

Economics 210c/236a
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LECTURE 14

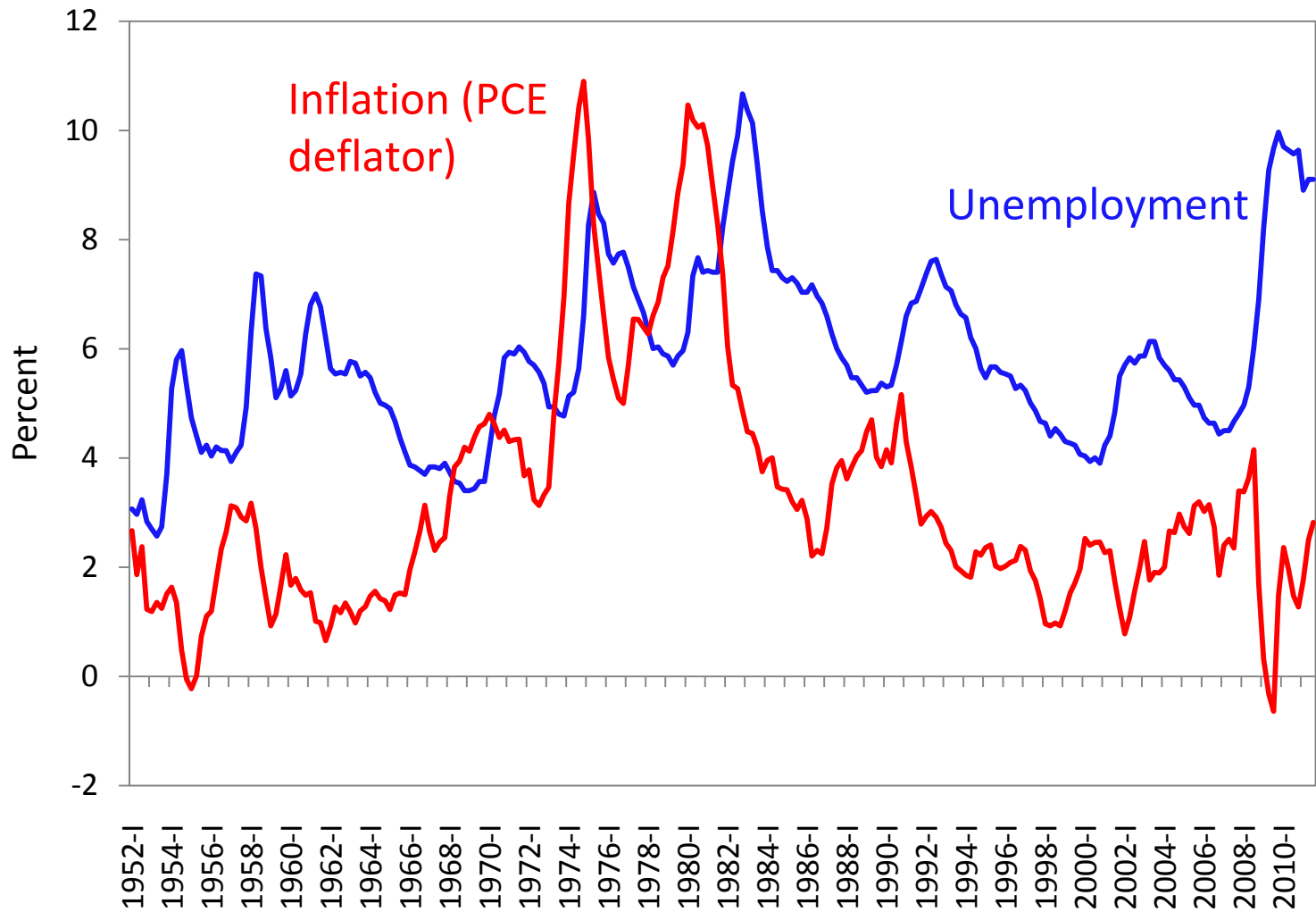
The Determinants of Macroeconomic Policy: The Postwar Era



December 7, 2011

I. INTRODUCTION

Inflation and Unemployment over the Postwar Era



II. RICHARD CLARIDA, JORDI GALÍ, AND MARK
GERTLER, “MONETARY POLICY RULES AND
MACROECONOMIC STABILITY: EVIDENCE AND SOME
THEORY”

Taylor's Interest Rate Rule

$$i_t = 1\% + 1.5\pi_t + 0.5[\ln Y_t - \ln \bar{Y}_t],$$

or

$$i_t - \pi_t = 2\% + 0.5(\pi_t - 2\%) + 0.5[y_t - \bar{y}_t]$$

Estimating a Conventional (Backward-Looking) Interest Rate Rule

$$i_t = \alpha + \beta\pi_t + \gamma(y_t - \bar{y}_t) + w_t,$$

or

$$i_t = r^{EQ} + \pi^* + \beta(\pi_t - \pi^*) + \gamma(y_t - \bar{y}_t) + w_t.$$

One could consider estimating this by OLS.

Derivation of the Equation that CGG Estimate (I)

Model:

$$(1) \quad i_t^* = r^{EQ} + \pi^* + \beta[E_t\pi_{t+1} - \pi^*] + \gamma[E_t(y_{t+1} - \bar{y}_{t+1})],$$

$$(2) \quad i_t = \rho i_{t-1} + (1 - \rho)i_t^* + e_t.$$

Dealing with expectations:

$$\pi_{t+1} = E_t\pi_{t+1} + u_{t+1},$$

$$y_{t+1} - \bar{y}_{t+1} = E_t[y_{t+1} - \bar{y}_{t+1}] + v_{t+1},$$

where u_{t+1} and v_{t+1} are uncorrelated with anything known at t .

Derivation of the Equation that CGG Estimate (II)

Algebra yields:

$$i_t = A + \rho i_{t-1} + (1 - \rho)\beta\pi_{t+1} + (1 - \rho)\gamma(y_{t+1} - \bar{y}_{t+1}) + \varepsilon_{t+1},$$

where

$$A \equiv (1 - \rho)[r^{EQ} + (1 - \beta)\pi^*],$$

$$\varepsilon_{t+1} = e_t - (1 - \rho)\beta u_{t+1} - (1 - \rho)\gamma v_{t+1}.$$

TABLE II
BASELINE ESTIMATES

| | π^* | β | γ | ρ | p |
|-------------------|----------------|----------------|----------------|----------------|-------|
| Pre-Volcker | 4.24 (1.09) | 0.83 (0.07) | 0.27 (0.08) | 0.68 (0.05) | 0.834 |
| Volcker-Greenspan | 3.58 (0.50) | 2.15 (0.40) | 0.93 (0.42) | 0.79 (0.04) | 0.316 |

Standard errors are reported in parentheses. The set of instruments includes four lags of inflation: output gap, the federal funds rate, the short-long spread, and commodity price inflation.

Source: Clarida, Galí, and Gertler.

Table 7.1 Monetary Policy Rules: Descriptive Statistics

| Variable | International Gold Standard Era | | |
|----------|---|------------------------------|------------------------------|
| | 1879:1–91:4 Coefficient | 1897:1–1914:4 Coefficient | 1879:1–1914:4 Coefficient |
| Constant | 6.458 (70.5) | 5.519 (47.3) | 5.984 (75.0) |
| π | 0.019 (1.01) | 0.034 (1.03) | 0.006 (0.32) |
| y | 0.059 (2.28) | 0.038 (1.89) | 0.034 (1.52) |
| R^2 | 0.15 | 0.07 | 0.02 |
| Variable | Bretton Woods and Post-Bretton Woods Eras | | |
| | 1960:1–79:4 Coefficient | 1987:1–97:3 Coefficient | 1954:1–97:3 Coefficient |
| Constant | 2.045 (6.34) | 1.174 (2.35) | 1.721 (5.15) |
| π | 0.813 (12.9) | 1.533 (9.71) | 1.101 (15.1) |
| y | 0.252 (4.93) | 0.765 (8.22) | 0.329 (3.16) |
| R^2 | 0.70 | 0.83 | 0.58 |

Note: These are ordinary least squares estimates of the coefficients of the variables in eq. (1). The left-hand-side variable (r) is measured by the commercial paper rate for the years 1879–1914 and by the federal funds rate for the years 1954–97. The variable π is measured by the average inflation rate over four quarters, and the variable y is measured by the percentage deviation of real output from a trend. Numbers in parentheses are ratios of coefficients to standard errors. See figs. 7.1 and 7.2 for data sources.

