetary policy. But since Taylor (1993), the discussion has moved the other way, toward interest rate rules.

“Rationalizing what central banks already do.”

Thrust of that discussion: one does not have to refer to money when implementing monetary policy.

To think about this:


Think of short-term nominal interest rates as being low, but not zero.
MONETARY IMPLEMENTATION

Within the NK model, any desired stabilization policy could be implemented via either interest rate movements or movements in the stock of money.

At some level, this has to be true.

Meaning:

- We do not have to implement via money ...
- ... or even refer to money ...
- ... but we can implement via money if desired.

This is an important concept in the current environment.

Why desired now? Consider:

- Christiano, Motto and Rostagno (2004) – “The Great Depression and the Friedman Schwartz hypothesis”: a monetary base rule would have avoided the depression.
Many have looked for a role for money in the NK framework. In the basic NK model, it is not necessary to make reference to money. Many arguments about this. But even in the basic NK model, you can pursue stabilization policy via movements in the money stock. In normal times, you may not want to do this. In extraordinary times, you may want to turn to this option. This is what is happening now in central bank policy worldwide.
A Conceptual Question

- The NK model consists of four equations.
- A fourth equation describes the demand for money as a function of the nominal interest rate.
- It is a decoupled equation: It is not needed to find the equilibrium allocations in the economy.
- A question sometimes asked: is it not possible to invert the money demand equation, expressing the system in terms of a monetary rule instead, without reference to interest rates at all?
- Answer: It is possible, but the monetary rule is not like the ones normally studied in the earlier literature.
**Preliminaries**

- Assume the inflation target is zero.
- Adopt Woodford’s money-in-the-utility function specification.
- Assume that money does not pay interest.
- All variables are expressed as deviations from their steady state equilibrium or target values.
- There is no assumption concerning the zero bound: This is a local analysis for positive nominal interest rates.
- Think of nominal interest rates as being low but positive.
FOUR EQUATIONS

Consider four equations:

1. \[ x_t = E_t x_{t+1} - \sigma [r_t - E_t \pi_{t+1}] + \epsilon_{x,t} \] (1)
2. \[ \pi_t = \kappa x_t + \beta E_t \pi_{t+1} + \epsilon_{\pi,t} \] (2)
3. \[ r_t = \phi_\pi \pi_t + \phi_x x_t \] (3)
4. \[ m_t = \eta_x x_t - \eta_r r_t \] (4)

Equations (1) and (2) are standard.

Equation (3) is an *ad hoc* Taylor rule with policy parameters \( \phi_\pi \) and \( \phi_x \).

Equation (4) is the money demand relation coming from the money-in-the-utility function specification.

Normally, the money demand equation (4) is viewed as *decoupled*, and so ignored.
Determinacy

- Substituting equation (3) into equation (1) creates a two-dimensional system with determinacy condition

\[ \varphi_\pi + \frac{1 - \beta}{\kappa} \varphi_x > 1. \] (5)

- Equilibrium determinacy depends on policy parameter choices.
- Policy must be “aggressive enough” to prevent self-fulfilling fluctuations unrelated to fundamental shocks.
- We can choose optimal values for \( \varphi_\pi \) and \( \varphi_x \) subject to the determinacy condition.
AN ALTERNATIVE

- Throw out the Taylor rule, equation (3).
- Invert the money demand relation:
  \[ r_t = \frac{\eta_x x_t - m_t}{\eta_r} \]  
  (6)
- Substitute (6) into (1).
- Specify a money supply rule to replace the Taylor rule:
  \[ m_t = \mu_\pi \pi_t + \mu_x x_t \]  
  (7)
- Substitute (7) into (1). This creates a two-dimensional system, as before.
AN EQUIVALENCE

- The new system is two dimensional, with variables $x_t$ and $\pi_t$.
- There is no reference to nominal interest rates.
- The new system is identical to the original one if

$$\eta_r \varphi_\pi = -\mu_\pi$$

(8)

$$\eta_r \varphi_x = \eta_x - \mu_x.$$  

(9)

- Since $\mu_\pi$ and $\mu_x$ are arbitrary policy parameters, we can always choose their values appropriately to meet these conditions.
- Appropriate choices means determinacy conditions are also met.
- We can optimize choices of $\mu_\pi$ and $\mu_x$ to obtain the optimal allocations given determinacy.
- From this perspective, there is little to choose between interest rate or monetary implementations.
REMARKS

- Feedback for money supply rules unusual.
- A monetary feedback rule can accomplish everything an interest rate rule can accomplish.
- It is still a rule. All issues about commitment and announcing policy paths are still relevant.
- Setting $\mu_\pi = \mu_x = 0$, “money does not matter,” may yield determinacy but would in general be far from the optimal policy.
- Switching to “quantitative monetary policy” at low nominal interest rates without thinking about issues like this may lead to policy errors.
- Objections to quantitative monetary policy are better couched in terms of practical considerations.
- In addition, interest rate rules have a clear problem—they can generate deflationary traps.
Deflation is a real possibility in the current environment. A global recession that continues longer than currently anticipated could create a deflationary psychology. If this becomes entrenched, we could face an extended period of declining prices. We have the example of Japan. An important near-term goal for monetary policy is to prevent this outcome.
**Deflationary Traps**

- The Japanese experience spawned a literature.

