# SOME EMPIRICAL EVIDENCE ON THE EFFECTS OF SHOCKS TO MONETARY POLICY ON EXCHANGE RATES

MARTIN EICHENBAUM AND CHARLES L. EVANS

- What are the effects of U.S. monetary policy on exchange rates?
- VAR 1974-1990
- [CPI (P), IP (Y), ratio of nonborrowed to total reserves (NBRX), difference between U. S. and foreign short-term interest rates (RFor - Rus), real exchange rate (s)]
- Recursive identification

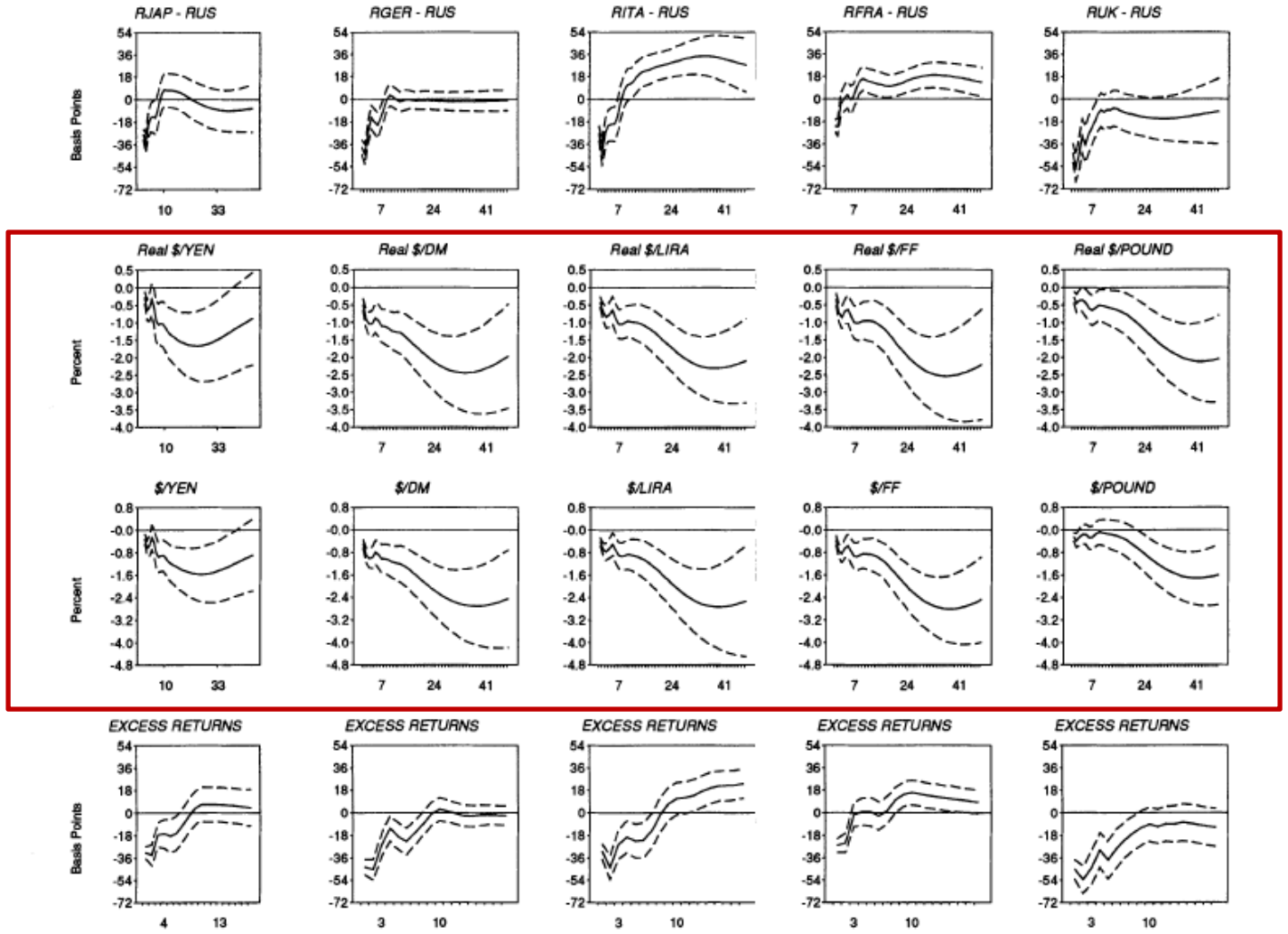



FIGURE I