Source: Taylor (1999).

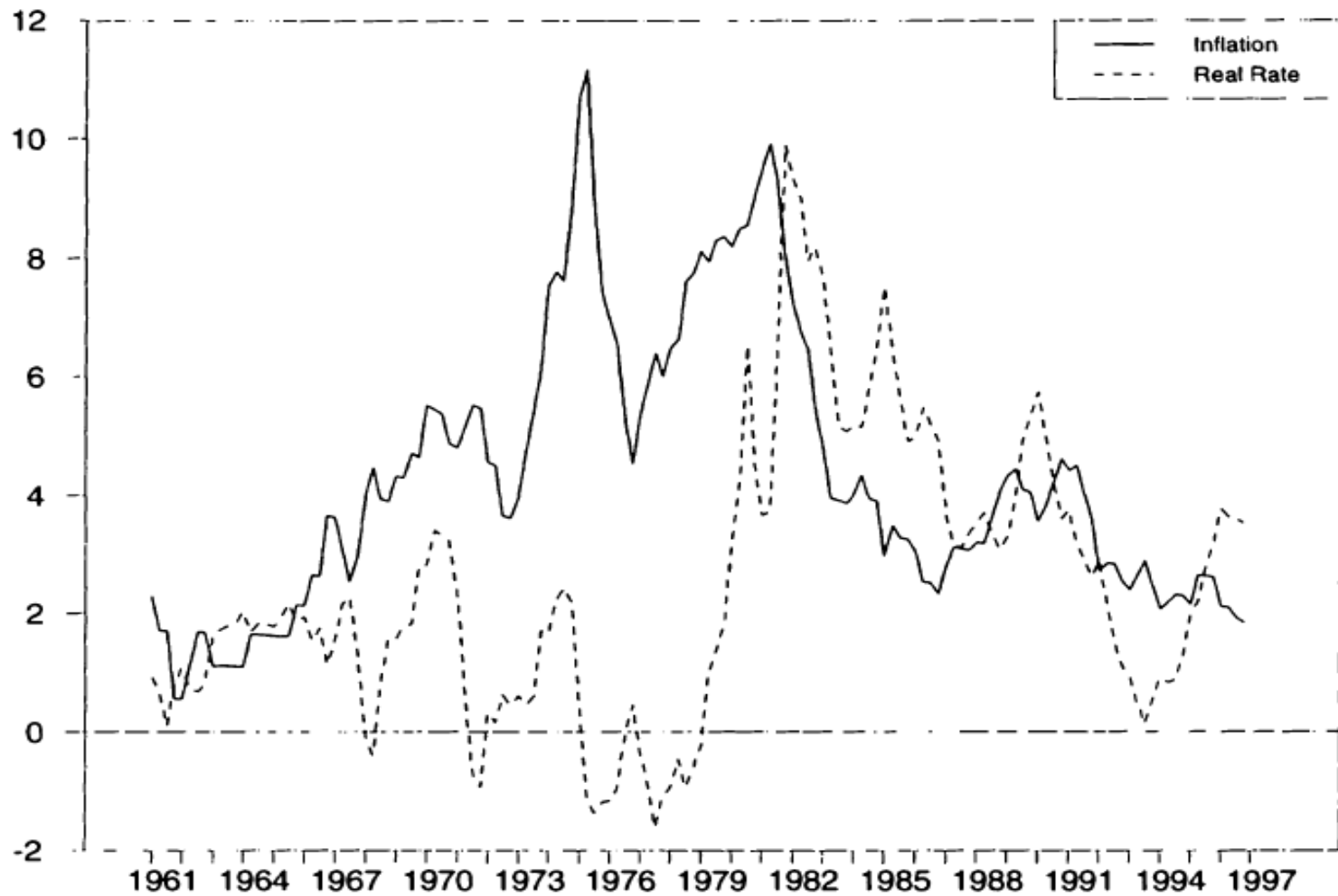


FIGURE IV
The Real Interest Rate and Inflation

Source: Clarida, Galí, and Gertler.

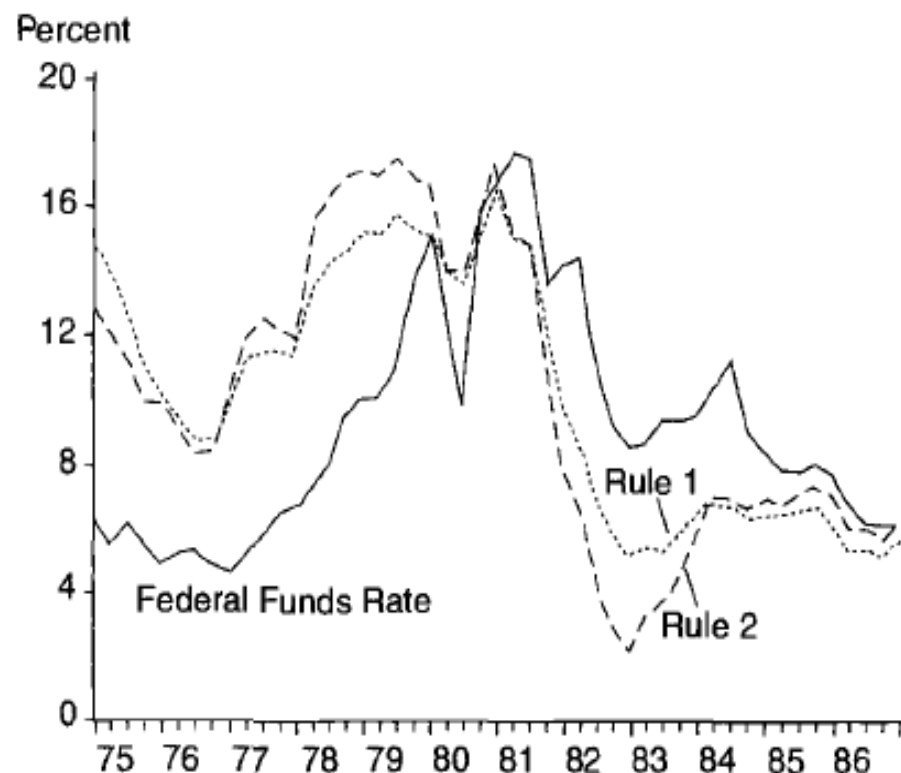
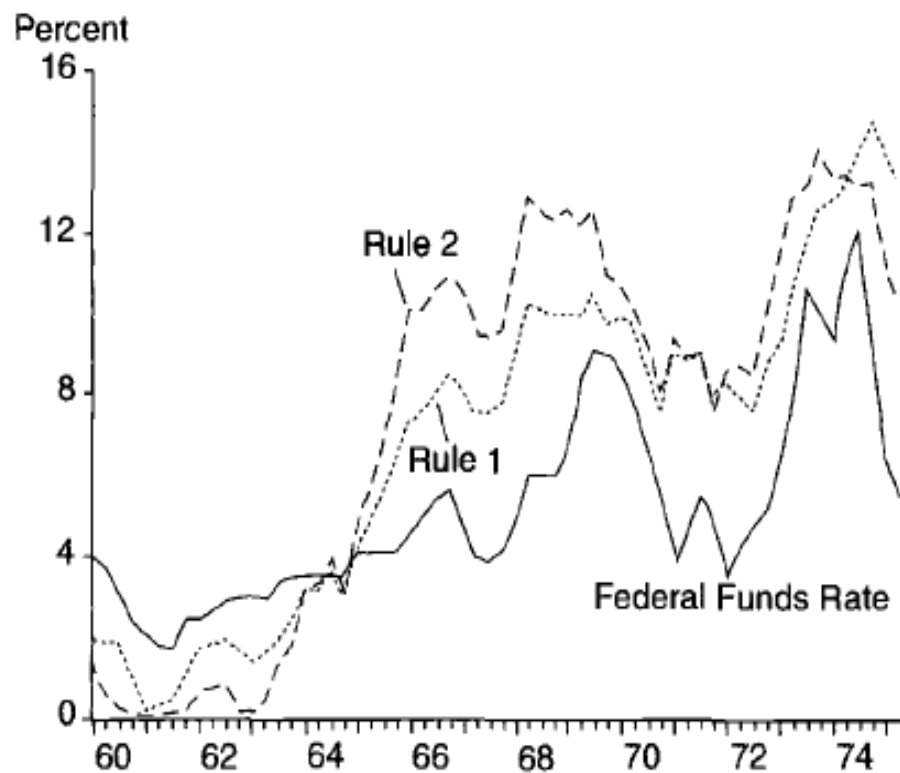


Fig. 7.4

Fig. 7.5

Note: Rules 1 and 2 are given by the monetary policy rule in eq. (1) with $g = 0.5$ and 1.0 , respectively.

