MONETARY ECONOMICS

ECON 260A

Empirical Evidence: Preliminary

- Several decades of research on the relationship among money, prices, GDP, etc.
- Quantity Theory of Money in the background
- Correlation/Causation

Empirical Evidence: Preliminary

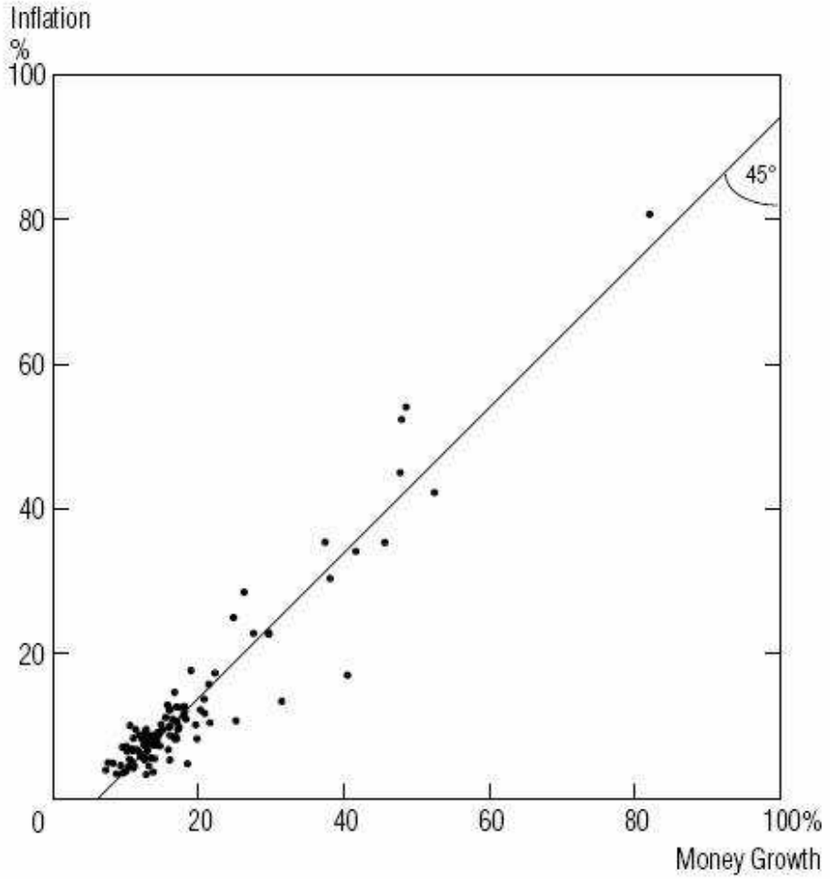
- Relationship between Money Growth and Inflation

- Correlation in the long-run with a coefficient close to 1.

Chart 1

Money Growth and Inflation:
A High, Positive Correlation

Average Annual Rates of Growth in M2 and in Consumer Prices
During 1960–90 in 110 Countries



Empirical Evidence: Preliminary

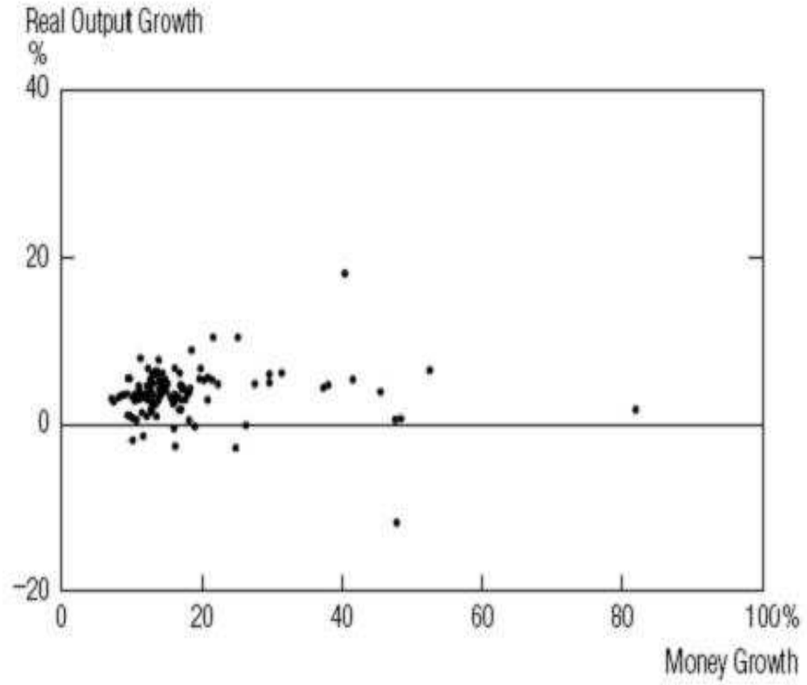
- Relationship between Money Growth and Output Growth

- Correlation is close to 0.

Chart 2

Money and Real Output Growth:
No Correlation in the Full Sample . . .

Average Annual Rates of Growth in M2
and in Nominal Gross Domestic Product, Deflated by Consumer Prices
During 1960–90 in 110 Countries



Source: International Monetary Fund

Empirical Evidence: Preliminary

- In the short-run?
- Cross-correlations: money lead changes in real economic activity
- Role of money for business cycles (Friedman-Schwartz)
- Spurious? [Reverse causation]

Empirical Evidence: Preliminary

- Other studies
- Granger causality between money and income
- VAR (Vector Autoregression) studies

Readings

- Read also *Handbook of Monetary Economics* chapter on the empirical role of money

Empirical Evidence on the Effects of Monetary Policy

- How can we measure monetary policy?
- What are the effects of monetary policy on output, inflation, interest rates, etc.?
- How large is the contribution of monetary policy to business cycle fluctuations?
- Criticism and new issues

Empirical Evidence on the Effects of Monetary Policy

- Read: Christiano, Eichenbaum, and Evans (1999), Monetary Policy Shocks: What Have We Learned, and To What End

Empirical Evidence on the Effects of Monetary Policy

- What happens after an exogenous shock to monetary policy?
- Exogenous?

Empirical Evidence on the Effects of Monetary Policy

- What are monetary policy shocks?
- Possible interpretations

Empirical Evidence on the Effects of Monetary Policy

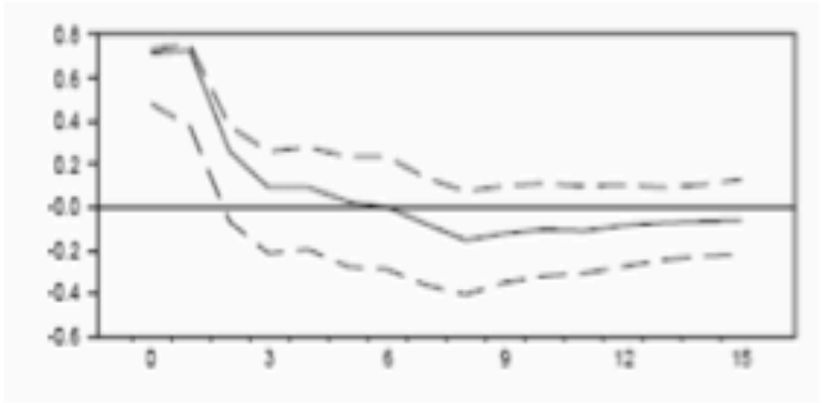
- VARs
- Assumptions
  - Fed's feedback rule is linear
  - Recursiveness