Dynamic Response Functions: Benchmark Specification

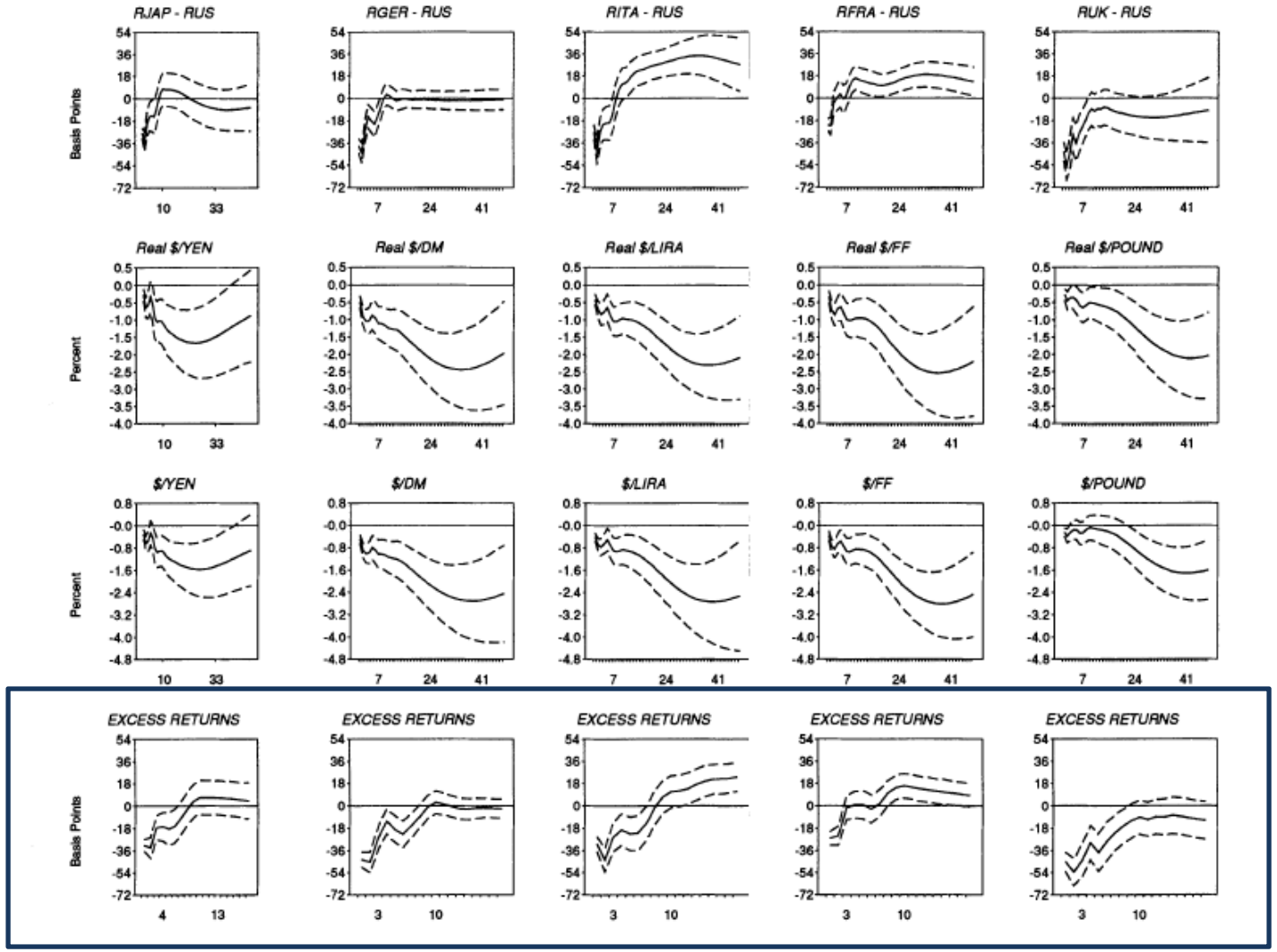
Column 1 displays the dynamic effect of an orthogonalized negative innovation in *NBRX* on the difference between Japanese and U. S. interest rates (RJAP-RUS), the real U. S.–Japan exchange rate, the nominal U. S.–Japan exchange rate, and an uncovered interest parity condition. Columns 2 through 5 do the same for Germany, Italy, France, and the United Kingdom, respectively.