Source: Taylor (1999).

III. ATHANASIOS ORPHANIDES. 2003. "THE QUEST FOR
PROSPERITY WITHOUT INFLATION"

Orphanides's Framework

Suppose you want to follow

$$\begin{aligned} i_t &= \pi_t + r_t^{EQ} + b(\pi_t - \pi^*) + c(Y_t - \bar{Y}_t) \\ &\equiv i_t^{RULE}. \end{aligned}$$

But suppose you actually follow:

$$i_t = \tilde{\pi}_t + \tilde{r}_t^{EQ} + b(\tilde{\pi}_t - \pi^*) + c(\tilde{Y}_t - \tilde{\bar{Y}}_t).$$

This implies:

$$\begin{aligned} i_t &= i_t^{RULE} + (\tilde{r}_t^{EQ} - r_t^{EQ}) + (1 + b)(\tilde{\pi}_t - \pi_t) \\ &\quad + c[(\tilde{Y}_t - \tilde{\bar{Y}}_t) - (Y_t - \bar{Y}_t)]. \end{aligned}$$

Inflation

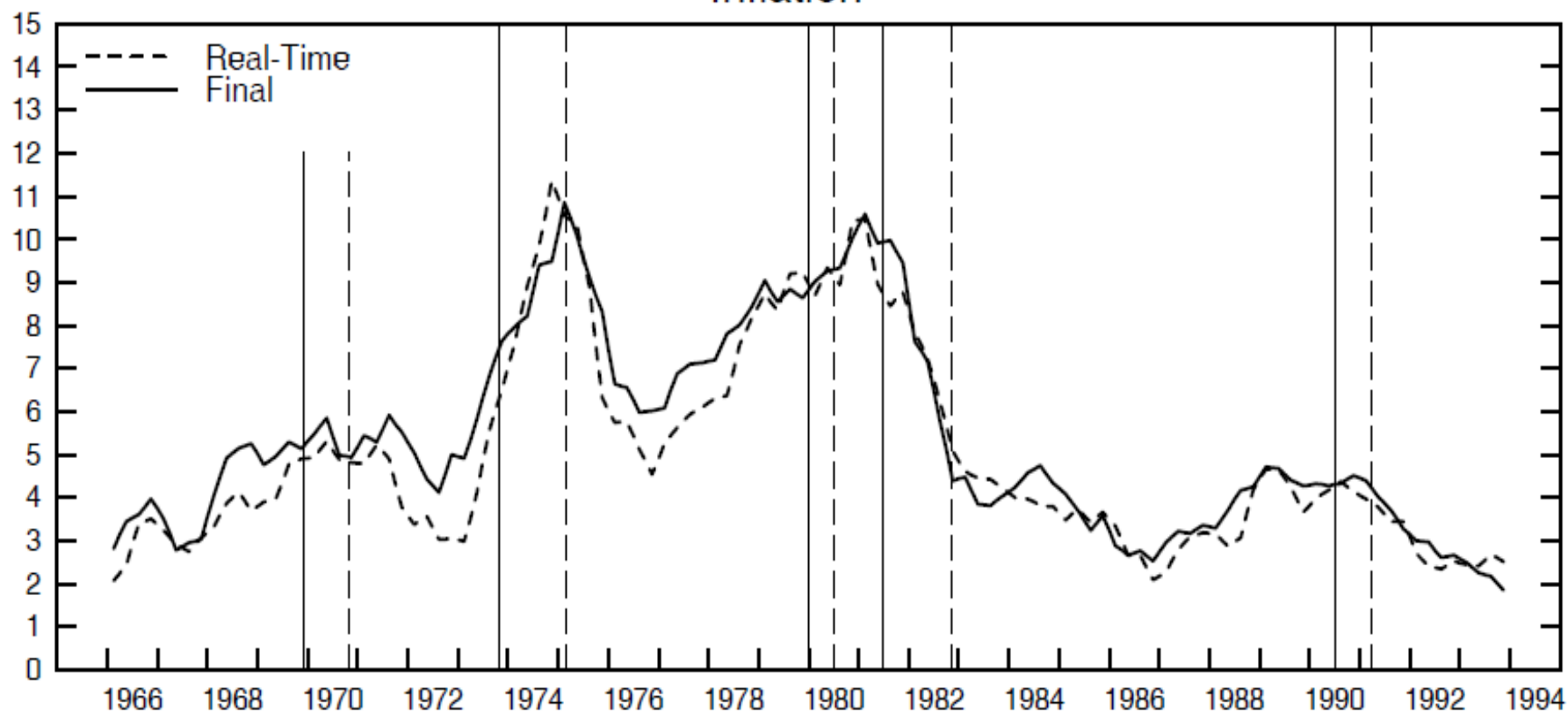


Fig. 2. Real-time misperceptions. Real-time data reflect information as of the middle of the quarter shown. Final data reflect historical information with data available at the end of 1994. See also notes to Fig. 1.

Source: Orphanides.

Output Gap

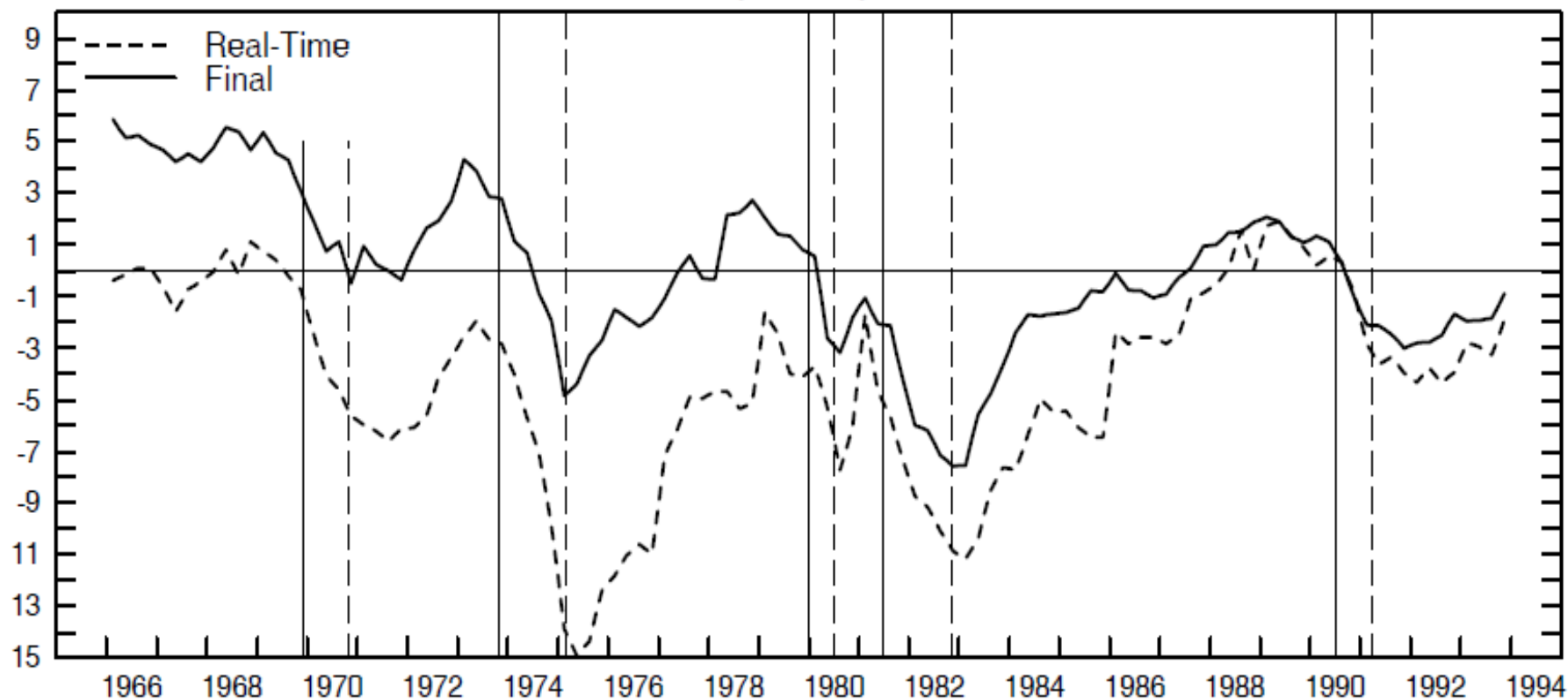


Fig. 2. Real-time misperceptions. Real-time data reflect information as of the middle of the quarter shown. Final data reflect historical information with data available at the end of 1994. See also notes to Fig. 1.

