

## **PRIVATE SECTOR INFLUENCES ON MONETARY POLICY IN THE UNITED STATES**

Charles L. Weise  
Associate Professor  
Department of Economics  
Gettysburg College  
Gettysburg, PA 17325  
cweise@gettysburg.edu

July 2007

*Abstract.* I examine the extent to which the Federal Reserve's monetary policy actions are correlated with the expressed wishes of private sector lobbying groups. I update and extend work by Havrilesky (1990, 1993) regarding the effect of signals from the banking industry through the Federal Advisory Council. I also construct a new database containing statements from nonfinancial interest groups. I find that monetary policy actions are correlated with signals from non-financial groups before 1979 but not after and are correlated with signals from the FAC after 1979 but not before. I also find that the Fed's policy stance more closely matches the preferred stance of the banking industry after 1979.

JEL codes: E5, E6

Keywords: Federal Reserve, Federal Advisory Council, Taylor rule, political economy

Acknowledgements: Earlier versions of this paper were presented at the Gettysburg College Department of Economics Brown Bag Seminar and the 2007 Eastern Economics Association meetings. I thank Stacy Hannings, Pooja Pokhrel, and two anonymous referees. All errors and omissions are my own.

Research on political business cycles, the time inconsistency problem of monetary policy, and the “new political economy” suggests that monetary policy may be subject to influence from governmental and private sector pressure groups. Consistent with these perspectives, a number of empirical studies have found that monetary policy in the United States responds to signals from politically powerful interests. Havrilesky (1993) finds that signals from Congress and the executive branch to raise or lower interest rates have explanatory power in post-war data. His work is updated in Froyen, Havrilesky and Waud (1997) and Froyen and Waud (2002). These authors find a strong correlation between monetary policy actions and signals from the executive branch during the Burns and early Volcker chairmanships, though the correlation is weak to nonexistent for other chairmanships. Saeki and Shull (2003) find that changes in the federal funds rate are correlated with signals from the executive branch but not Congress, while Caporale and Grier (2005) find that regime shifts in real interest rates coincide with shifts in ideology of the president and key members of Congress. Finally, Havrilesky (1990, 1993), finds that monetary policy actions are also correlated with signals from the banking industry as reflected in the policy recommendations of the Federal Advisory Council (FAC).

This paper asks whether U.S. monetary policy actions are correlated with recommendations from the banking industry and non-financial private sector interest groups. As in Havrilesky’s work, minutes from the quarterly FAC meetings with the Board of Governors are used to construct a proxy for banking industry preferences. A similar index is constructed using statements from non-financial interest groups that appear in the press. Though they lack a formal advisory role on monetary policy within the Federal Reserve System, representatives of business and labor organizations frequently offer monetary policy advice through the media in the weeks leading up to an FOMC meeting and when important economic data are released. The media

routinely report the reactions of such organizations to FOMC decisions as well. These public statements are often linked in press accounts to lobbying efforts focused on Congress, the executive branch, or the Federal Reserve. Press accounts also frequently use these statements as an indicator of informed public sentiment on issues related to monetary policy. It is frequently argued that the banking industry tends to favor a monetary policy geared primarily toward maintaining low and stable inflation, while non-financial business and labor groups have a stronger interest in a pro-growth and pro-employment monetary policy. Thus the signals from these groups are representative of the pressures arising from economic forces in the private sector that the Federal Reserve faces as it balances its twin responsibilities of maintaining low inflation and full employment.<sup>1</sup>

The results of this empirical work are striking: before 1979, movements in the federal funds rate are strongly correlated with signals from non-financial interest groups but not with signals from the banking industry. After 1982, movements in the federal funds rate are strongly correlated with signals from the banking industry but not with signals from non-financial interest groups. Evidence that monetary policy actions are correlated with private sector policy recommendations has a number of implications. At a minimum, the results presented here suggest that accounting for private sector pressures can lead to better forecasts of future monetary policy actions. The correlation between monetary policy and signals from the private sector may suggest that economists pay more attention to “political economy” interpretations of monetary policy. Alternatively, the correlation may reflect unobserved variables related to Federal Reserve preferences over unemployment and inflation. In this case the results described in this paper provide evidence for a shift in Fed preferences in the early 1980s. In any case these results ought to direct the attention of those studying specific historical episodes such as the

Great Inflation of the 1970s and the disinflation of the 1980s toward political factors as a partial explanation for these events.