- Excess return

$$\Psi_t^{For} = R_t^{For} - R_t^{US} + (s_{t+1}^{For} - s_t^{For}).$$

- UIP implies

$$E_t \Psi_{t+j}^{For} = 0$$

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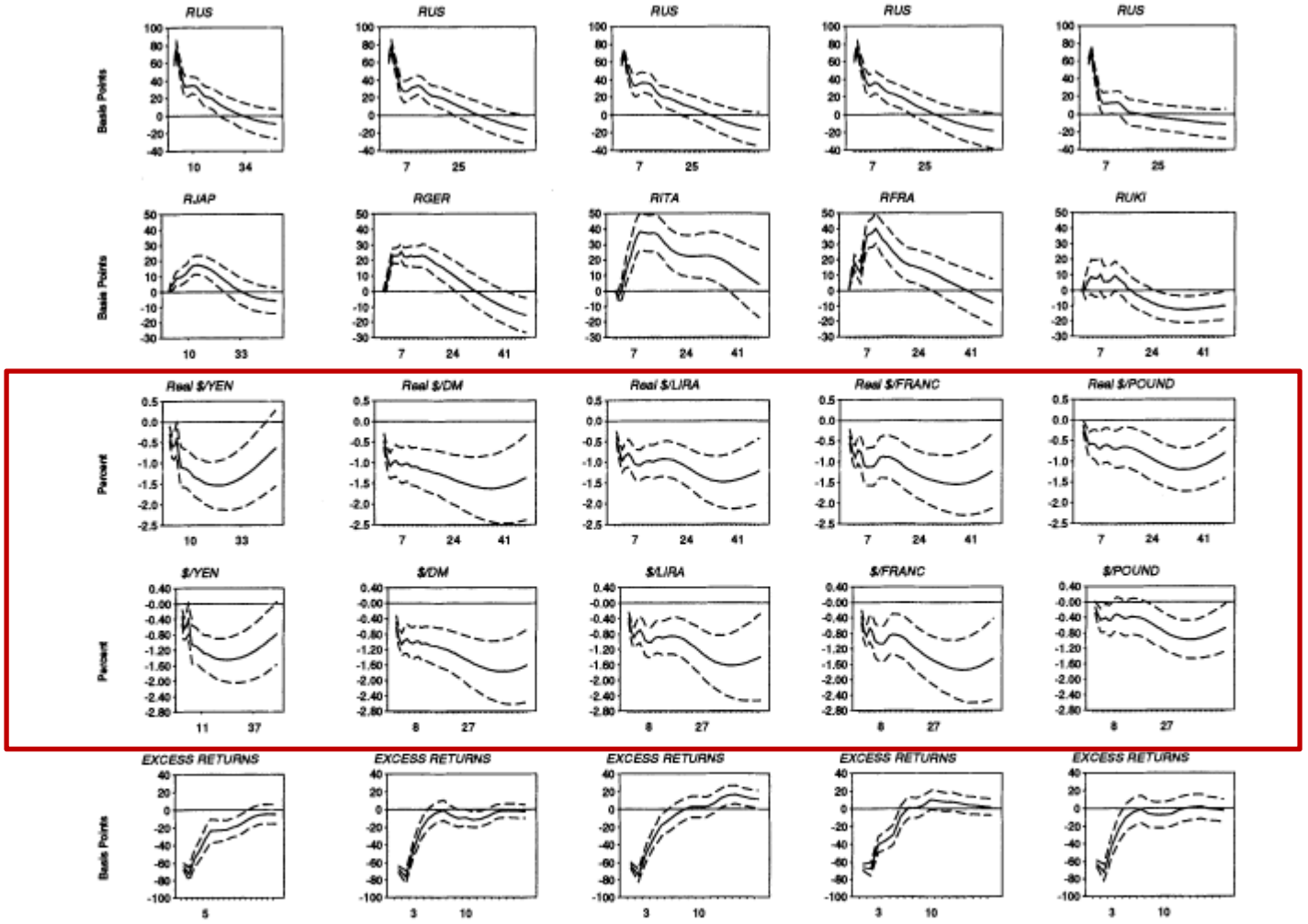



FIGURE III

Dynamic Response Functions: Orthogonalized Shock in Federal Funds Rate, Seven-Variable System

Column 1 displays the dynamic effect of an orthogonalized innovation in the Federal Funds rate on the Federal Funds rate (RUS), the ıpanese interest rate (RJAP), the real U. S.–Japan exchange rate, the nominal U. S.–Japan exchange rate, and an uncovered interest parity ndition. Columns 2 through 5 do the same for Germany, Italy, France, and the United Kingdom, respectively.