Source: Orphanides.

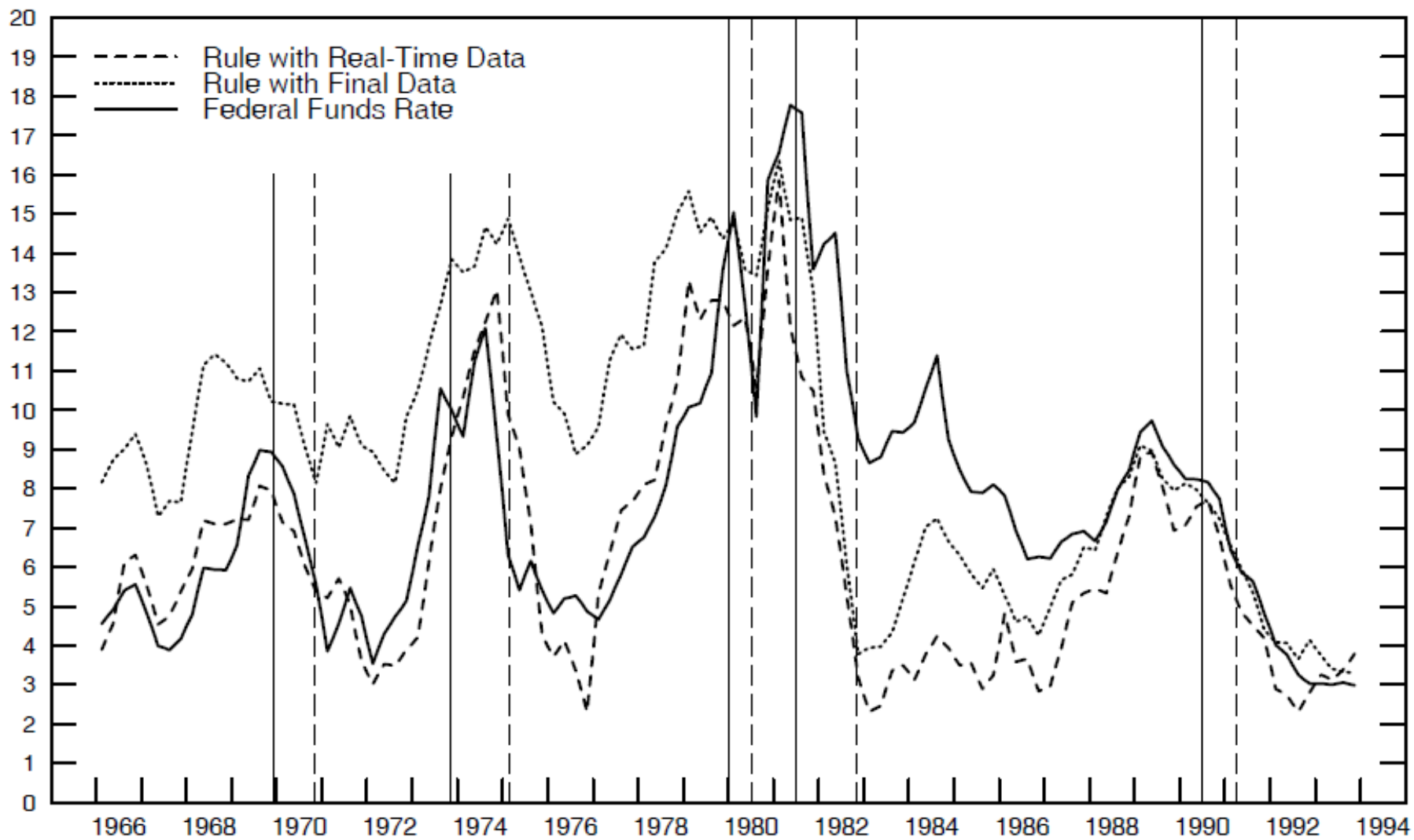


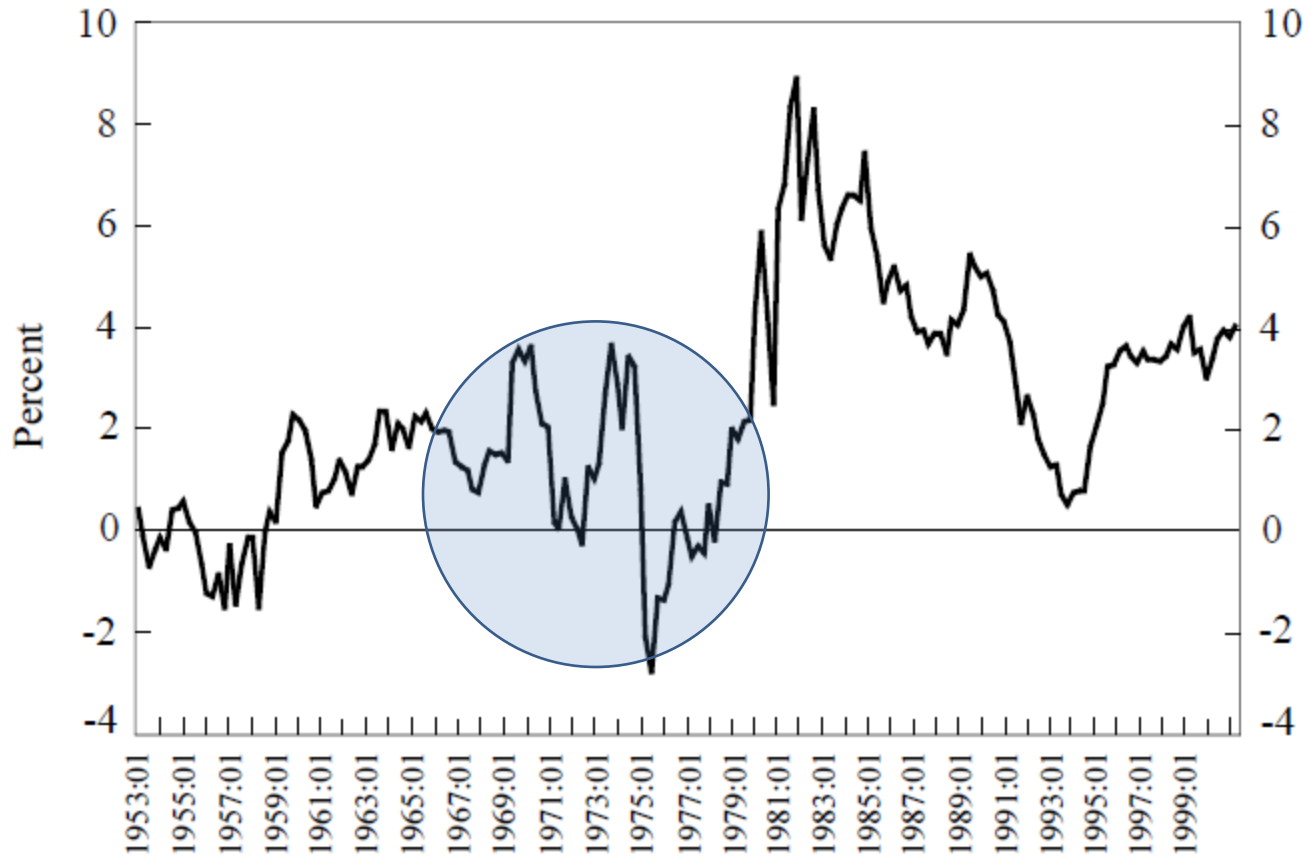
Fig. 5. Then and now: Taylor rule with final and real-time data.

Source: Orphanides.

“A 4% unemployment rate is used in calculating full-employment receipts and outlays as a conventional standard To serve this purpose the unemployment rate used ... must be reasonably stable from year to year. However, this does not mean that the feasible and proper target for unemployment is always represented by the same figure. In fact, ... a 4% overall unemployment rate today would mean much tighter conditions in labor markets than would have been true ten or twenty years ago.”

