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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



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Monetary Policy I

What the devil is “monetary policy”?



Monetary Policy I

An attempt to influence the path of (macroeconomic) variables to be something other than what it otherwise would be...



Monetary Policy I

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?



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Monetary Policy I

How Can a Central Bank Do Such a Thing?



Monetary Policy I

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

Assets

Gold	\$11
Securities Held Outright	\$490
Repurchase agreements	\$80
Term auction credit	\$301
Commercial paper	\$144
Other	\$540
Total	1,970.30

Liabilities

Currency	\$823
Deposits of DFI	\$425
US Treasury	\$578
Capital	
	\$40.40



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



Monetary Policy I

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.



Monetary Policy II

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)



Monetary Policy II

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”)



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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

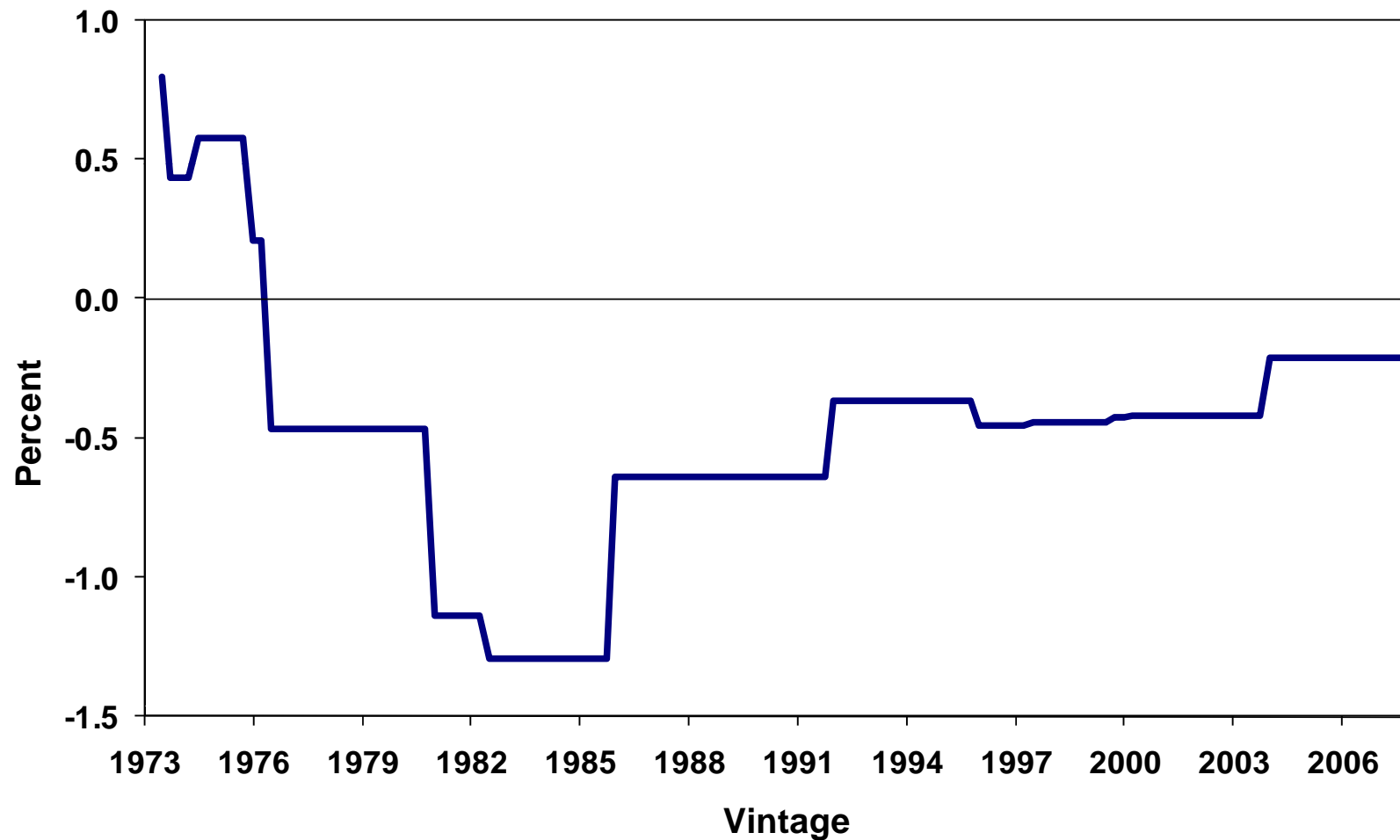
Data

- 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?