Contractionary U.S. monetary policy shocks lead to:

1. Persistent appreciation in nominal and real exchange rates (max effect is delayed)
2. Large, persistent, departures from UIP

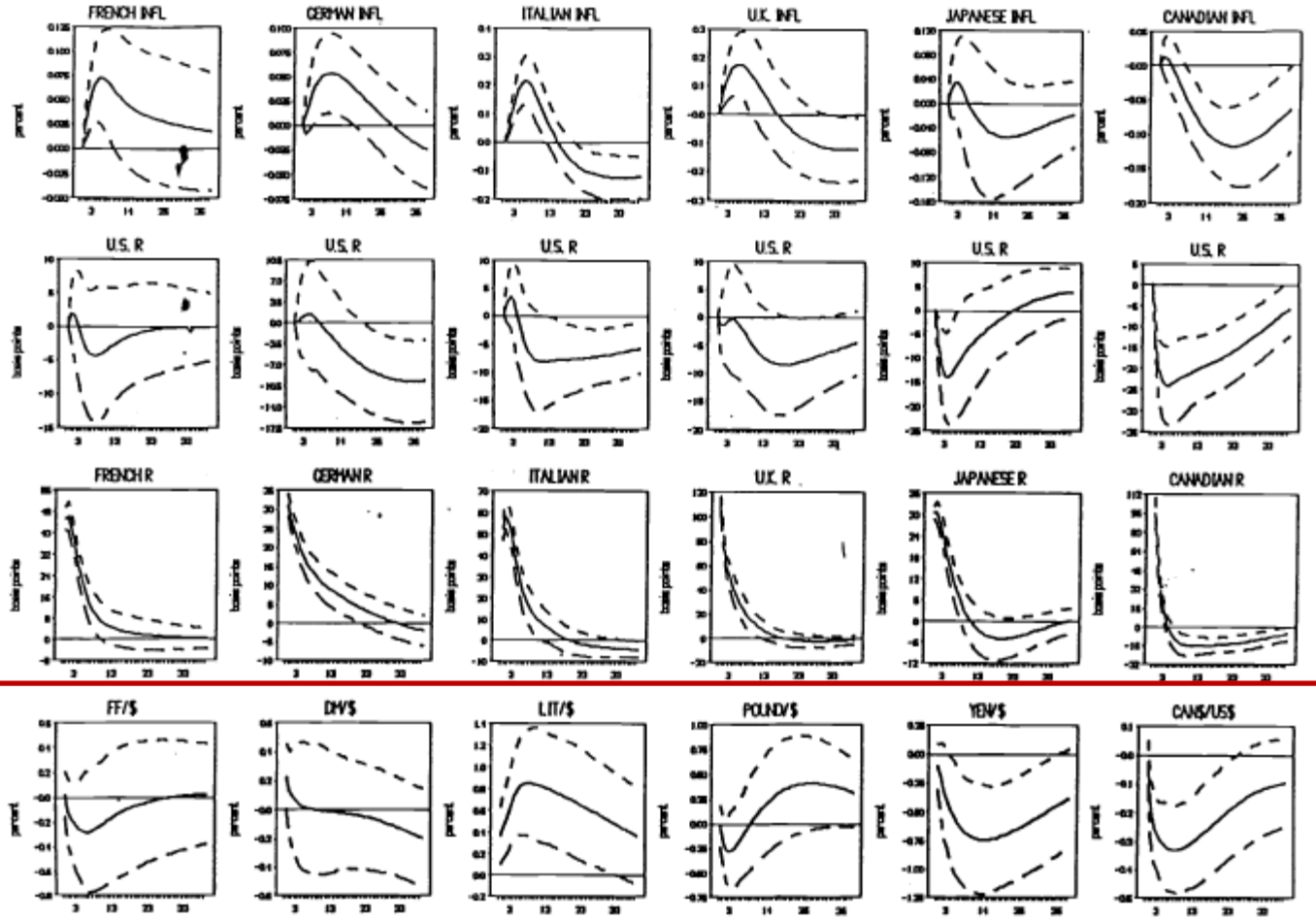
- VD: around 20% of ER variance explained by MP shocks

# LIQUIDITY MODELS IN OPEN ECONOMIES

Grilli and Roubini

- Exchange rate puzzle
- Forward discount bias puzzle
- US: MP shocks lead to currency appreciation
- Other G7: MP shocks lead to currency depreciation

Figure 1
Impulse Response Functions: Orthogonalized Shock to Interest Rates in G-7 Countries other than the U.S.
7 Variable System




Column 1 shows the dynamic effect of an innovation in the French interest rate on the French inflation (INFL), the Fed Funds rate (U.S. R), the French interest rate (French R), and the nominal Franc - U.S. Dollar exchange rate (FF/$). Columns 2 to 6 do the same for interest rates shocks in Germany, Italy, U.K., Japan and Canada.

