What Do Central Banks Do?

Or

Why Is Monetary Policy Implemented by Controlling the Price of Liquidity?

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Disclaimer:

The views expressed are mine and do not necessarily represent the views of the Federal Reserve Bank of St. Louis or the Board of Governors of the Federal Reserve
Who I am

- Economist, Federal Reserve Bank of St. Louis (also, vice president)
- Previously:
  - Federal Reserve Board, Washington DC
  - Some teaching (U of Michigan, Michigan State U, Ohio State U, Virginia Tech)
- Schooling: U of Minnesota and MIT
What Is A “Central Bank”?

• Usually, government chartered or sponsored
• Usually, fiscal agent for government
  • taxes must be paid “in the king’s money”
  • issue payments for the government
• Usually, seek to conduct “monetary policy”
• Usually, are at the center of the “payment system”
  • often, payments settled on the books of the central bank
    are “final” and “irrevocable”

• May have banking safety and soundness (supervision) role
• May have consumer protection role
• May have financial markets monitoring role
• May be “independent” of the government
History

• Sweden: Riksbank, 1668, as parliament’s bank
  • 1904 obtained monopoly on note issue
• England: Bank of England
  • Wealthy merchants seeking an investment vehicle
  • Hard-up king selling (licensing) right to issue currency
• “Sovereigns always are hard-up.” => sell some part of their rights
• Independence of the central bank
• Temptation to “monetize” king’s debt => inflation
The “Businesses” of a Central Bank

• Check clearing (dead business)
• Electronic payments
• Bank examinations
• Consumer protection
• Bank mergers/acquisitions
• Monetary policy
Monetary Policy I

What the devil is “monetary policy”? 
An attempt to influence the path of (macroeconomic) variables to be something other than what it otherwise would be...
Intervene in financial markets

- Seek to change a short-term interest rate from the value it otherwise would be
- Seek to change a long-term interest rate from the value it otherwise would be

...or, manufacture automobiles and trucks
Monetary Policy I

• A very short-term interest rate is the price of “liquidity”
  – the conversion of an asset quickly and without loss of value into “medium of exchange”

• Can/should the central bank also change the price of risk?
Monetary Policy I

How Can a Central Bank Do Such a Thing?
What type of “medium of exchange” does a central bank have to offer?

– currency (hand to hand payments)
– deposits at the central bank (interbank payments)

• These are liabilities of the central bank
Monetary Policy I

What does a central bank buy with these liabilities?

– Anything it wants!
  • Well, anything the law allows…

– Government bonds, private sector bonds, corporate loans, foreign currency, etc.
Federal Reserve Balance Sheet

<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold</td>
<td>Currency</td>
</tr>
<tr>
<td>Securities Held Outright</td>
<td>Deposits of DFI</td>
</tr>
<tr>
<td>Repurchase agreements</td>
<td>US Treasury</td>
</tr>
<tr>
<td>Term auction credit</td>
<td>Capital</td>
</tr>
<tr>
<td>Commercial paper</td>
<td>Capital</td>
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<tr>
<td>Other</td>
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<tr>
<td>Total</td>
<td>1,970.30</td>
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</tbody>
</table>
Monetary Policy I

Historical Note:

The demand for central bank liabilities can be coerced by law…

- Pay the King’s taxes in the King’s money, currency or central bank deposits
- Statutory reserve requirements against private deposits
The Mystery of Central Banking:

I can buy anything I wish (as the law allows) and pay for it with deposits that I issue on myself – and no one asks for any other payment.
Monetary Policy I

How?

Because the economy requires a means of making payment, and central bank liabilities are such a medium…

What would happen if no one wanted central bank liabilities?
Monetary Policy I

Mechanics

• Buy and sell government securities
• Outright purchases, repurchase agreements (in and outward)
• Lend to depository institutions

• Lend to others?
Monetary Policy I

Most central banks have as a daily policy target the overnight RP rate on government (Treasury) securities.

The Federal Reserve sets its target in terms of an overnight, unsecured interbank lending rate (for deposits at the Federal Reserve)
Monetary Policy I

The overnight RP rate is the theoretically “correct” rate – it corresponds best to macroeconomic models.