Section 1 of this paper describes the empirical model and data used in this study. Section 2 discusses results, and Section 3 describes a series of robustness tests. Section 4 concludes.

## 1. Model and data

I test for the effect of private sector interest group signals on monetary policy by adding political variables to an otherwise standard model of Fed behavior based on the Taylor rule of the kind estimated by Clarida, Gali, and Gertler (2000). I model the Fed's choice of the federal funds rate as

$$f_t^* = (r^* + \pi^*) + \beta E_t[\pi_{t+k_1, t+k_2} - \pi^*] - \alpha E_t[u_{t+h_1, t+h_2} - u_{nt}] \quad (1)$$

$$f_t = \rho_1 f_{t-1} + \rho_2 f_{t-2} + (1 - \rho_1 - \rho_2) f_t^* + \delta z_t + \varepsilon_t \quad (2)$$

where  $f_t$  is the federal funds rate,  $f_t^*$  is the medium run federal funds rate target,  $r^*$  is the natural real rate of interest,  $\pi^*$  is the Fed's long-run inflation target,  $\pi_{t+k_1, t+k_2}$  is the average inflation rate from period  $t+k_1$  to  $t+k_2$ ,  $u_{t+h_1, t+h_2}$  is the average unemployment rate from period  $t+h_1$  to  $t+h_2$ ,  $u_{nt}$  is the natural rate of unemployment,  $E_t$  is the Fed's expectations conditional on information available at period  $t$ ,  $z_t$  is a vector of political variables, and  $\varepsilon_t$  is a disturbance term. The model can be estimated in reduced form

$$f_t = a_0 + a_1 f_{t-1} + a_2 f_{t-2} + a_3 E_t \pi_{t+k_1, t+k_2} + a_4 E_t u_{t+h_1, t+h_2} + a_5 z_t + \varepsilon_t \quad (3)$$

from which the structural parameters ( $\rho_1$ ,  $\rho_2$ ,  $\beta$ ,  $\alpha$ , and  $\pi^*$ ) can be recovered from the coefficient estimates.

I estimate equation (3) using monthly data over two time periods, March 1968 to September 1979 (pre-Volcker period) and October 1982 to June 2000 (post-Volcker period).<sup>2</sup>

The federal funds rate is the average of daily rates for the last week of the month, from the Haver

Analytics USECON database. I follow Orphanides (2002) in using the Greenbook forecasts of the GNP or GDP implicit deflator inflation rate and civilian unemployment rate to measure the Fed's expectations of inflation and unemployment. For each month the Greenbook forecasts are the most recent forecasts available to the Fed on the 15<sup>th</sup> of the month.

The political variables are derived from recommendations for monetary policy made by the Federal Advisory Council (FAC) in its quarterly meetings with members of the Board of Governors and published statements by private non-financial groups regarding monetary policy. An appendix, available on the author's website, provides the data and describes in detail how it was constructed. FAC recommendations from 1968 to 2000 were obtained from the Board of Governors and the Financial Markets Center website. For non-financial group signals I collected statements that could be considered advocacy of particular monetary policy actions from three non-financial economic interest groups – the AFL-CIO, the National Association of Manufacturers (NAM), and the U.S. Chamber of Commerce (COC) – as reported by the Associated Press wire service, the New York Times, the Wall Street Journal, and the Washington Post from 1968 to 2000. These groups were chosen because of the frequency of their public statements on monetary policy and the fact that they represent broad-based economic interests. I distinguish between ex ante statements – those made before an FOMC meeting advocating a particular policy action – and ex post statements – those expressing approval or disapproval of a recent monetary policy action.