## Exchange rate anomalies in the industrial countries: A solution with a structural VAR approach, Kim-Roubini

- Different, non-recursive, identification scheme

- SVAR

$$\begin{bmatrix} e_{\mathrm{MS}} \\ e_{\mathrm{MD}} \\ e_{\mathrm{CPI}} \\ e_{\mathrm{IP}} \\ e_{\mathrm{OPW}} \\ e_{\mathrm{FFR}} \\ e_{E(/\$)} \end{bmatrix} = \begin{bmatrix} 1 & g_{12} & 0 & 0 & g_{15} & 0 & g_{17} \\ g_{21} & 1 & g_{23} & g_{24} & 0 & 0 & 0 \\ 0 & 0 & 1 & g_{34} & g_{35} & 0 & 0 \\ 0 & 0 & 0 & 1 & g_{45} & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & g_{65} & 1 & 0 \\ g_{71} & g_{72} & g_{73} & g_{74} & g_{75} & g_{76} & 1 \end{bmatrix} \begin{bmatrix} u_R \\ u_M \\ u_{\mathrm{CPI}} \\ u_{\mathrm{IP}} \\ u_{\mathrm{OPW}} \\ u_{\mathrm{FFR}} \\ u_{E(/\$)} \end{bmatrix},$$

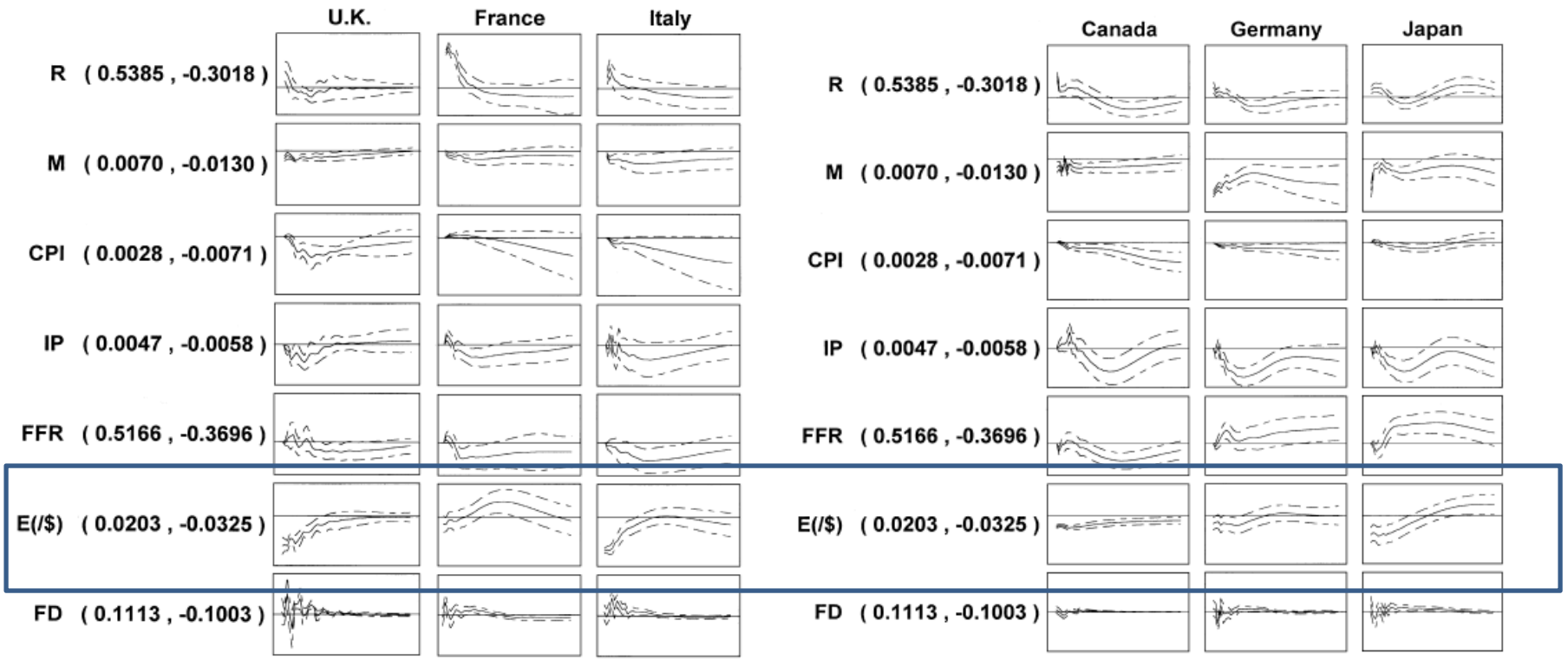



Fig. 1. Impulse responses to monetary policy shocks.