Data Uncertainty

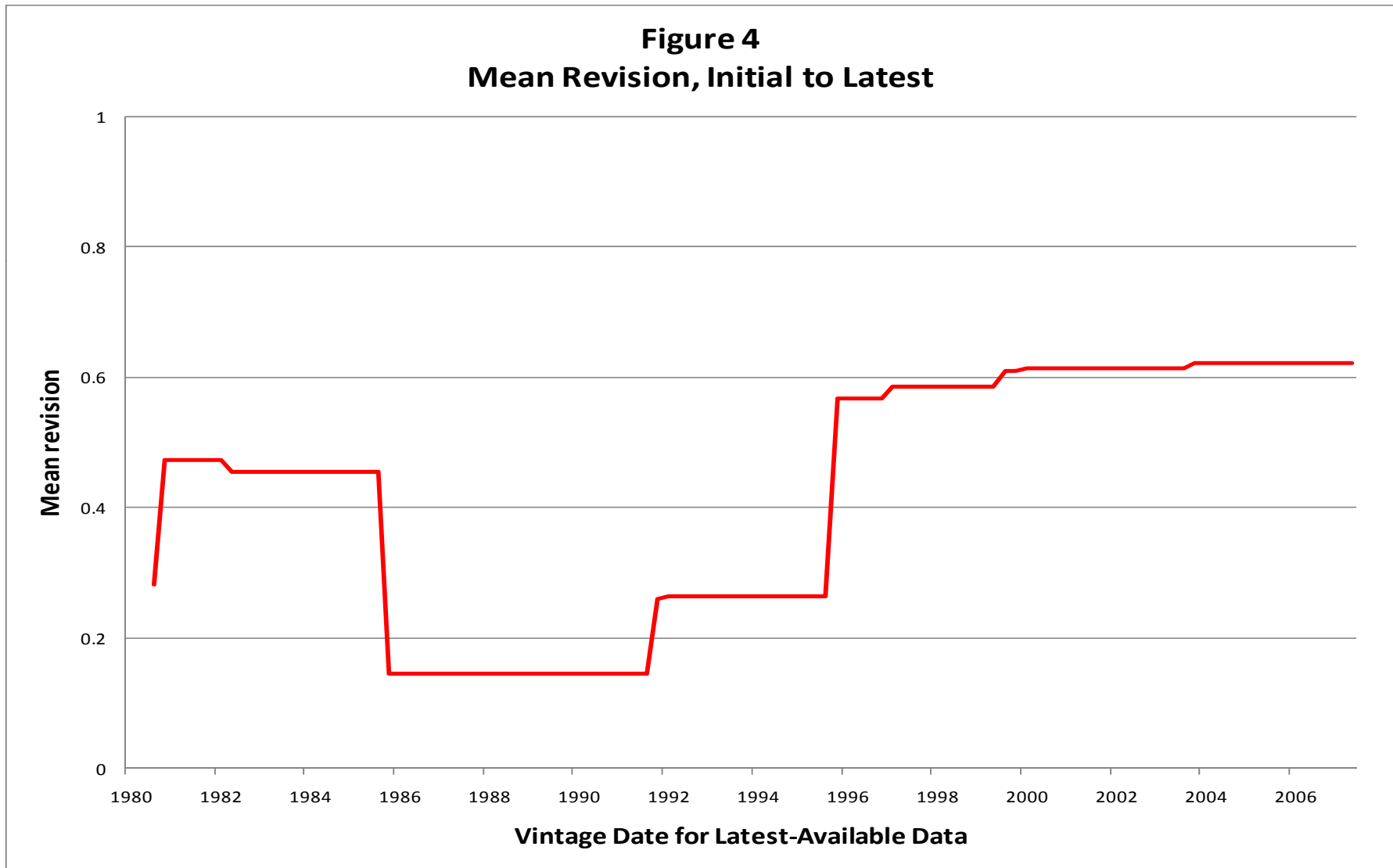
Figure 3
Real Consumption Growth for 1973Q2