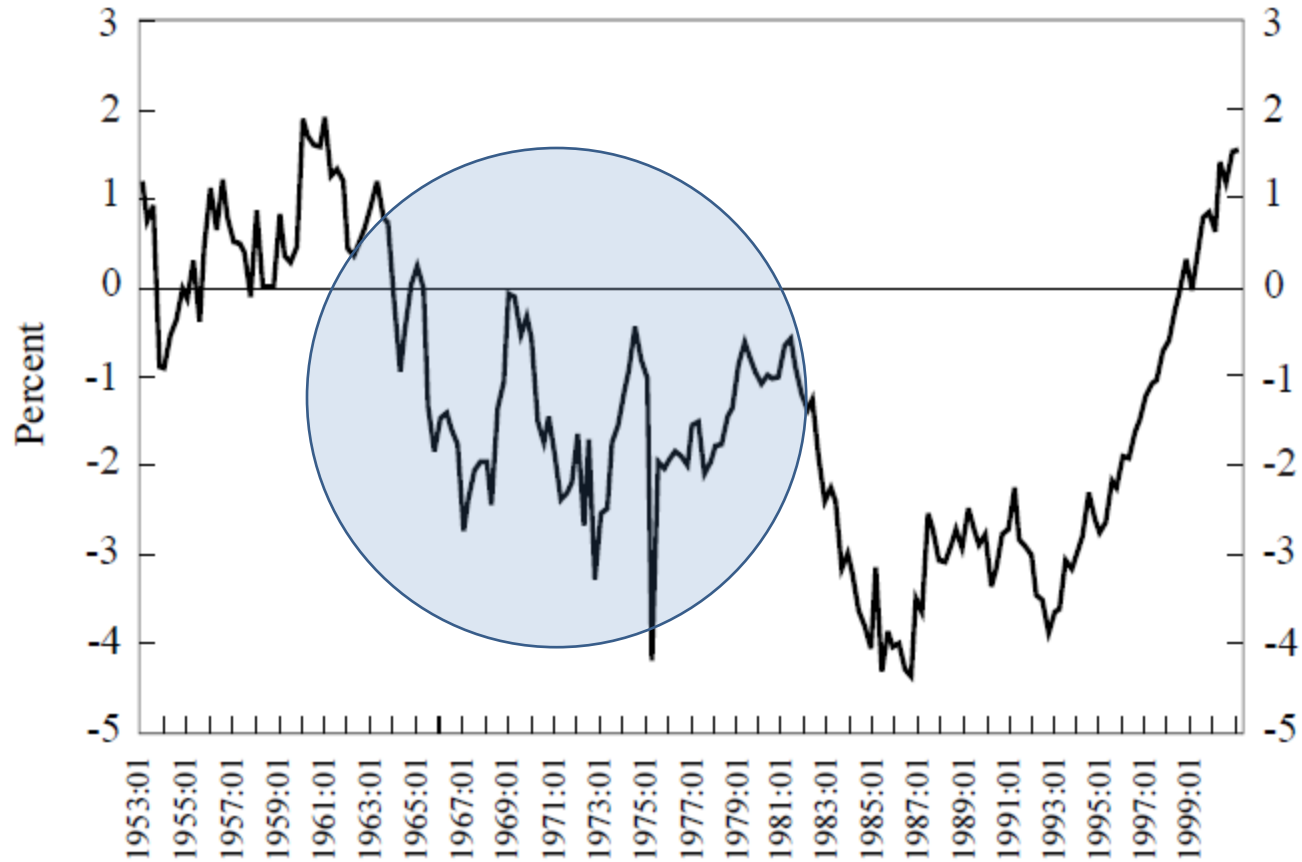
Richard Nixon, “Annual Budget Message to the Congress, Fiscal Year 1975,” February 4, 1974.

Chart 4
Ex Ante Real Federal Funds Rate



From: Romer and Romer (2002)

Chart 3
Ratio of High-Employment Surplus to Potential GDP



From: Romer and Romer (2002)

Possible Determinants of Policy

- Technical problems (Orphanides, Brunner and Meltzer, Calomiris and Wheelock)
- Politics (Meltzer)
- Preferences (Favero and Rovelli)
- Ideas (Friedman and Schwartz, DeLong, Mayer, Romer and Romer)

IV. ROMER AND ROMER, “THE EVOLUTION OF ECONOMIC UNDERSTANDING AND POSTWAR STABILIZATION POLICY”

Key Characteristics of Policymakers' Framework

- Normal or sustainable rate of unemployment
- Belief in a permanent inflation-unemployment tradeoff
- Sensitivity of inflation to slack

Narrative Sources

- Record of Policy Actions and Minutes of the FOMC
- Economic Report of the President

Characteristics of Policymakers' Economic Framework in Different Eras

| Characteristic | 1950s | 1960s | Early 1970s | Mid 1970s | Late 1970s | 1980s & Early 1990s | Late 1990s |
|--|---|---------------------------------|-------------------------------------|--------------|---------------|---------------------------|---|
| Normal u or \bar{u} | 4.5-5% | 4% | 4% | 5.5% | 5.0% | 6-7% | 5% |
| Belief in a permanent π - u trade-off | No (Perhaps a positive relationship) | Yes | No | No | No | No | No (perhaps a positive relationship) |
| Sensitivity of π to slack | Medium | N/A π varies with u | Initially high, then very low | Medium | Very low | Medium | Medium |

From: Romer and Romer (2002)

In 1959, when the current rate of unemployment was 5.0%, the chief economist of the Board of Governors said:

“[t]he economy is approaching the limits of resource utilization.”

(Minutes, 6/16/59, p. 6)

Characteristics of Policymakers' Economic Framework in Different Eras

| <u>Characteristic</u> | <u>1950s</u> | <u>1960s</u> | <u>Early 1970s</u> | <u>Mid 1970s</u> | <u>Late 1970s</u> | 1980s & <u>Early 1990s</u> | <u>Late 1990s</u> |
|--|---|---------------------------------|-------------------------------------|----------------------|-----------------------|-----------------------------------|---|
| Normal u or \bar{u} | 4.5-5% | 4% | 4% | 5.5% | 5.0% | 6-7% | 5% |
| Belief in a permanent π - u trade-off | No (Perhaps a positive relationship) | Yes | No | No | No | No | No (perhaps a positive relationship) |
| Sensitivity of π to slack | Medium | N/A π varies with u | Initially high, then very low | Medium | Very low | Medium | Medium |

From: Romer and Romer (2002)

Of inflation in the second half of 1967 (when unemployment was 3.9%), the *Economic Report* stated:

Demand was not yet pressing on productive capacity – over-all or in most major sectors. The period of slow expansion [from mid-1966 to mid-1967] had created enough slack so that production could respond to increasing demand without significant strain on productive resources.

(*EROP*, 1968, p. 105)

Characteristics of Policymakers' Economic Framework in Different Eras

| Characteristic | 1950s | 1960s | Early 1970s | Mid 1970s | Late 1970s | 1980s & Early 1990s | Late 1990s |
|--|---|---------------------------------|-------------------------------------|--------------|---------------|---------------------------|---|
| Normal u or \bar{u} | 4.5-5% | 4% | 4% | 5.5% | 5.0% | 6-7% | 5% |
| Belief in a permanent π - u trade-off | No (Perhaps a positive relationship) | Yes | No | No | No | No | No (perhaps a positive relationship) |
| Sensitivity of π to slack | Medium | N/A π varies with u | Initially high, then very low | Medium | Very low | Medium | Medium |

From: Romer and Romer (2002)

The 1970 *Economic Report* said:

output will be below its potential and the rate of inflation, while declining, will probably still be too high. The transition to an economy growing along the path of potential output at full employment with reasonable price stability will not have been completed.

(*EROP*, 1970, p. 65)

Arthur Burns concluded that:

monetary policy could do very little to arrest an inflation that rested so heavily on wage-cost pressures. In his judgment a much higher rate of unemployment produced by monetary policy would not moderate such pressures appreciably.