(2) Forecast error variance of nominal exchange rate due to monetary policy shocks

| | 6 months | 12 months | 24 months | 48 months |
|---|---|---|---|---|
| Germany | 4.4 (5.5) | 4.6 (5.9) | 4.5 (5.0) | 4.6 (4.6) |
| Japan | 26.0 (23.7) | 22.2 (20.4) | 18.0 (16.1) | 17.0 (12.9) |
| U.K. | 34.2 (19.7) | 29.1 (17.0) | 21.0 (11.8) | 16.6 (9.0) |
| France | 8.2 (9.1) | 7.5 (7.3) | 10.7 (7.4) | 10.2 (7.5) |
| Italy | 58.3 (13.9) | 40.9 (12.4) | 25.8 (9.1) | 15.2 (6.8) |
| Canada | 61.2 (10.4) | 58.0 (11.1) | 49.7 (12.4) | 45.3 (13.2) |

- Response of non-US variables to US MP shocks

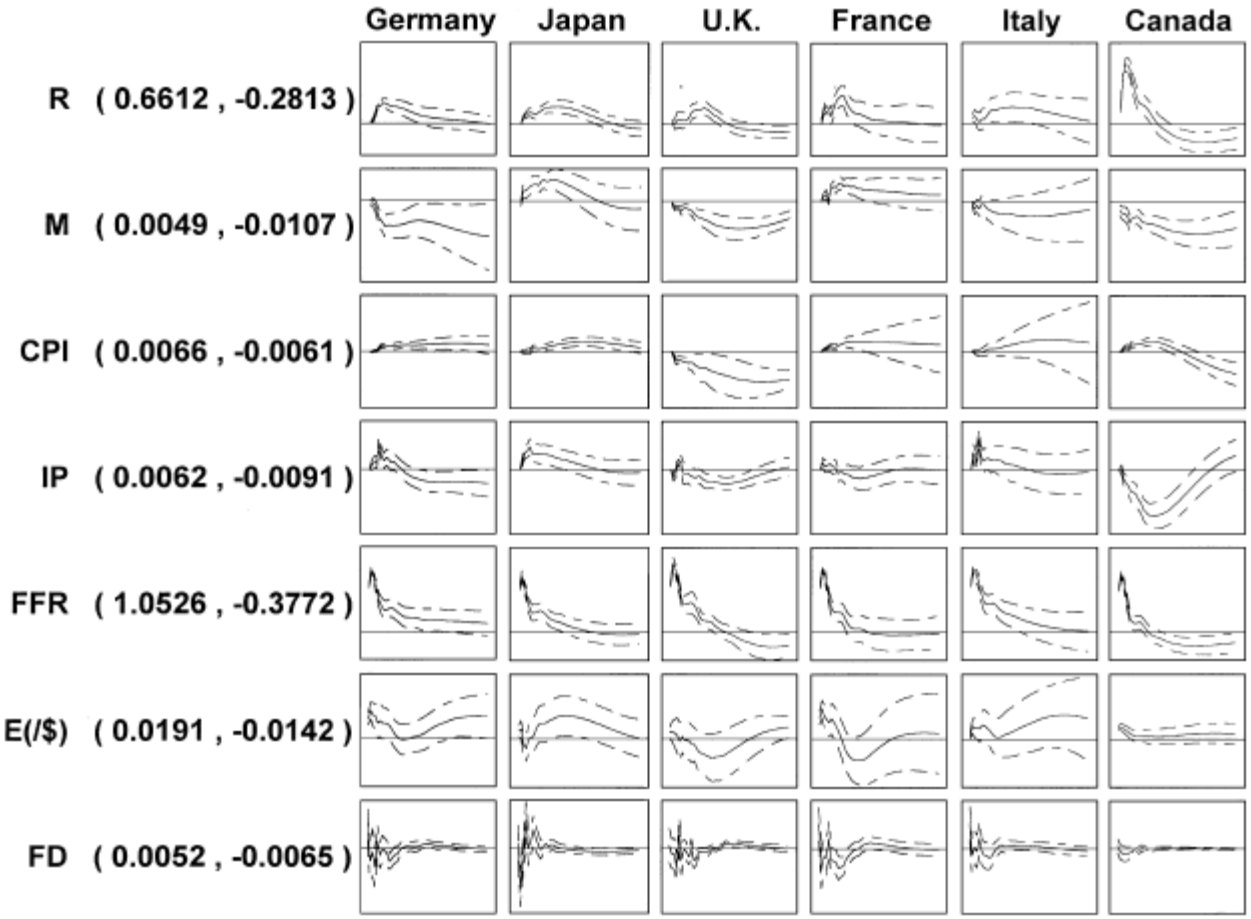



Fig. 4. Impulse responses to FFR shocks.