Empirical Evidence on the Effects of Monetary Policy

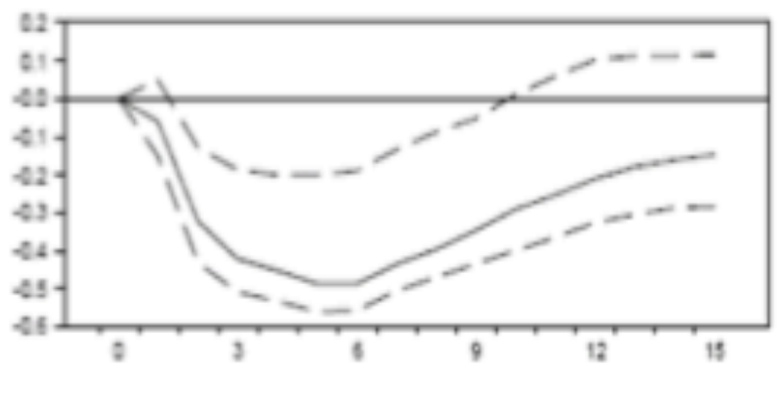
- Controversy on identification
- But agreement on qualitative effects

CEE: Response to a MP shock

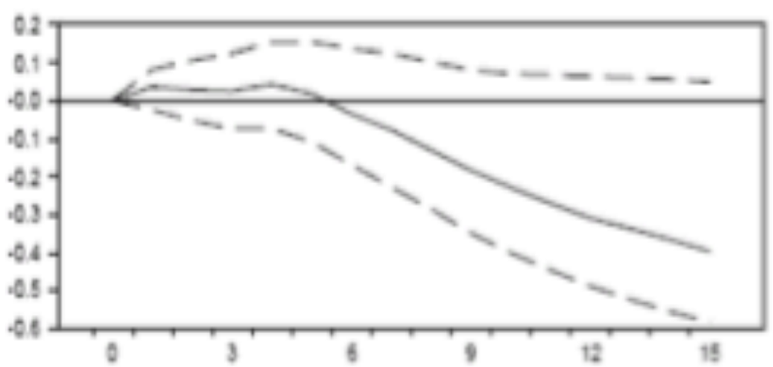
Figure 1. Estimated Dynamic Response to a Monetary Policy Shock



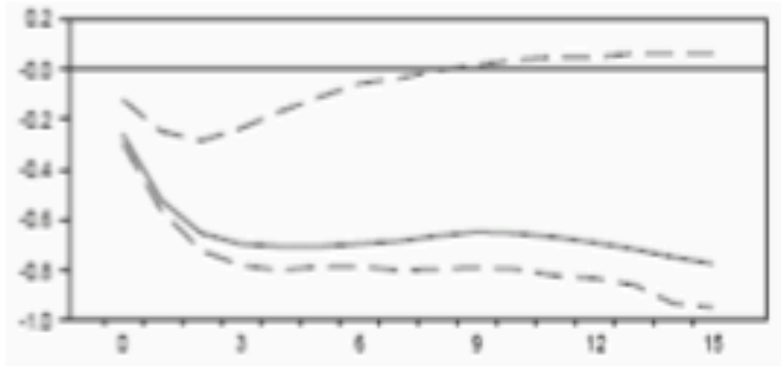
Federal funds rate



GDP



GDP deflator



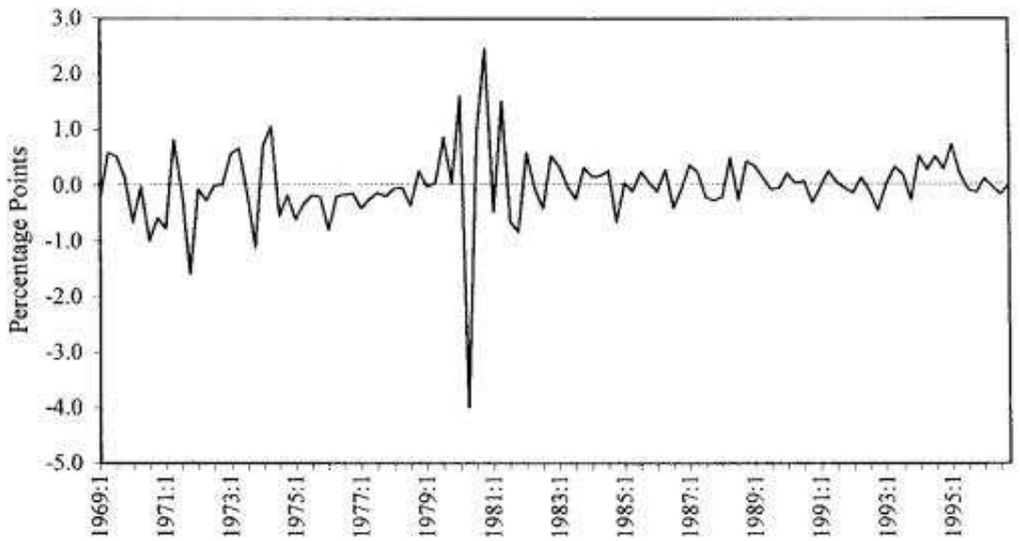
M2

Other Approaches

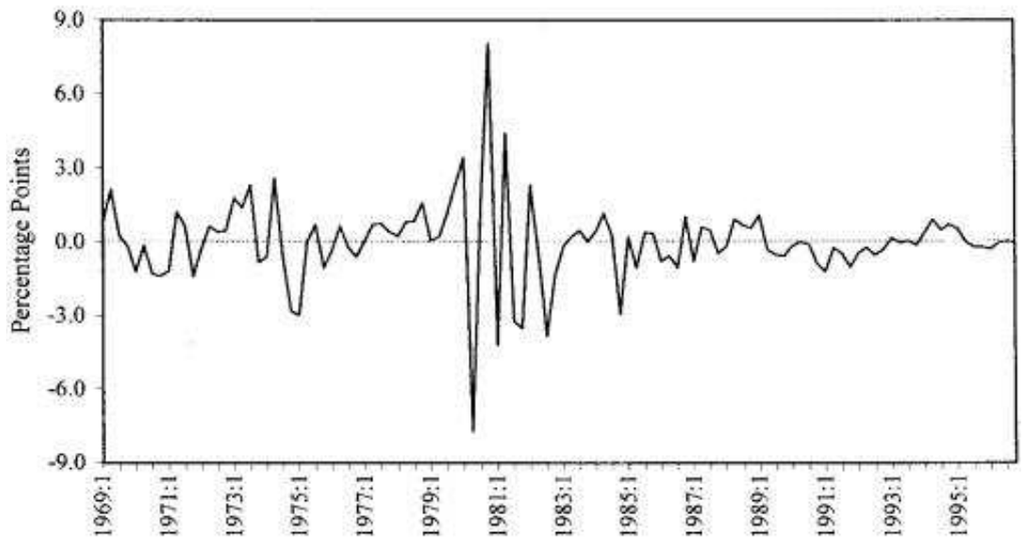
- VARs without recursiveness assumption
- E.g.: equations for banking reserves
- Romer&Romer's Narrative Approach (Fed's record of policy actions)
- Sign restrictions
- Large information set