I constructed an index of interest group signals based on the FAC recommendations and non-financial group statements. For FAC recommendations and ex ante non-financial group statements, I followed Havrilesky (1993) and assigned a value of 0 if the statement offered unqualified support for the Fed's current policy stance, +1 (-1) if the statement explicitly

encouraged the Fed to ease (tighten), and  $+1/2$  ( $-1/2$ ) if the statement offered qualified support for current monetary policy, with a bias toward more easing (tightening). Ex post statements criticizing current monetary policy as too tight (indicating a preference for looser policy) were scored  $+1$ , those criticizing current policy as too loose were scored  $-1$ , and those expressing approval of current policy were scored  $0$ . The monthly index of FAC recommendations, which are made quarterly, uses the most recent recommendation. The monthly index of non-financial group statements takes on the value of zero in months when no statements occur, signifying acquiescence to or approval of the current stance of monetary policy.

Figure 1 plots the statements of nonfinancial pressure groups as well as the FAC for comparison. Two features stand out. First, the overwhelming majority of statements by nonfinancial pressure groups advocate an easing of monetary policy, whereas the FAC statements are much more balanced. This is consistent with the view that the banking industry has a greater anti-inflation bias than non-financial groups. Second, ex ante policy statements by nonfinancial groups are somewhat more prevalent after 1979. This may be because, the Fed having adopted a more anti-inflation policy stance after 1979, non-financial groups had a greater interest in policy advocacy. It is also possible that the increased frequency is a result of changes in reporting practices by the AP and major newspapers, or an increase in public relations activities by the groups that is unrelated to their approval or disapproval of monetary policy. Among the groups, the AFL-CIO made more statements in the early part of the sample, while the COC and NAM made more statements in the later part of the sample. The NAM made no ex ante or ex post statements prior to the early 1980s.

## 2. Empirical results

To establish a baseline for the empirical analysis, I first estimate Equation 3 without political variables. I set  $h_1=k_1=0$  and  $h_2=k_2=3$ , so that the Fed responds to expectations of the average rate of unemployment and inflation from the current period to three quarters in the future. The natural rate of unemployment is assumed constant over each sub-period and set equal to the period averages, 5.8% for 1968-79 and 6.2% for 1982-2000. The results are reported in Table 1. The estimate of  $\alpha$  shows that the Fed's response to expected unemployment was weaker in the later period than the earlier period. The estimate of  $\beta$  indicates that the Fed responded strongly to expected inflation in both sample periods. In both periods the Fed adhered to the Taylor Principle, which says that the Fed should raise interest rates by more than one percentage point for every increase in the expected inflation rate. This finding is consistent with results in Orphanides (2002), who also uses "real time" data and finds little difference between the pre-Volcker and post-Volcker responses to inflation.

Table 2 reports results from estimation of equation 3 with the FAC variable included as a separate independent variable. The first two columns report the results using  $h_1=k_1=0$ ,  $h_2=k_2=3$  and a constant natural rate of unemployment as in Table 1. For all variables other than FAC, the estimates are very close to what they are in Table 1. The estimates concerning the FAC variable suggest that while the Federal Reserve did not respond to recommendations from the FAC in the pre-Volcker period, since 1979 the Fed has reacted strongly to these recommendations. For the post-Volcker sample the coefficient on FAC is large and statistically significant. The results imply that a FAC recommendation for tightening (FAC=-1) is accompanied by an immediate increase of 23 basis points in the federal funds rate, controlling for the Fed's forecasts of inflation and unemployment. Given the inertia implied by the coefficients on lags of the federal

funds rate, the long-run impact is to increase the federal funds rate by 460 ( $=\hat{\delta}/(1-\hat{\rho}_1-\hat{\rho}_2)$ ) basis points.

The other columns of the table test whether the results above are sensitive to the specification of the Taylor rule equation. In the third and fourth columns the Fed is assumed to focus only on the current level of unemployment and the next quarter's forecast of inflation ( $h_1=h_2=0, k_1=k_2=1$ ) instead of the four quarter average. In the last two columns the natural rate of unemployment is assumed to be time-varying. My proxy for the natural rate of unemployment (as the Fed might have perceived it at each meeting) is a 120-month trailing moving average of the actual unemployment rate. This is similar to the measure used in Orphanides (2002). In both cases the estimates are very similar to those in the base case.