## Identifying monetary policy in a small open economy under flexible exchange rates

Cushman and Zha

- Small open economy
- Previous puzzling results in VARs due to identification scheme
- Here SVAR with block exogeneity

- Here

$$A(L)y(t) = \varepsilon(t),$$

- Block exogeneity

$$y(t) = \begin{bmatrix} y_1(t) \\ y_2(t) \end{bmatrix}, \qquad A(L) = \begin{bmatrix} A_{11} & A_{12}(L) \\ 0 & A_{22}(L) \end{bmatrix}, \qquad \varepsilon(t) = \begin{bmatrix} \varepsilon_1(t) \\ \varepsilon_2(t) \end{bmatrix}.$$

$$A_{21}(L) = 0$$

- Y1=[ER, M1, R, P, Y, Tx, Tm], Y2=[Y_US, P_US, R_US, WxP]

# Recursive Approach

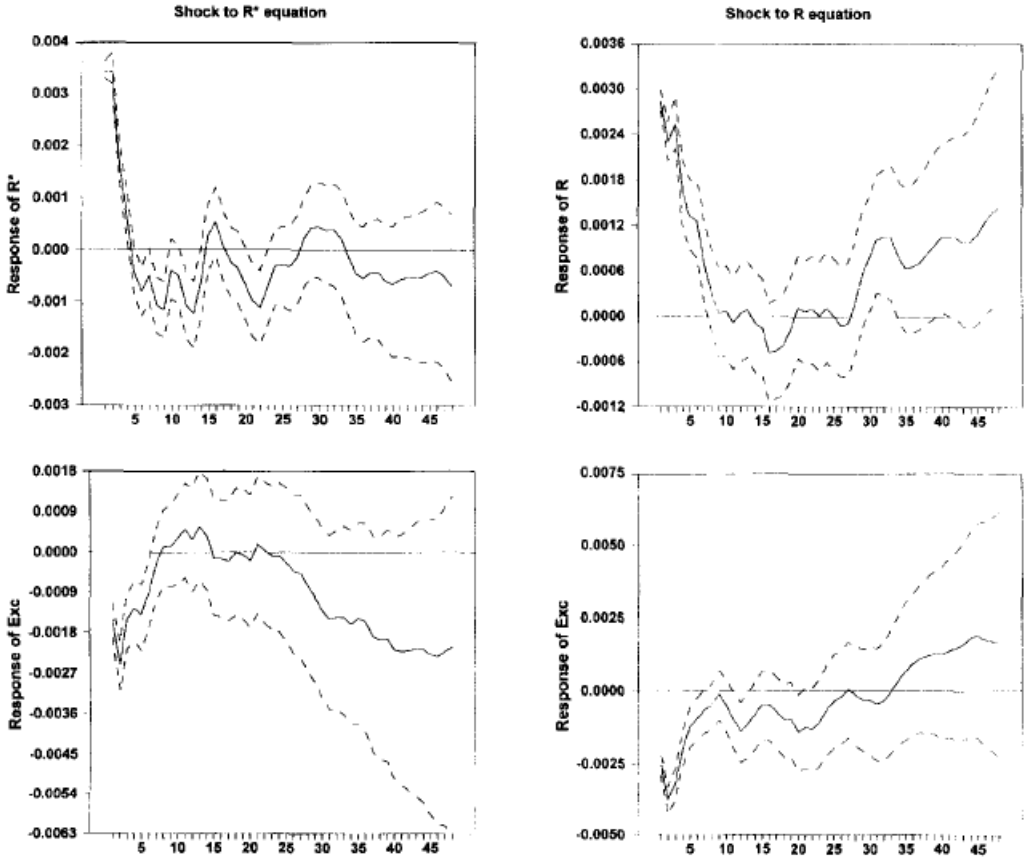



Fig. 1. Dynamic responses for the model with the Choleski approach. Intervals between the two dashed lines contain two standard errors.