R&R Narrative Approach

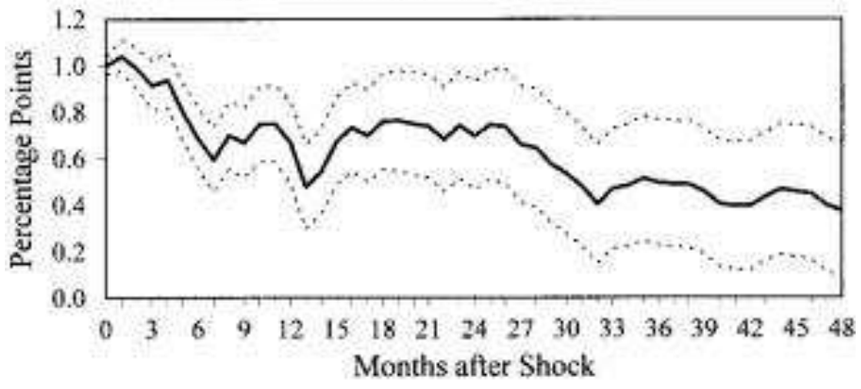
a. New Measure of Monetary Policy Shocks



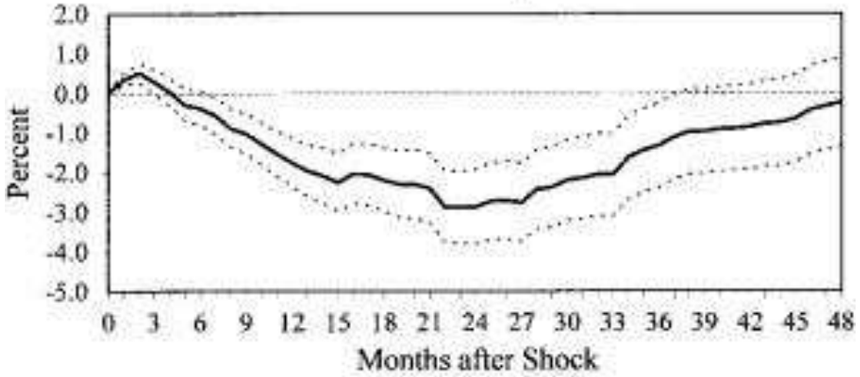
b. Change in the Actual Federal Funds Rate



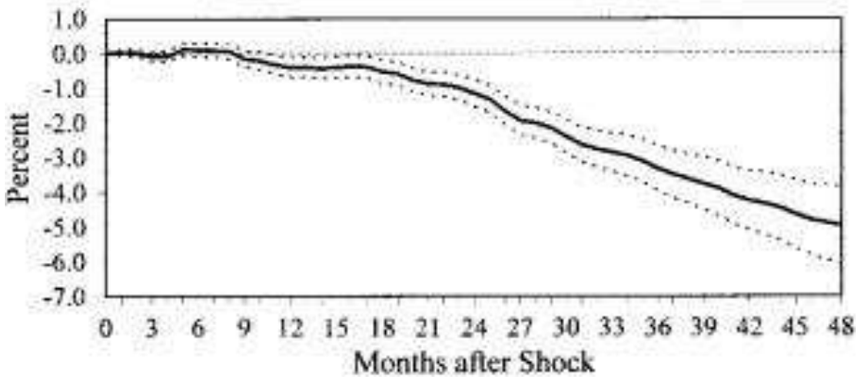
a. Effect on the Cumulated Shock



b. Effect on Output



c. Effect on the Price Level



Empirical Evidence on the Effects of Monetary Policy

- Contractionary MP shocks lead to a reduction in inflation (possibly with initial increase, price puzzle)
- Contractionary MP shocks lead to hump-shaped response in output
- Sluggish response of macroeconomic variables to MP shocks (peak after 1-2 years)
- Small overall contribution of MP shocks on BC fluctuations (5-30%)
- [Systematic vs. non-systematic MP]

Price Puzzle

- Ways to solve the puzzle (e.g., large information set, commodity prices)
- Cost channel

Empirical Evidence on the Effects of Monetary Policy

- Have the Effects of Monetary Policy Changed Over Time?

- Criticism of VAR approach
- Residuals as MP shocks

- Cochrane (1998), What do the VARs mean? Measuring the output effects of monetary policy, JME

Cochrane, JME 1998

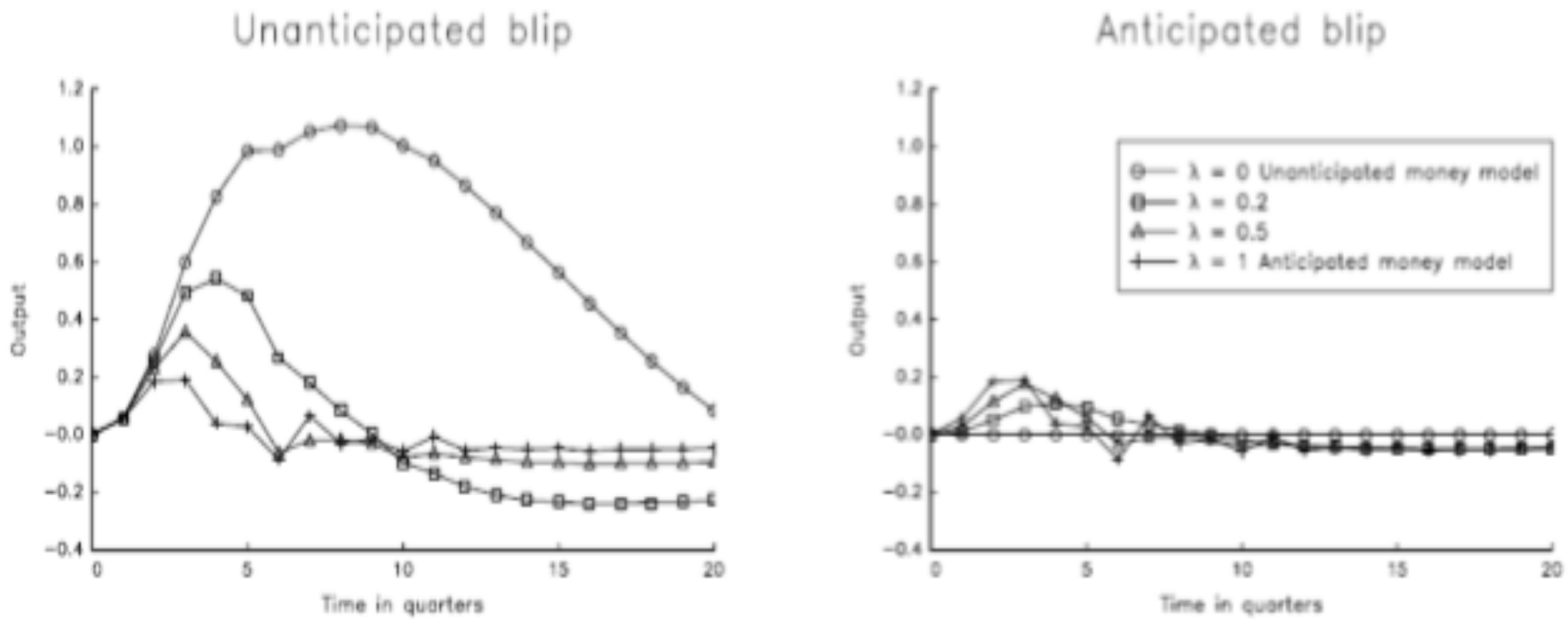


Figure 3: Output effects of two monetary experiments, under various assumptions about the effects of anticipated vs. unanticipated money. Calculated from M2 VAR.