Data Uncertainty

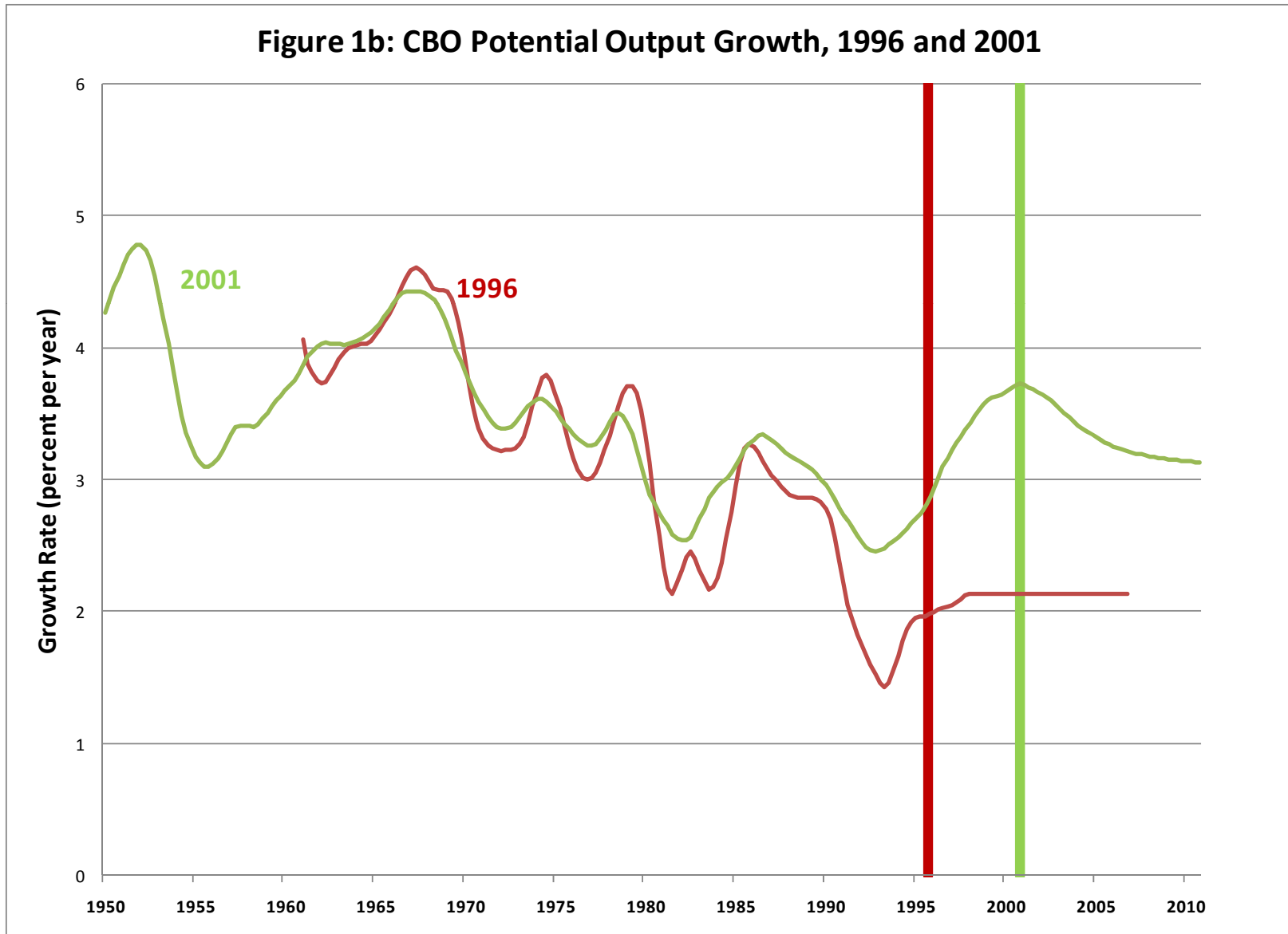
Figure 4
Mean Revision, Initial to Latest