The RP rate is rate at which the central bank converts default risk-free government securities into medium of exchange.

> This is the fulcrum for monetary policy.
Monetary Policy II

If I wish to change the path of the economy,
-- How do I know where the economy is already going?
-- How do I determine my actions?
-- What are the risks?

> Classic decision theory problem.
More mechanics:

• The central bank changes a default risk-free short-term nominal interest rate.
• But it wishes to change a short-term real interest rate because that will...
• ... change long-term real interest rates.

>>> How does it get from here to there?
Monetary Policy II

What connects nominal and real interest rates?
(expected inflation)

What connects short- and long-term interest rates?
(the yield curve)
Expectations are crucial

“Saying that expectations are all that matters is an exaggeration, but not by much.”

⇒ Classic problem in strategic behavior
⇒ How are expectations formed?
⇒ What is the nature of the equilibrium? (Nash equilibrium)
Monetary Policy II

Early economic analyses recognized the role of expectations
⇒ But assumed private actors did not respond strategically to monetary (or fiscal) policy actions
⇒ Robert Lucas argued (~1973) argued this cannot be correct – naïve
⇒ Generated research on expectation formation ("model-based expectations")
Monetary Policy II

Uncertainty
Monetary Policy II

Uncertainty re the data.
Uncertainty re the economy’s structure
Uncertainty re the quality of my model
Uncertainty re future shocks to the economy

“An exercise in risk management”
– Alan Greenspan
Monetary Policy II

Data

• What is the current level and growth rate of “potential” output in the economy?
• What is the current level and growth rate of “actual” output?
• What is the current level of employment?
• What is the current rate of inflation?
Figure 3
Real Consumption Growth for 1973Q2
Data Uncertainty

Figure 4
Mean Revision, Initial to Latest

Vintage Date for Latest-Available Data

Mean revision
Figure 1b: CBO Potential Output Growth, 1996 and 2001

Data Uncertainty: Potential Output
Forecast Uncertainty: The FOMC

Real Gross Domestic Product

% change at an annual rate


Forecast Error

Greenbook forecast (next 4 qtrs)  Real-Time Actual (next 4 quarters)
Forecast Uncertainty: FOMC
Monetary Policy

• All central banks operate some type of monetary policy
• All have excellent staffs of economists
• All have fancy economic models
• All produce forecasts that combine the models with expert human judgment

>>> None of it, really, helps very much…
Monetary Policy

So, what is to be done?

• Avoid foolishness – do no harm.
• Avoid policies that allow high rates of inflation.
• Avoid policies that allow asset price bubbles.
• Avoid policies that allow easy financing of large government budget deficits.
Monetary Policy

Recent literature on policy under model uncertainty...

• Uncertainty is greatest in *levels* of data
  – Less in growth rates
  – Less in *relative* growth and levels (ratios)

• Conduct policy in changes
  – If inflation is increasing, increase real short-term interest rate target
  – If output is too low, decrease real short-term rate target
Summary

• Central banks may be seen as moving the economy by changing the price of “liquidity,” that is, by changing the price at which they convert government debt into medium of exchange such as deposits at the central bank.

• Such actions of the central bank will affect many economic variables, including the amounts of commercial bank deposits, components of aggregate demand, employment, and inflation.

• Central banks implement their policy by setting a target for a short-term (often overnight) interest rate. Most often, this the overnight RP rate on government securities. The Federal Reserve uses the overnight rate on unsecured loans among banks (the federal funds rate), which typically exceeds the RP rate by 10 basis points.

• Econometric models assist policymakers, but to date are not sufficiently accurate to be the primary basis of policy judgements.
Some Further Readings


-- unique article seeking to bridge the gap between policymakers’ “conceptual models” and the econometrician seeking to build empirical models useful to policymakers. Some advanced material, but readable nonetheless. Highly recommended for any econometrics student wishing to work in a central bank.


-- classic, well-known comparative study of how central banks implement policy in financial markets. Borio has more recent papers discussing narrower geographic areas; search the BIS web site.


-- when published, the definitive discussion of how the Federal Reserve implements monetary policy by a former head of the Federal Reserve’s Open Market Desk. Dated in some parts, but still worth study.