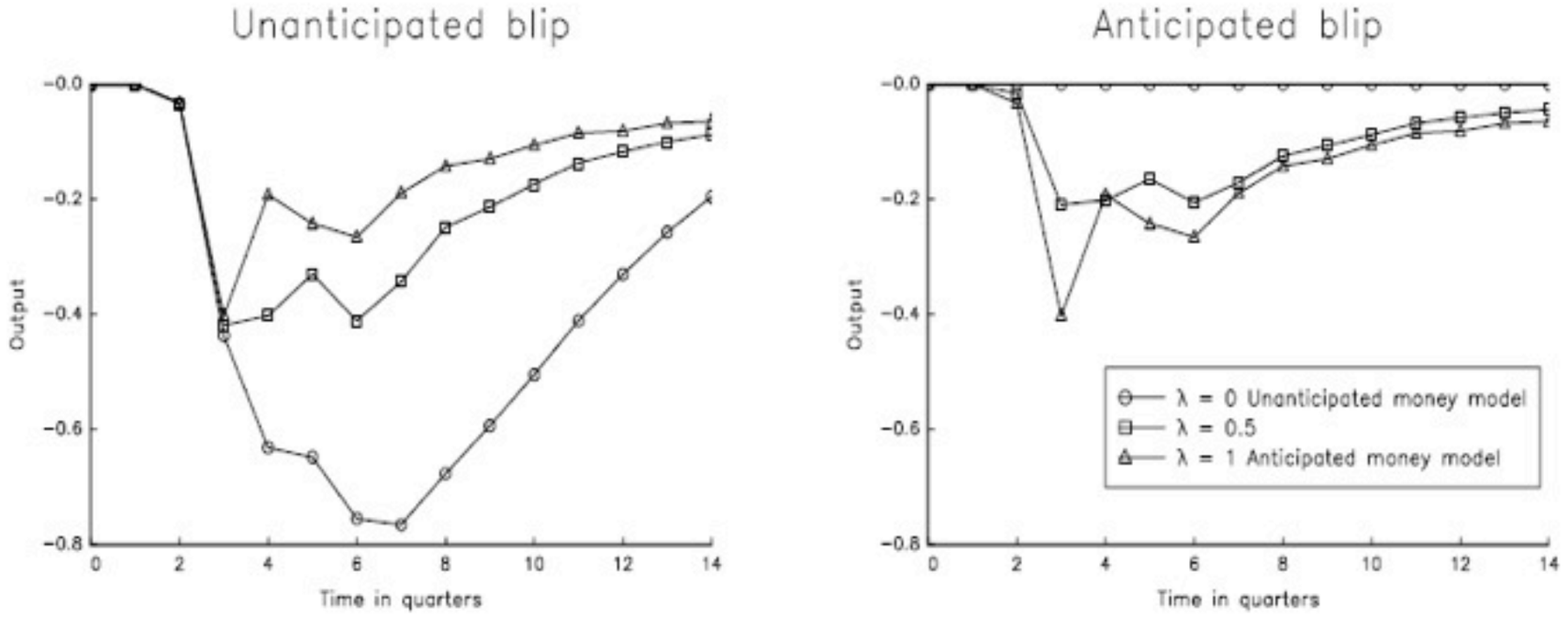


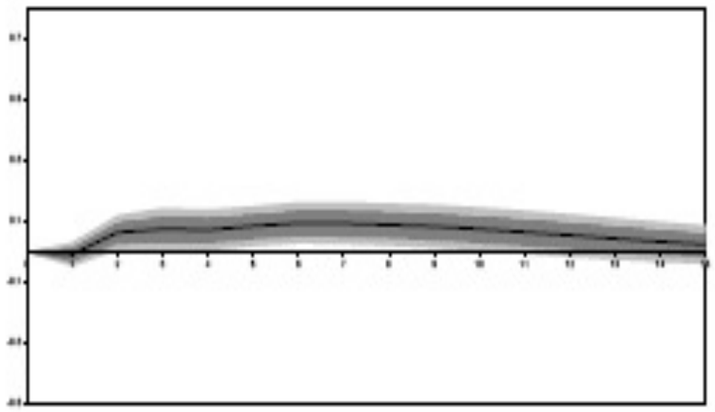
Figure 6: Output effects of two monetary experiments, under various assumptions about the effects of anticipated vs. unanticipated money. Calculated from federal funds VAR.

- Olivei and Tenreyro (2007) The Timing of Monetary Policy Shocks, AER

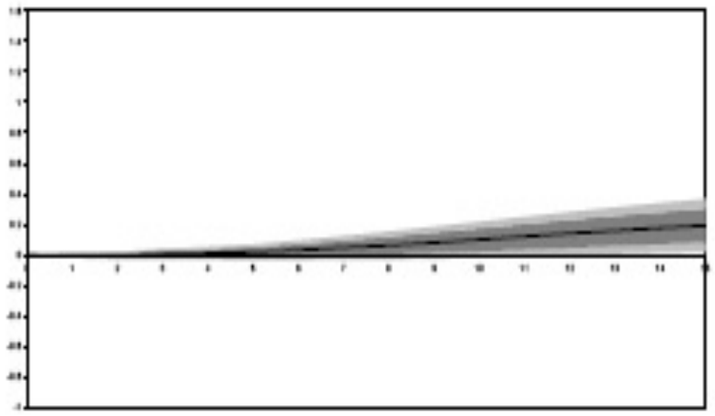
Olivei and Tenreyro (2007)

FIGURE 1

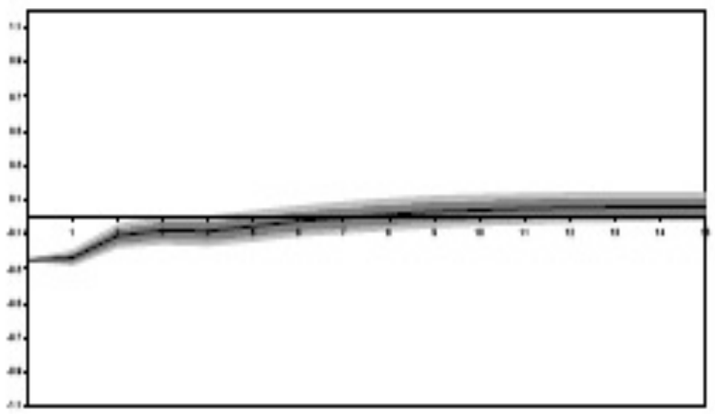
25-Basis Point Decline in Fed Funds Rate
No Quarterly Dependence. 1966:Q1 to 2002:Q4



