MONETARY POLICY
WHEN INTEREST RATES ARE BOUNDED AT ZERO

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OUTLINE

1. Introduction
2. Overview of the model
3. Simulations and the results
4. Additional considerations
5. Conclusions
6. Strengths & Weaknesses
**OBJECTIVE**

- To assess whether the zero lower bound on nominal interest rates could constraints the interest-rate channel of monetary policy for the Central Bank.

**METHOD**

- Solution paths for the model were examined under, Higher Inflation Scenario- **HIS** (4%) and Low Inflation Scenario -**LIS** (0%) in a variety of monetary policy reaction function.
- They consider two types of demand shocks: Permanent unanticipated & Temporary unanticipated shocks.
- It is a Model-based empirical study of the U. S. economy
### ASSUMPTIONS

(A) Ignore the possibility of a *term premium* on the real long bond.

(B) The aggregate spending makes the output gap a function only of *long-term real rates*.

(C) The expected long-term real rate is completely *forward-looking*, satisfying period-by-period arbitrage.
IS curve

- Relates output to the ex ante long-term real interest rate

Monetary policy reaction function

- Moves the short-term nominal interest rate in response to deviations of target variables from desired values

Price contracting specification

- Nominal price contracts are negotiated in real terms
SHOCKS

0.4% drop in demand

Permanent Unanticipated Shocks

Nominal Short-Rate Levels

Log-Difference Nominal Short Rates

Temporary Unanticipated Shocks

Nominal Short-Rate Levels

Log-Difference Nominal Short Rates

1% drop in demand

Temporary Unanticipated Shocks

Nominal Short-Rate Levels
(1) Permanent Unanticipated Shocks - Log-Difference

Nominal Rates

**Nominal short rate**
- HIS (dashed line/right scale) falls about 3 percentage points
- LIS adjusts by a total of nearly 1 1/4 % points

**Long real rate**
- HIS initially drops by 62 basis points
- LIS the long rate falls 56 basis points

**Output gap**
- Output recovers a little more steeply in the HIS
Nominal short rate
- In HIS, the short rate lowers to zero in the second period
- LIS short rates can fall only 2.1 percentage points

Long real rate
- In HIS, sharper initial drop in the real long rate than LIS

Output gap
- In HIS, recession ends in one quarter
- In LIS, output overshoots slightly, and recession lasts two quarters
Nominal short rate
- In HIS, the short rate decline about 4 percentage points
- But in LIS, short rates fall to 1 1/2 percentage points

Long real rate
- In HIS, rates drop considerably further, initially by 35 basis points,
- But in LIS it drops only by 20 basis points

Output gap
- LIS, permit a somewhat steeper recovery of output, but the pattern is not markedly different
(4) Temporary Unanticipated Shocks—Nominal Short-Rate Levels

**Nominal short rate**
- HIS permits a substantially more aggressive response measured in terms of percentage points

**Long real rate**
- Consequently the decline in real long rates is more than twice as steep in HIS

**Output gap**
- The path of output during the recovery in HIS is only a little steeper, ending the recovery about a quarter earlier
Nominal short rate
• In HIS, rates drop much more sharply—and stay low for longer

Long real rate
• Over the first year, it averages about 25 basis points lower in the HIS
• But in LIS, the rates are unable to fall as sharply

Output gap
• The decline in output is significantly sharper in LIS
• Level of output is higher in the HIS and the output gap is closed about one quarter sooner
A. TERM PREMIUM IN INTEREST RATES

In LIF short rates drops one-half that of HIS

Long rates is large in HIS to generate a relatively more robust recovery

B. SHORTER TERM REAL RATES IN IS CURVE

The model behaves about as it does in previous

Exclusion of shorter duration real rates appears to be an unimportant

C. BACKWARD-LOOKING BOND MARKETS

Real rates are lower in the HIS than in the LIS but the relative differences are small

This does not alter the qualitative properties of the model simulations
CONCLUSIONS

- The results indicate that the argument is correct, qualitatively speaking, the decline in real rates can be constrained by the inability of nominal rates to fall below zero.
- For relatively small and short-lived spending shocks, as well as for permanent and large shocks, the path of output in the LIS is only modestly below that in the HIS.
- But for large shocks persisting a few quarters, differences in output paths across high- and low-inflation scenarios can be larger.
- Allowance for a term premium in long-term interest rates tends to augment differences across inflation scenarios. Including shorter term rates in the IS curve and making the bond markets backward-looking seems to have little effect on the conclusions.
STRENGTHS

1. A very simple model but well specified and easily shown how it react in different scenarios.

2. It was one of the first research conducted and it opened up doors for others researchers like Krugman (1998), Orphanides and Wieland (1998), Svensson (2000, 2001) to explore more.
1. One limitation of this approach is that it focuses solely on the interest-rate channel for monetary policy. James Clouse (2000) shows other channels.

2. The estimated model assumes a linear trend for potential output, so that permanent shocks to output are not identified.

3. The model do not derives their equations for private-sector behavior from explicit optimization, raising the question of their stability in the face of policy experiments that are outside the historical experience over which each model is estimated.

4. By explicitly modeling money demand and extending this model, Wolman (1998 and 2000) 1998a) concludes that, in the context of labour supply shocks, the zero bound is not an important factor.