# Block-exogeneity

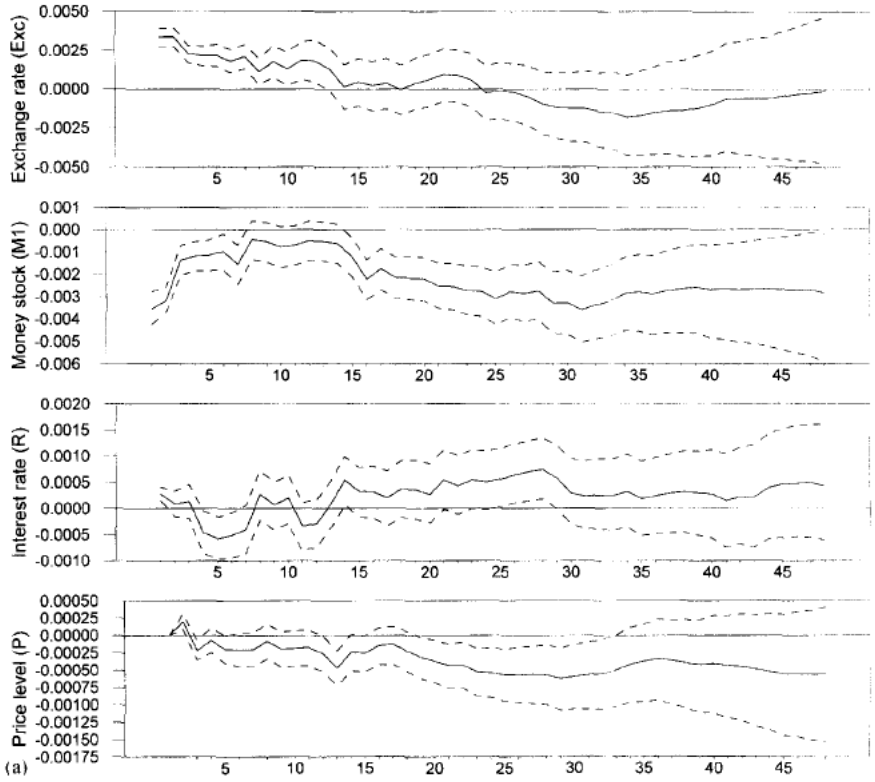



Fig. 2. Dynamic responses to a contractionary monetary policy shock. Intervals between the two dashed lines contain two standard errors.

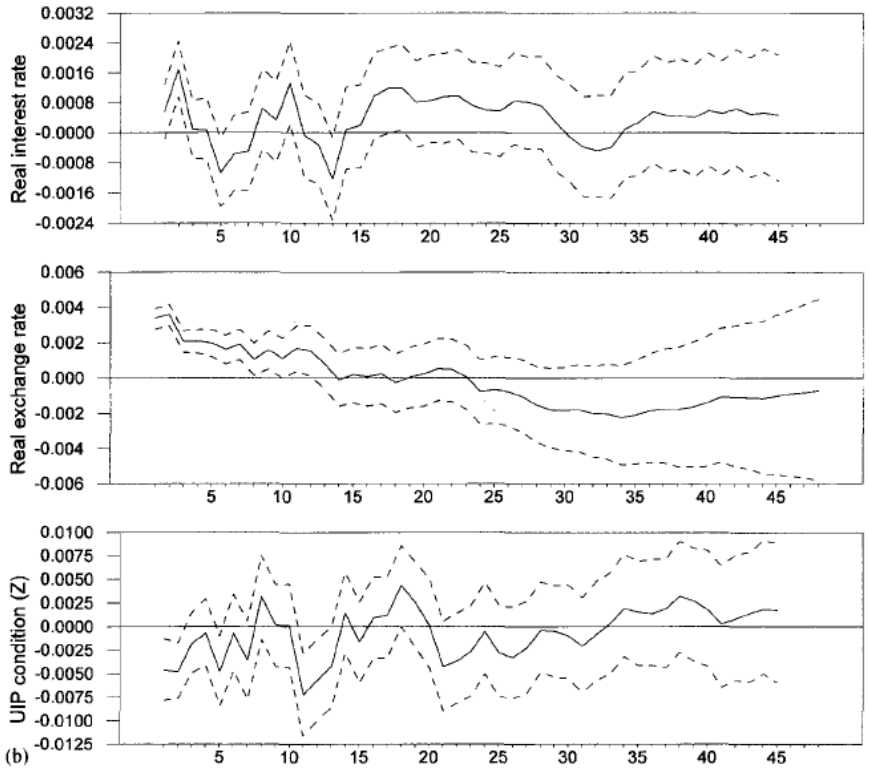



Fig. 2. (Continued, Intervals between the two dashed lines contain two standard errors).

Table 3
Decomposition of forecast variance for output

| Months | Information | Money Demand | Money Supply | Production | Foreign |
|---|---|---|---|---|---|
| 1 | 0.00 | 0.00 | 0.00 | 100.00 | 0.00 |
| 6 | 2.89 | 0.75 | 2.75 | 40.29 | 53.31 |
| 12 | 4.07 | 0.47 | 1.00 | 20.30 | 74.33 |
| 18 | 3.06 | 0.37 | 0.67 | 16.70 | 79.19 |
| 24 | 4.27 | 0.31 | 0.74 | 22.17 | 72.51 |
| 36 | 5.76 | 0.22 | 0.64 | 18.98 | 74.41 |
| 48 | 4.08 | 0.31 | 0.61 | 20.82 | 74.17 |

*Note*: Initial responses take place at month 1.