Response of GDP



Response of PGDP

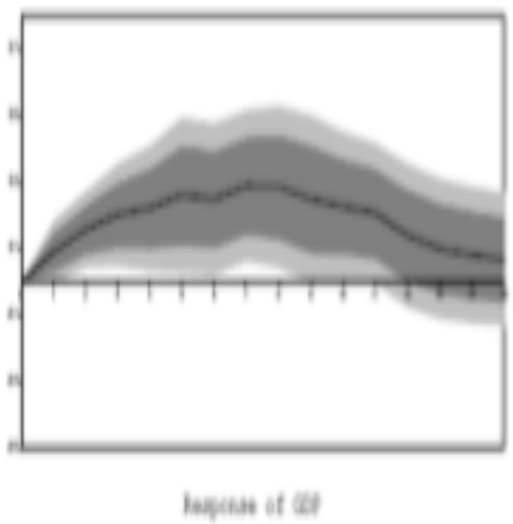


Response of FFR

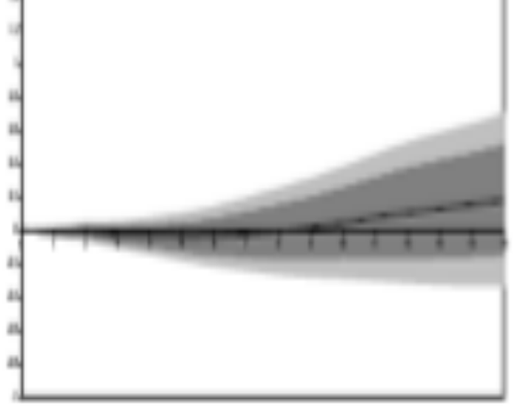
VAR with QUARTER DEPENDENCE

FIGURE 2

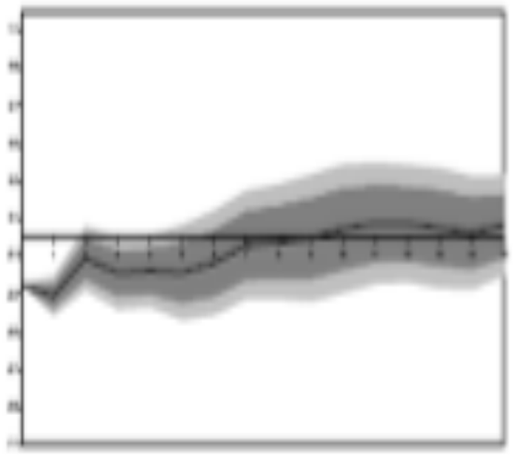
25-Basis Point Decline in Fed Funds Rate in Q1
Quarterly Dependence. Benchmark Model 1966:Q1 to 2002:Q4



Response of GDP



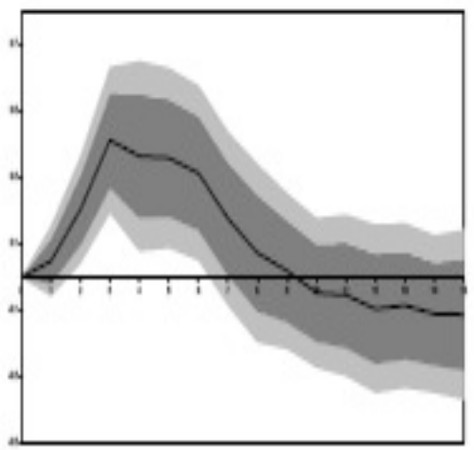
Response of PGDP



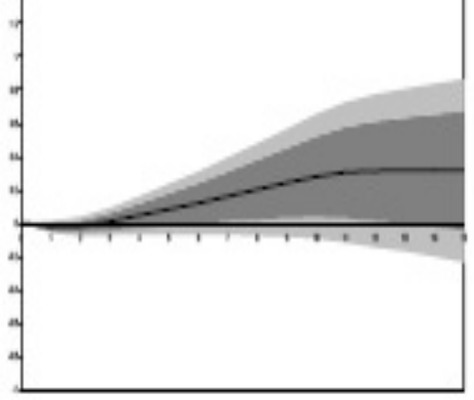
Response of FFR

FIGURE 3

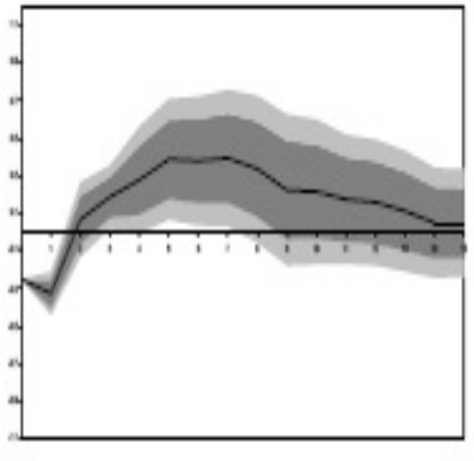
25-Basis Point Decline in Fed Funds Rate in Q2
Quarterly Dependence. Benchmark Model 1966:Q1 to 2002:Q4



Response of GDP



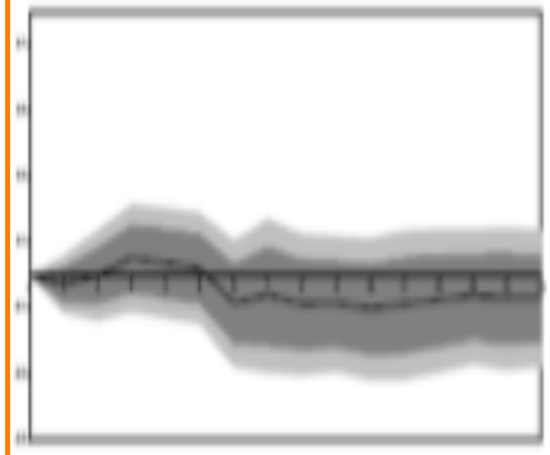
Response of PGDP



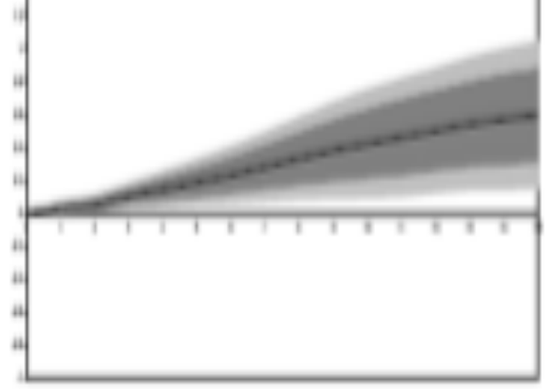
Response of FFR

FIGURE 4

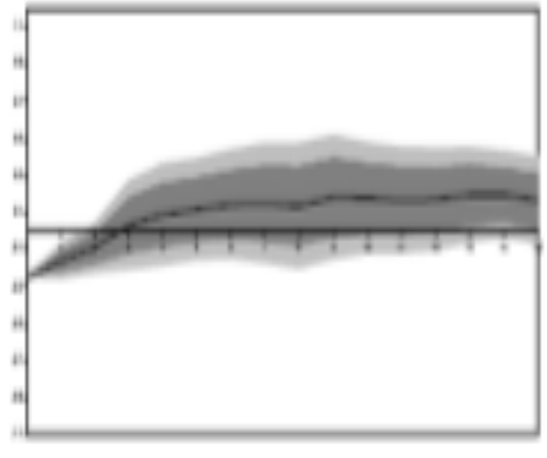
25-Basis Point Decline in Fed Funds Rate in Q3
Quarterly Dependence. Benchmark Model 1966:Q1 to 2002:Q4