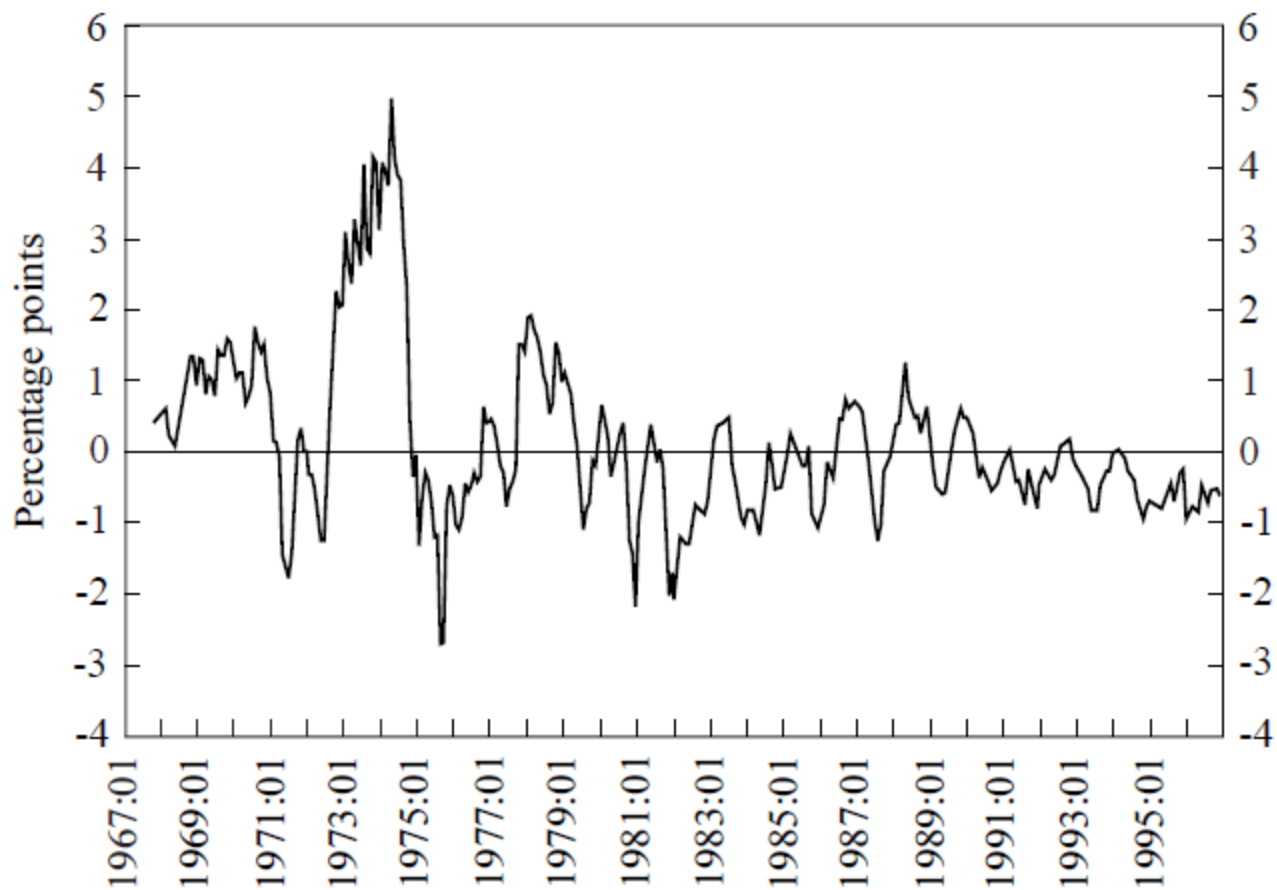
(Minutes, 6/8/71, p. 51)

The 1979 *Economic Report* stated:

“The stubborn resistance of inflation to the traditional remedies reflects the fact that the rate of wage and price increase is relatively inflexible in the face of slack demand,” and that “[r]eductions in output and major increases in unemployment are no longer as effective in slowing the rate of wage and price increase”

(*EROP*, 1979, p. 78)

Chart 1
Average Greenbook Forecast Errors for Inflation



From: Romer and Romer (2002)

Table 1
Summary Statistics for Greenbook Inflation Forecast Errors

| | Martin (67:10-70:1) | Burns (70:2-75:6) (75:7-78:2) | | Miller (78:3-79:7) | Volcker (79:8-87:7) | Greenspan (87:8-96:12) | Pre-Volcker (67:10-79:7) | Post-Volcker (79:8-96:12) |
|---------------------------|------------------------|----------------------------------|------|-----------------------|------------------------|---------------------------|-----------------------------|------------------------------|
| Root Mean Square Error | 1.1 | 2.2 | 1.1 | 1.1 | 0.8 | 0.5 | 1.7 | 0.7 |
| Average Forecast Error | 1.0 | 1.3 | -0.2 | 0.9 | -0.4 | -0.3 | 0.8 | -0.3 |
| N | 20 | 61 | 32 | 15 | 66 | 76 | 128 | 142 |

Note: The inflation forecast errors are for forecasts of average inflation at an annual rate in the quarter of the forecast and the subsequent two quarters. The data are in percentage points.

From: Romer and Romer (2002)

Table 2
Summary Statistics for the Natural Rate of Unemployment
Implicit in Greenbook Forecasts

| | Martin (67:10-70:1) | Burns (70:2-75:6) | (75:7-78:2) | Miller (78:3-79:7) | Volcker (79:8-87:7) | Greenspan (87:8-96:12) | Pre-Volcker (67:10-79:7) | Post-Volcker (79:8-96:12) |
|--------------------|------------------------|----------------------|-------------|-----------------------|------------------------|---------------------------|-----------------------------|------------------------------|
| Mean | 2.5% | 3.1% | 8.2% | 4.6% | 8.0% | 6.7% | 4.5% | 7.3% |
| Standard deviation | 1.6 | 3.5 | 2.5 | 2.2 | 2.4 | 1.8 | 3.6 | 2.2 |
| N | 20 | 61 | 32 | 15 | 66 | 76 | 128 | 142 |

Note: The implicit estimates of the natural rate are computed from the forecasts of unemployment and the change in inflation in the quarter of the forecast and the two subsequent quarters. See text for details.

From: Romer and Romer (2002)

In 1955, one FOMC member said:

“I feel that there are inflationary pressures present which should be checked now by a firmer monetary policy—one firm enough to curtail spending and thus dampen price pressures.”

(Minutes, November 16, 1955, p. 20)

In July 1971, Arthur Burns said:

“[A] substantial increase in unemployment has failed to check the rapidity of wage advances or to moderate appreciably the rise of the general price level. With increasing conviction, I have therefore come to believe that our Nation must supplement monetary and fiscal policy with specific policies to moderate wage and price increases.”

(Bulletin, July 1971, p. 596)

Specification of Monetary Policy Rule

$$(4) \quad r^{\text{DT}}_t = \alpha + \beta\pi_t + \gamma(Y_t - \bar{Y}_t) + \rho r^{\text{DT}}_{t-1}$$