They combined the following features:

- A Taylor-type policy rule which is ‘active.’
- A zero bound on nominal interest rates.
- A Fisher relation: $r_t = \rho + E_t \pi_{t+1}$.

These features combine to produce a ‘second’ steady state away from the targeted steady state.

This new steady state has inflation substantially below target and very low nominal interest rates.
The risk of a deflationary trap

- The Benhabib et al. story seems particularly relevant in the current environment.
- Policy rates are moving lower worldwide.
- A large, global shock.
- Why worry about deflation? Nominal contracting.
One question to ask when there are multiple steady states is which steady state is stable under learning dynamics.

Evans, Guse, and Honkapohja (2008, EER) did this analysis in a NK model.

They show that the targeted steady state is locally stable, but not globally stable, in the learning dynamics.

This is comforting.

Still, a large shock could send the economy into what they call a deflationary spiral.

How to prevent this?
AVOIDING DEFLATIONARY TRAPS

- One idea is to be particularly aggressive as interest rates are being lowered.
- Once inflation passes a certain threshold below the inflation target, then interest rates would be lowered to near zero rapidly.
- This policy does not really solve the problem.
  - It does enlarge the basin of attraction for the targeted steady state ...
  - ... by creating a new steady state still further from the targeted equilibrium.
Another idea is to pursue an aggressive fiscal policy.

Inside the model, fiscal policy is passive in the sense of Leeper (1991).

- An increase in real government debt is financed by lump-sum taxes.

In this setting, an increase in government consumption can put a floor on inflation sufficient to keep the economy in the basin of attraction of the targeted steady state.

Intriguing. Seems like the right type of analysis.
AVOIDING DEFLATIONARY TRAPS: EGH Fig. 1

Figure 1: $\pi^e$ and $c^e$ dynamics under standard policy
AVOIDING DEFLATIONARY TRAPS: EGH Fig. 4

Figure 4: Inflation threshold $\pi_L < \bar{\pi} < \pi^*$ for aggressive monetary and fiscal policies.
GLOBAL POLICY

- International policy coordination is of course difficult.
- For monetary policy, models are only recently available.
- Some literature suggests that gains from coordination may not be that large.
- Implication: don’t worry about a lack of coordination.
COORDINATION FROM ANOTHER PERSPECTIVE

- Bullard and Singh (2008, *JME*).
- Multiple NK economies.
- Multiple policymakers following Taylor-type rules.
- Each country focuses on CPI inflation, which includes imported goods prices.
- Equilibrium is global.
MORE ON COORDINATION

- Determinacy conditions depend on policymakers worldwide.
- Indeterminacy of the worldwide equilibrium can be caused by a single policymaker.
- In this model, there does not appear to be much that remaining countries can do to fix the problem.
- If the country pursuing the poor policy is large ...
  - ... endogenous volatility could reverberate worldwide.
- Worrisome.
Lessons on Coordination

The nature of worldwide equilibrium depends on the actions of all policymakers, especially major players.

May be about more than a ‘small gain’ from proper coordination.

More like: The structure of world equilibrium, the potential for endogenous volatility.

Another example: worldwide deflationary trap.

- Multiple country versions of Benhabib *et al.?*
CONCLUSION

- New environment characterized by:
  - worldwide recession.
  - very low policy rates globally.
  - possible deflationary trap.

- Themes:
  - Quantitative approaches to policy are feasible.
  - Assessing deflationary trap potential requires a credible analysis of dynamics.
  - Coordination: may be more important than commonly recognized.
Moving to quantitative approaches to policy is feasible and is going on right now.

We cannot lose sight of all of the other important lessons learned over the past 15 years.
Credibility, transparency, commitment remain important.

A deflationary trap like Japan’s is a clear near-term risk.
Possibly fiscal policy moves will help to avoid these dynamics.
Worldwide?

International policy coordination.
Less to do with small additional utility gains.
More to do with the structure of the global equilibrium and the potential for endogenous volatility.