Response of GDP



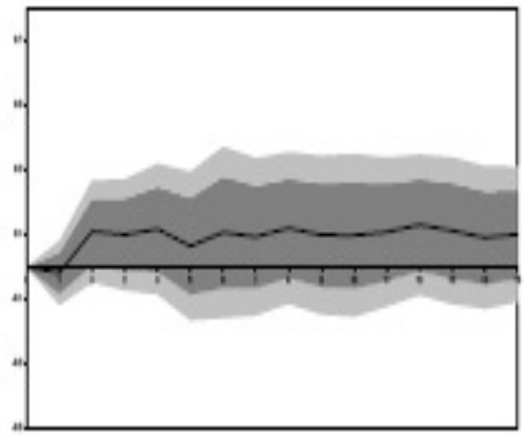
Response of PGDP



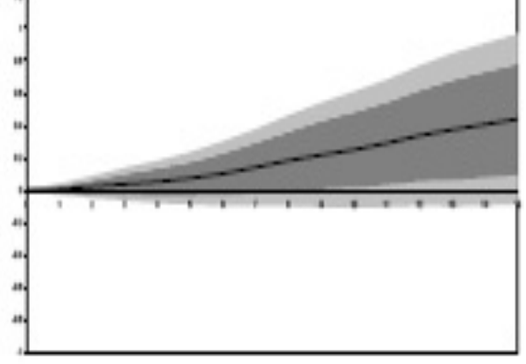
Response of FFR

FIGURE 5

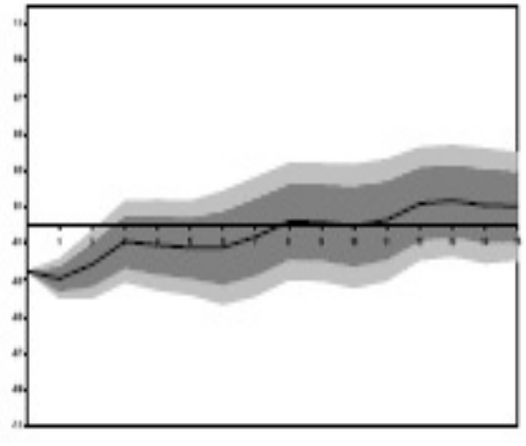
25-Basis Point Decline in Fed Funds Rate in Q4
Quarterly Dependence. Benchmark Model 1966:Q1 to 2002:Q4



Response of GDP



Response of PGDP



Response of FFR

Olivei-Tenreyro

- Timing of the shocks matter
- Q1,Q2: Response is quick, large, and it dis out quickly
- Q3,Q4: Almost no response
- Why?

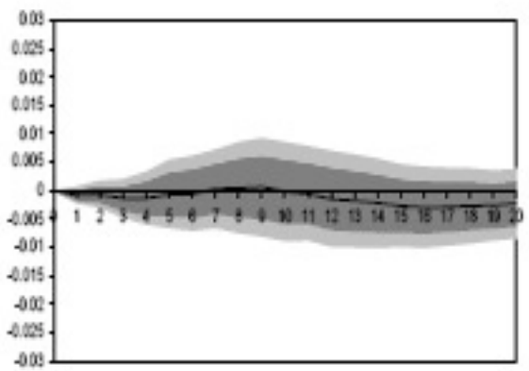
Olivei-Tenreyro (2008)

- International Evidence
- Heterogeneity in wage-setting conventions
  - Shunto in Japan (Feb-May)
  - Uniform + Multiple years in Germany

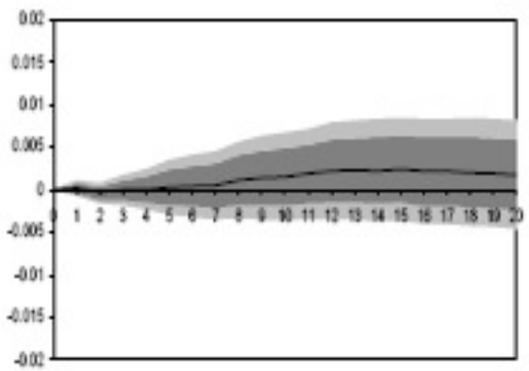
Japan

FIGURE 2

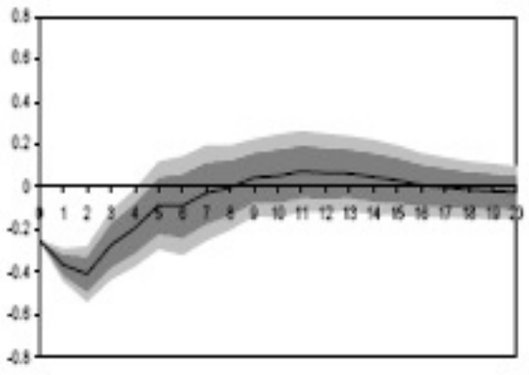
Japan
25-Basis-Point Decline in Call Rate in Q1
Quarterly Dependence. 1963:Q1 to 1995:Q2



Response of Industrial Production



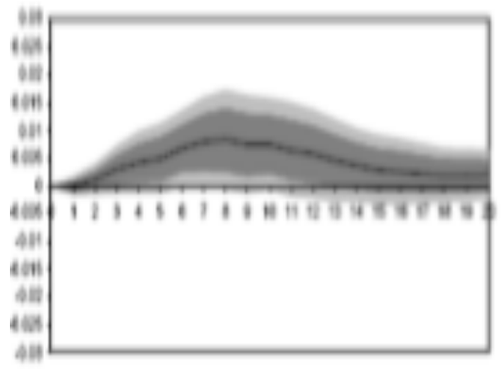
Response of Consumer Price Index



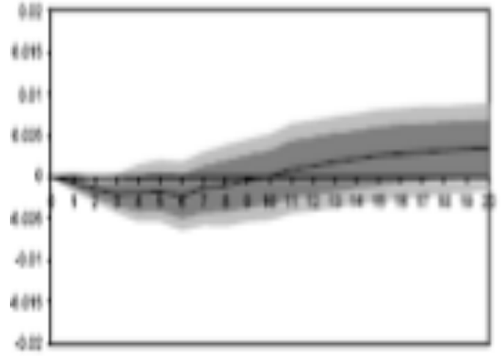
Response of Interest Rate

FIGURE 3

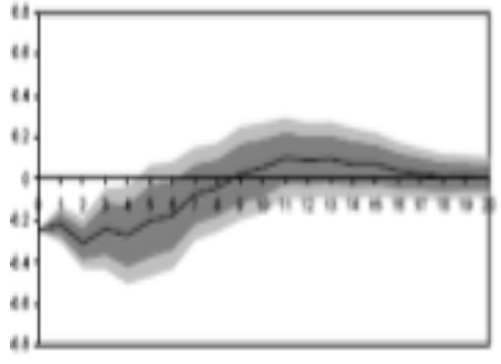
Japan
25-Basis-Point Decline in Call Rate in Q2
Quarterly Dependence. 1963:Q1 to 1995:Q2