r^{DT}_t is the detrended ex ante real interest rate

π is inflation

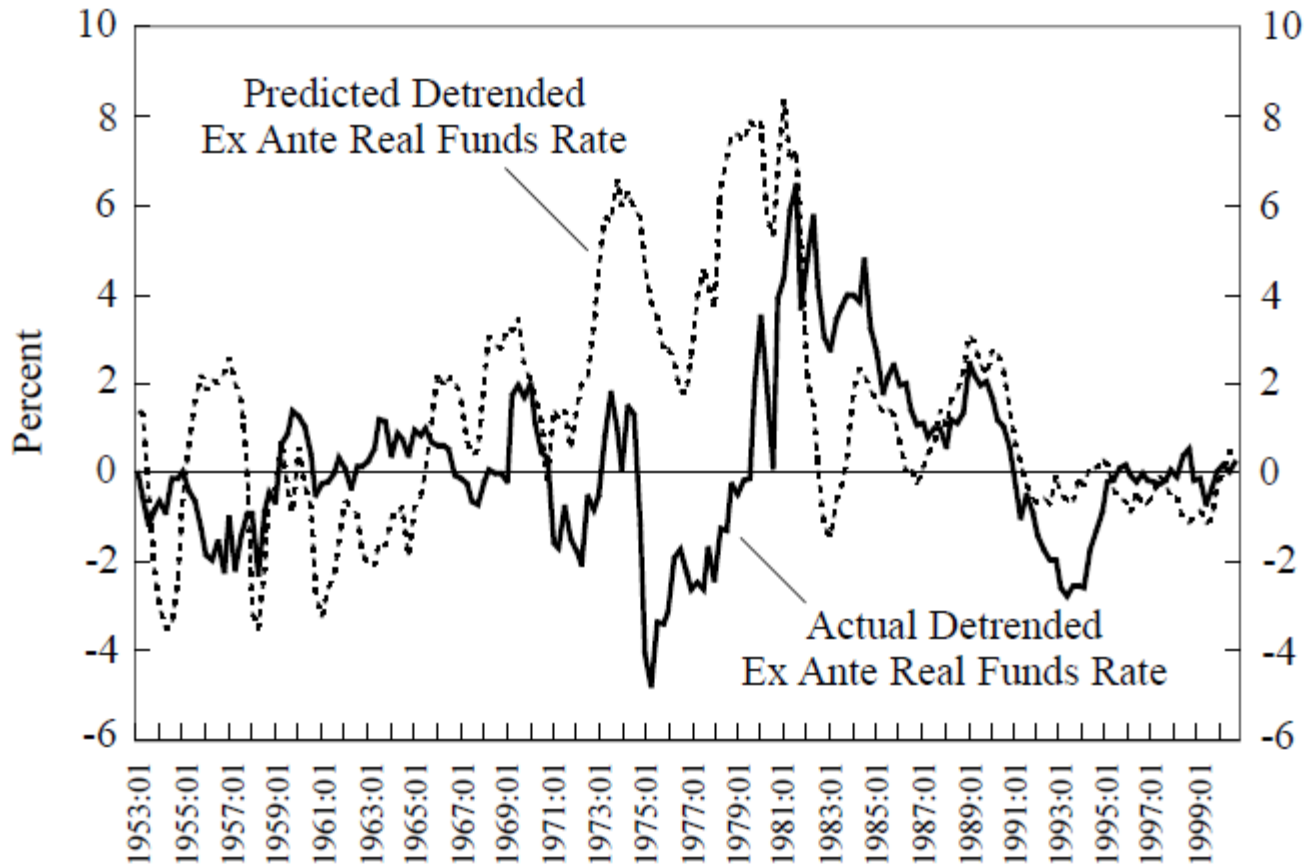
Y is the log of output

\bar{Y} is the log of normal or trend output

α reflects the target rate of inflation

a and b are positive parameters

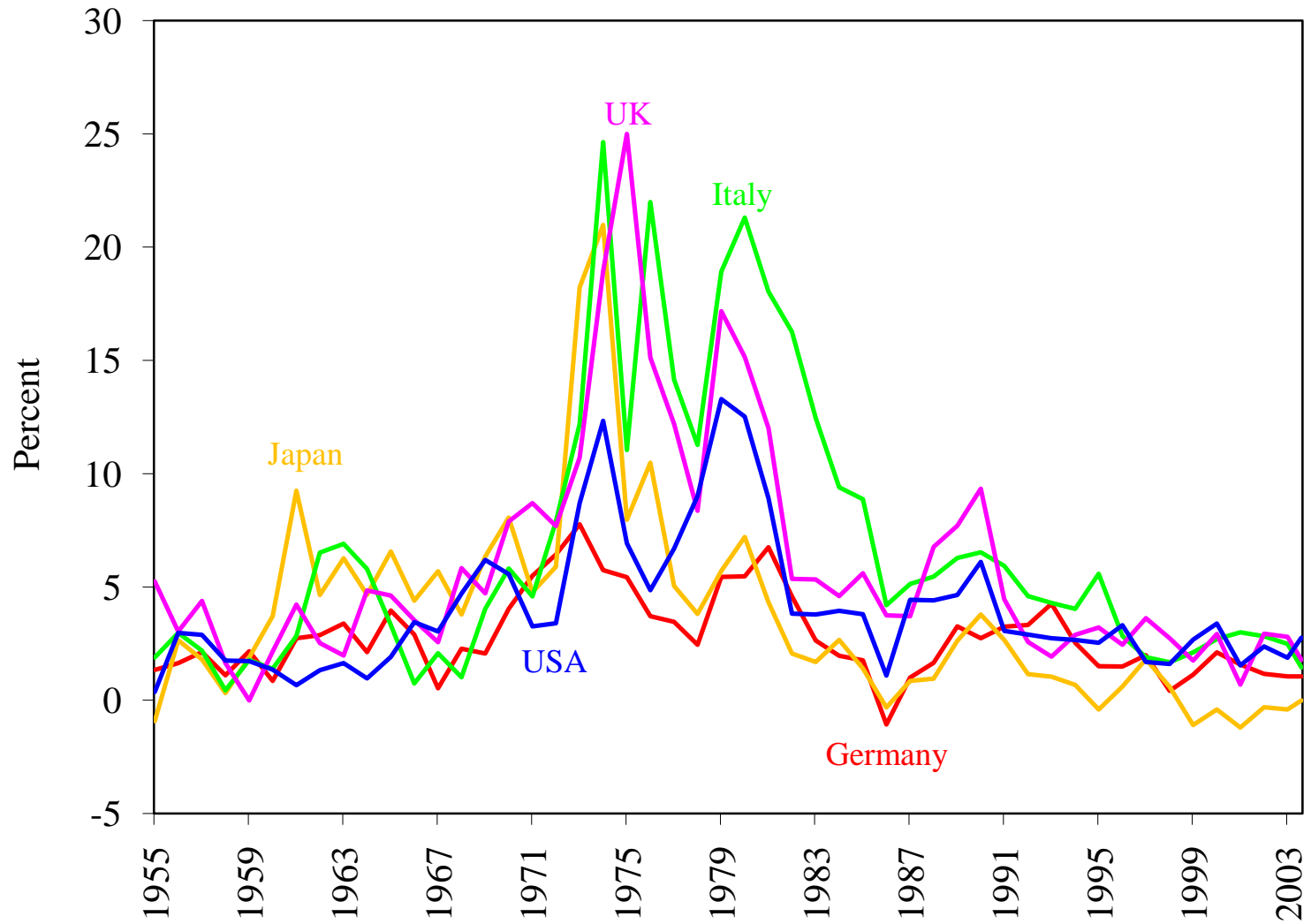
Chart 5
Actual Real Federal Funds Rate and
Predicted Rate from a Post-1979 Monetary Rule



From: Romer and Romer (2002)