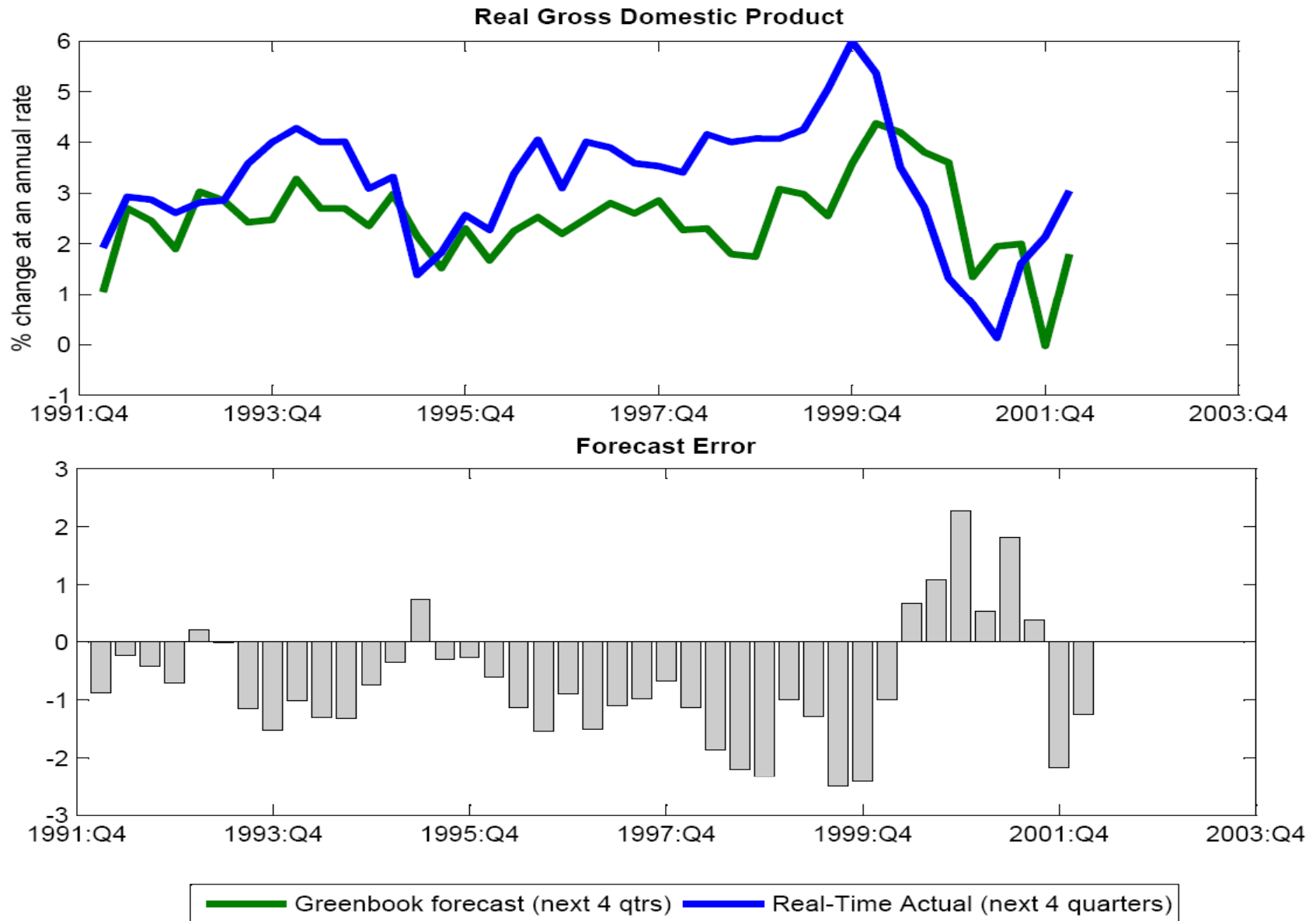
Data Uncertainty: Potential Output

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



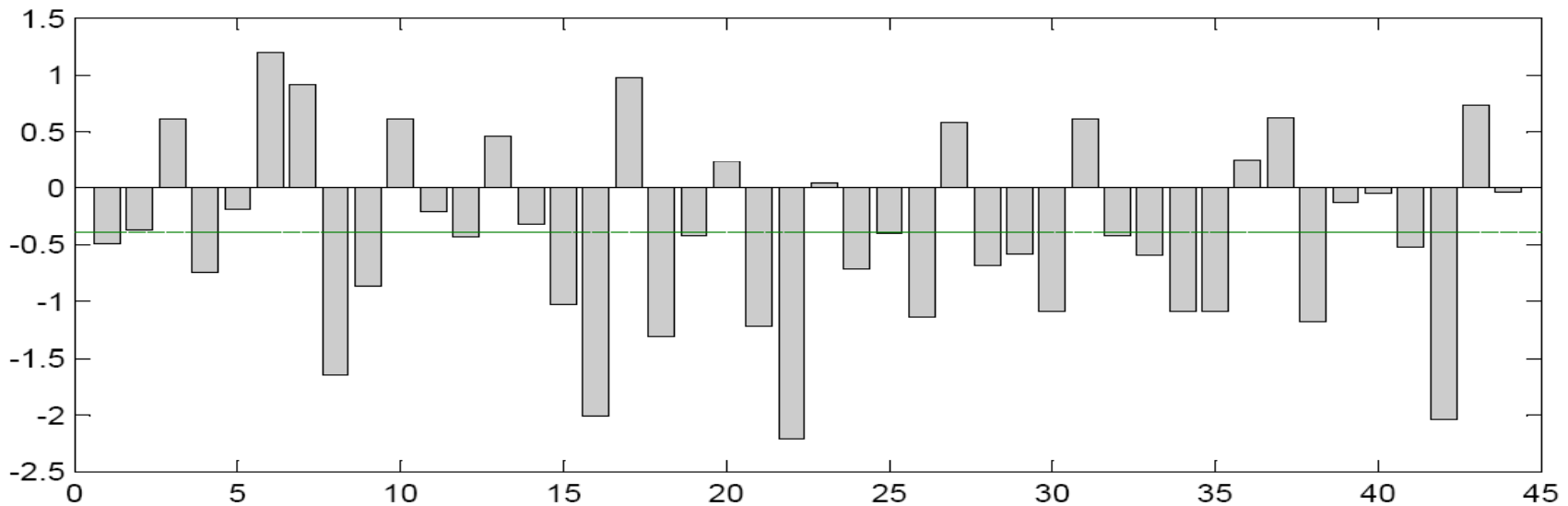
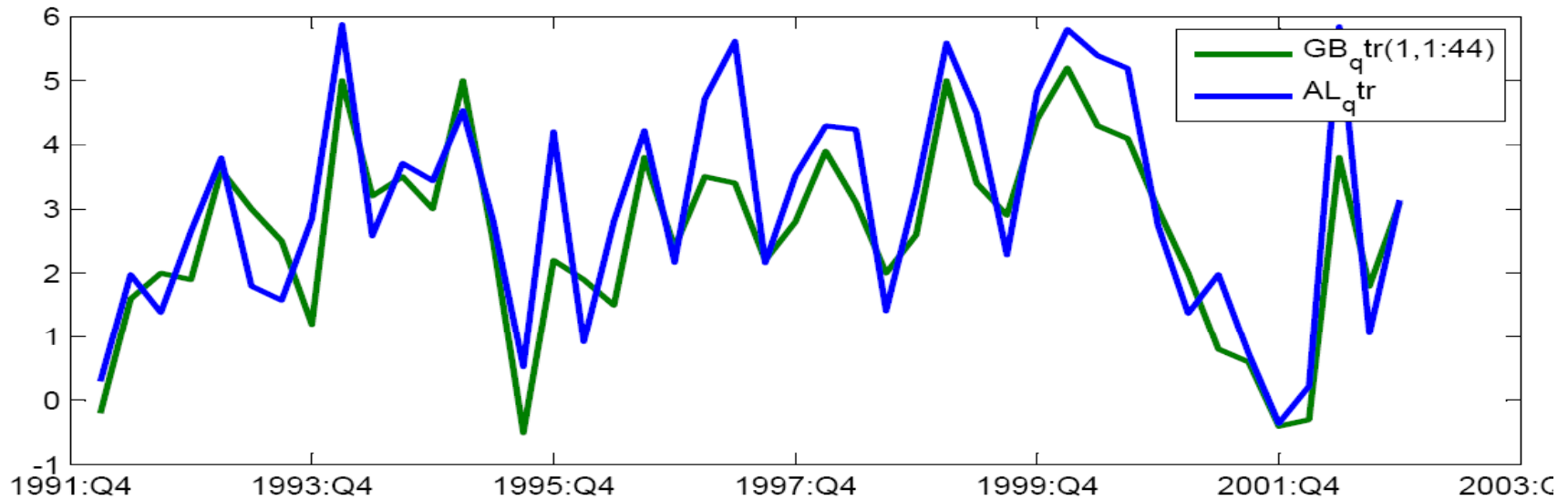


Forecast Uncertainty: The FOMC





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 is 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

- G. Kapetanios, A. Pagan and A. Scott. "Making a Match: Combining Theory and Evidence in policy-oriented macroeconomic modeling", *Journal of Econometrics*, February 2007
-- 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.
- C. Borio. "Monetary Policy Operating Procedures in Industrial Countries: A Survey", Bank for International Settlements working paper 47, July 1997 (available on the BIS web site)
-- 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.
- A. Meulendyke, *U.S. Monetary Policy & Financial Markets* (originally published by the Federal Reserve Bank of New York; available from the Federal Reserve Bank of St. Louis at <http://research.stlouisfed.org/aggreg/meulendyke.pdf>)
-- 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.