Response of Industrial Production



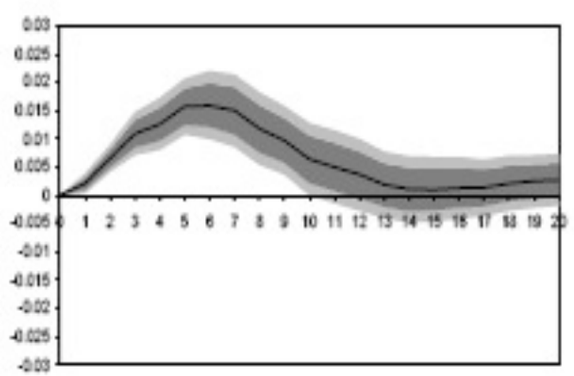
Response of Consumer Price Index



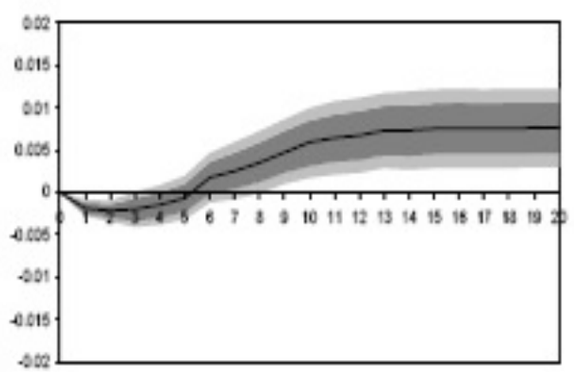
Response of Interest Rate

FIGURE 4

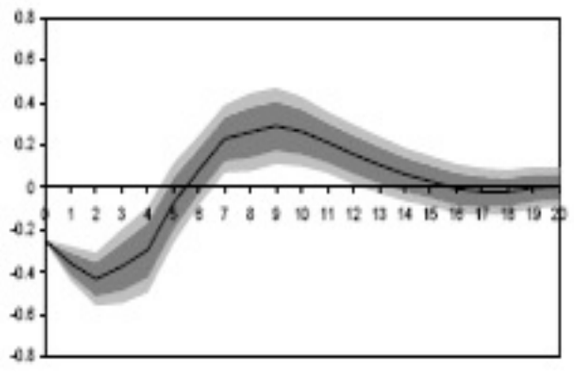
Japan
25-Basis-Point Decline in Call Rate in Q3
Quarterly Dependence. 1963:Q1 to 1995:Q2



Response of Industrial Production



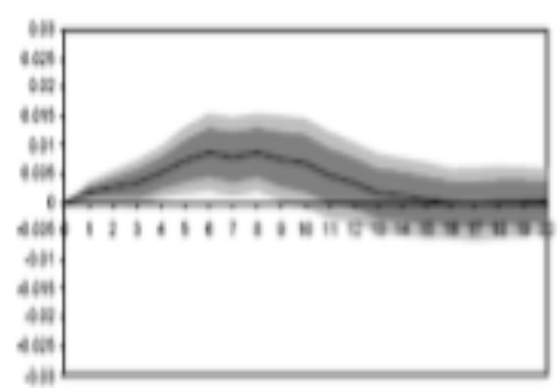
Response of Consumer Price Index



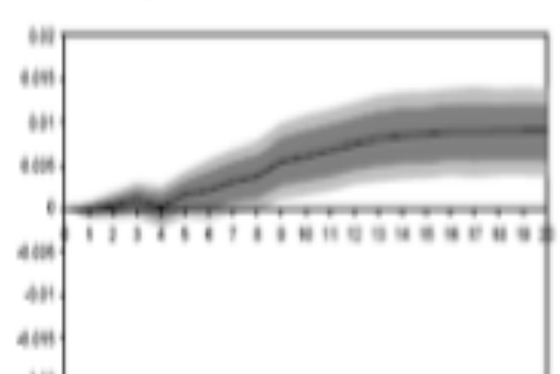
Response of Interest Rate

FIGURE 5

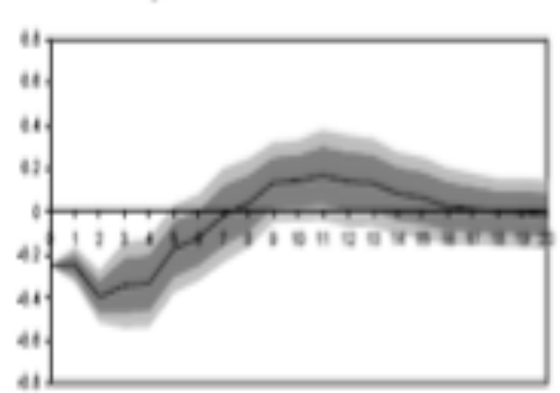
Japan
25-Basis-Point Decline in Call Rate in Q4
Quarterly Dependence. 1963:Q1 to 1995:Q2