V. DEAN SCRIMGEOUR, “THE GREAT INFLATION WAS
NOT ASYMMETRIC: INTERNATIONAL EVIDENCE”

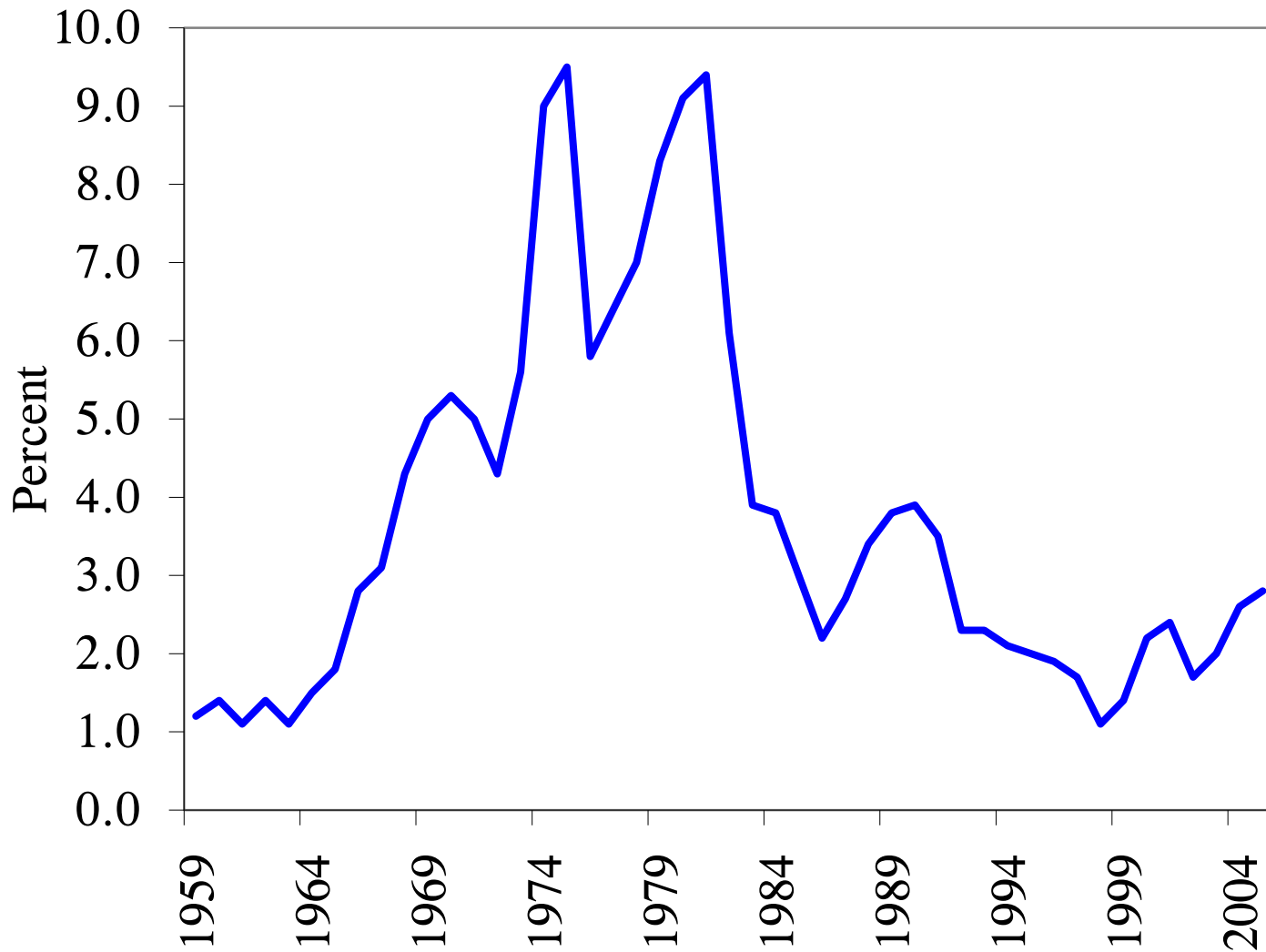
Inflation in Five Countries



From: Romer (2005)

What does the fact that the Great Inflation affected many countries suggest about its causes?

Inflation Rate (GDP Deflator)



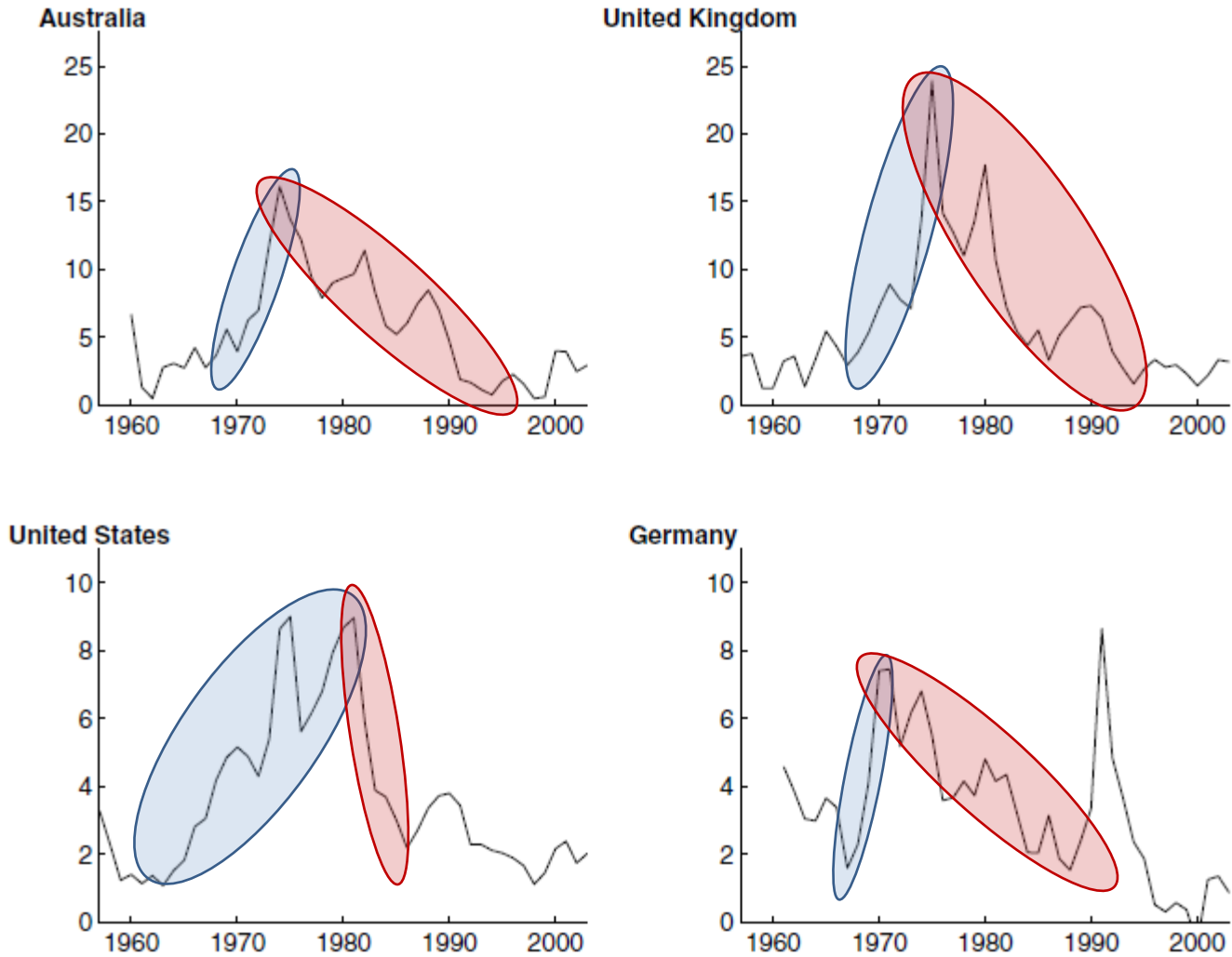


FIG. 1. Inflation in Four OECD Countries, 1957–2003.

From: Scrimgeour (2008)

TABLE 2

CHRONOLOGY OF THE GREAT INFLATION

| Country | Start year | Peak year | Finish year | Proportion in ascent | Excess years in ascent |
|------------------|------------|-----------|-------------|----------------------|------------------------|
| Germany | 1969 | 1972 | 1981 | 25.0 | -6 |
| Austria | 1970 | 1974 | 1983 | 30.8 | -5 |
| Australia | 1968 | 1975 | 1990 | 31.8 | -8 |
| United Kingdom | 1967 | 1975 | 1992 | 32.0 | -9 |
| Luxembourg | 1968 | 1974 | 1986 | 33.3 | -6 |
| Belgium | 1969 | 1975 | 1985 | 37.5 | -4 |
| Canada | 1967 | 1974 | 1984 | 41.2 | -3 |
| Italy | 1969 | 1980 | 1995 | 42.3 | -4 |
| Greece | 1968 | 1982 | 1999 | 45.2 | -3 |
| Sweden | 1964 | 1977 | 1992 | 46.4 | -2 |
| Spain | 1961 | 1977 | 1995 | 47.1 | -2 |
| Finland | 1958 | 1974 | 1990 | 50.0 | 0 |
| Switzerland | 1969 | 1972 | 1975 | 50.0 | 0 |
| Portugal | 1968 | 1983 | 1996 | 53.6 | 2 |
| Ireland | 1963 | 1976 | 1987 | 54.2 | 2 |
| New Zealand | 1967 | 1979 | 1989 | 54.5 | 2 |
| France | 1968 | 1978 | 1986 | 55.6 | 2 |
| Denmark | 1958 | 1975 | 1988 | 56.7 | 4 |
| Netherlands | 1962 | 1974 | 1981 | 63.2 | 5 |
| Iceland | 1958 | 1981 | 1992 | 67.6 | 12 |
| Norway | 1963 | 1981 | 1989 | 69.2 | 10 |
| Japan | 1958 | 1974 | 1980 | 72.7 | 10 |
| United States | 1969 | 1980 | 1983 | 78.6 | 8 |
| Mean inflation | 1963 | 1975 | 1992 | 41.4 | -5 |
| Median inflation | 1964 | 1975 | 1989 | 44.0 | -3 |

From: Scrimgeour (2008)

What does the fact that the Great Inflation was asymmetric in some countries and not others suggest about its causes?