Response of Industrial Production



Response of Consumer Price Index



Response of Interest Rate

Germany

FIGURE 12

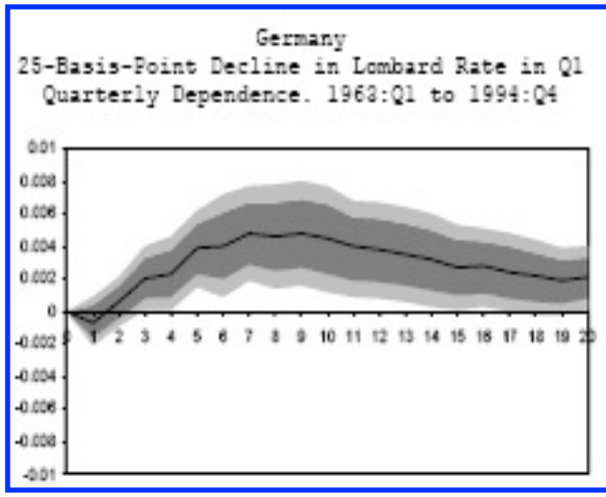


FIGURE 13

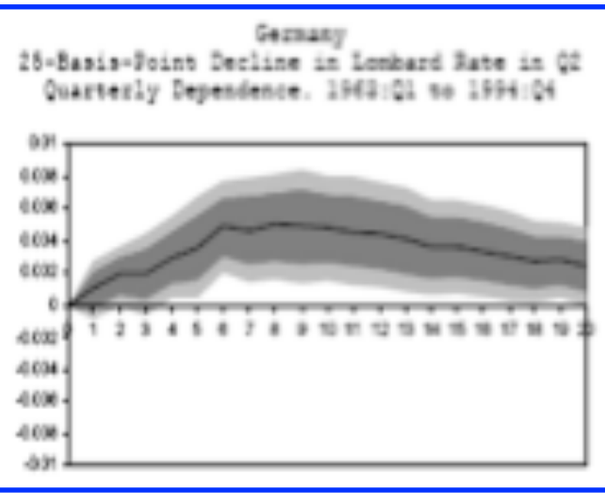


FIGURE 14

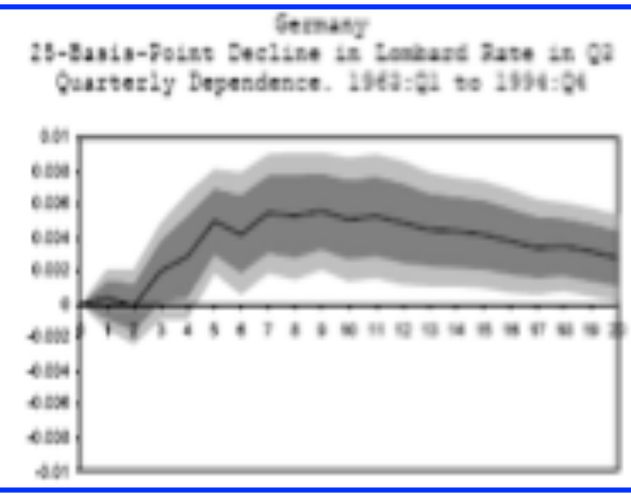
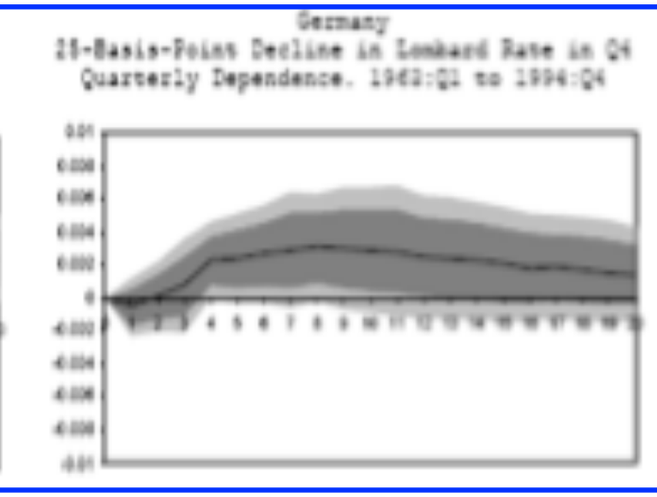
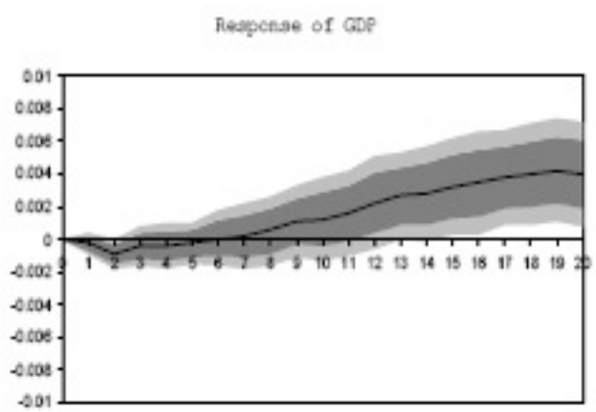
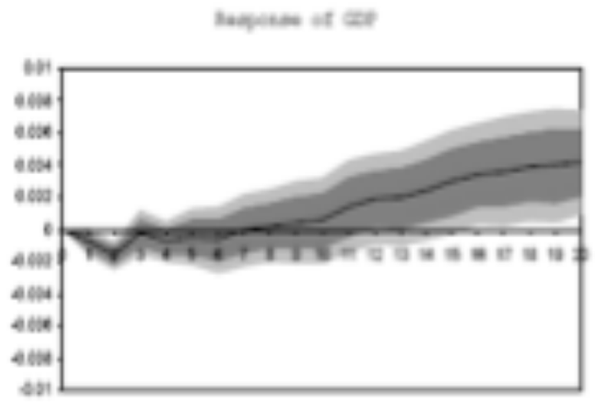
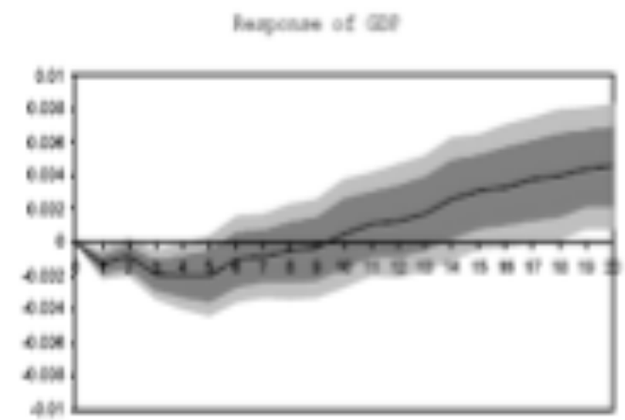


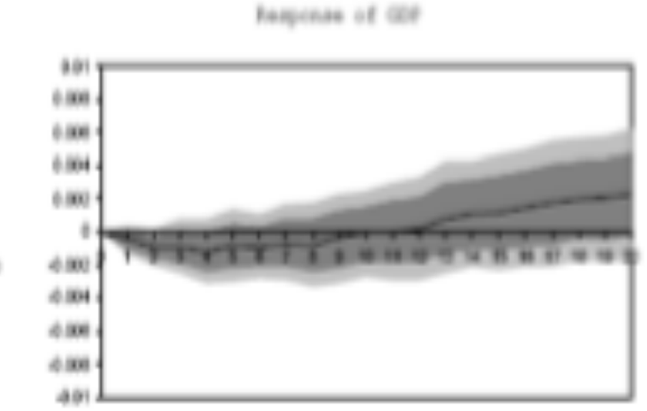
FIGURE 15

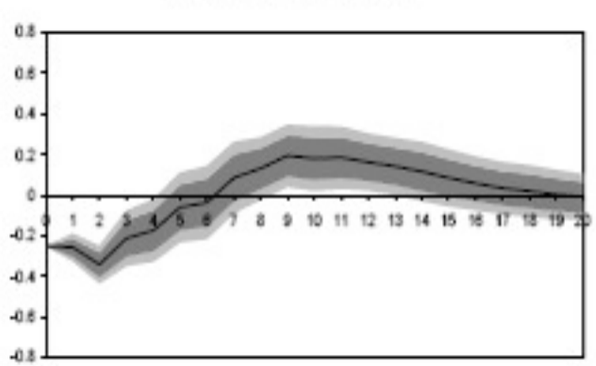


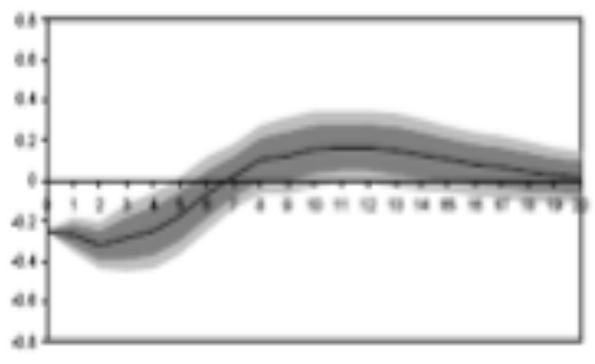


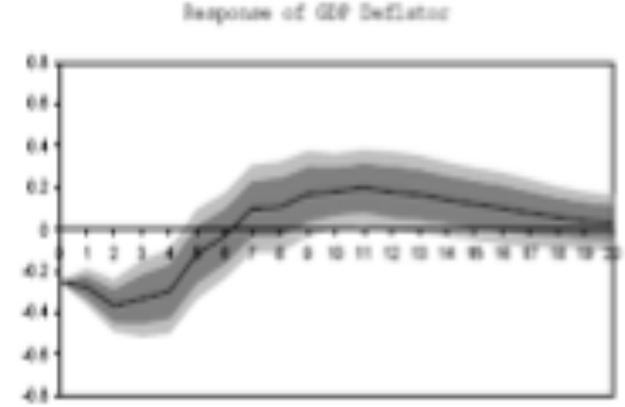


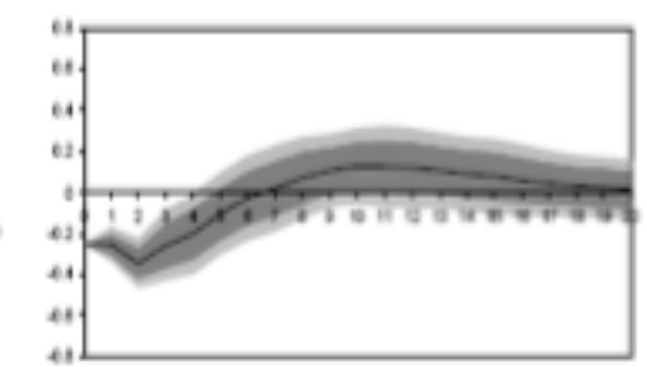












- Extensions?