Table 3 reports estimates of equation 3 when ex ante statements by nonfinancial pressure groups are included as a separate independent variable. The baseline model, with  $h_1=k_1=0$  and  $h_2=k_2=3$  and a constant natural rate of unemployment, is used. All the results reported in this table are essentially unchanged when the other two Taylor rule specifications are used. The figures show that before 1979 the federal funds rate responds strongly to statements by nonfinancial pressure groups. A statement by any group in favor of easing monetary policy is associated with a 42 basis point decrease in the federal funds rate, controlling for the Fed's forecasts of inflation and unemployment. This effect is statistically significant at the five percent level. The long run effect, given the estimated values of  $\rho_1$  and  $\rho_2$ , is 323 basis points – this is roughly the same order of magnitude as the Fed's response to signals from the banking industry after 1982. The response to the COC is larger and statistically significant at well above the one percent level, while the response to statements by the AFL-CIO is smaller but significant at the ten percent level (there were no statements by the NAM during the 1968-79 period). By contrast,

the Fed does not seem to respond to nonfinancial group statements after 1982. Regardless of the the group considered, the estimated coefficient on the group's statement is near zero and far from statistically significant.

Table 4 repeats the analysis of Table 3 using the lagged value of ex post statements. The question asked here is, does the Fed modify its behavior in the month following ex post criticism by these groups, controlling for the macroeconomic variables that enter the Fed's interest rate setting equation? The answer again is, yes before 1979, no after 1982. Overall, in the 1968-79 period an expression of displeasure regarding a tightening action is associated with a 24 basis point reduction in the federal funds rate in the following month conditional on the macroeconomic variables the Fed considers. This response is driven entirely by the response of the federal funds rate to statements by the AFL-CIO. The federal funds rate is not affected by ex post statements by the COC or NAM. In the 1982-2000 period, ex post statements have no effect regardless of the source.

Finally, Table 5 combines the results from the analysis of FAC statements and ex ante and ex post statements by non-financial groups under all three specifications of the Taylor rule equation. The figures confirm the results from previous analysis. Regardless of how the Taylor rule equation is specified, before 1979 the federal funds rate seems to respond to ex ante and ex post statements from non-financial groups but does not respond to recommendations of the FAC. After 1982, the federal funds rate seems to respond to the FAC, but not to non-financial groups. The effects are in general statistically significant, though only at the ten percent level or a little higher in the case of ex ante statements from non-financial groups.

### **3. Further checks for robustness**

An appendix available on the author's website presents results from regressions similar to those in Tables 1-5 for alternative model specifications. To summarize:

My FAC index differs slightly from Havrilesky's in a few periods because of differences in interpretation of the FAC's statements. The results are virtually identical when I use Havrilesky's original data.

The model estimates for the period 1979:10-2000:6 are very close to those for the period 1982:10-2000:6. In all regressions, the coefficient on FAC remains statistically significant in the 1979-2000 period and close to the values shown above while the nonfinancial group signals are insignificant.

The main results are also retained when a "real time" measure of the output gap is used in place of the unemployment rate. The coefficient on FAC continues to be significant and of about the same magnitude after 1982 and insignificant before 1979, as in the results above. The coefficients on the ex ante policy statements from nonfinancial groups are of the same sign but not statistically significant before 1979 (and close to zero and profoundly insignificant after 1982), while those on the ex post policy statements continue to be statistically significant before 1979 and insignificant after 1982. The coefficient on FAC is also significant for the 1979-2000 period in these regressions.

Finally, a number of authors have previously noted that signals from the executive branch have explanatory power in Taylor rule regressions. To test whether the results above stem from correlation between private sector groups and signals from the executive branch, I run the regressions in Table 5 adding Havrilesky's SAFER variable to measure executive branch signals. SAFER is only available up to the end of 1991, so the sample periods are 1968-79 and 1982-91.

SAFER is statistically significant in the pre-Volcker period and close to significant for two out of three specifications in the post-Volcker period. More importantly, the FAC variable continues to be statistically significant in the post-Volcker period and insignificant in the pre-Volcker period, while the nonfinancial group variables are significant in the pre-Volcker period but not in the post-Volcker period.

#### **4. The preferred policy stance of the banking industry and Federal Reserve**

Another way to characterize the relationship between private sector groups and the Fed is to compare the private sector groups' preferred policy stance to the actual monetary policy stance taken by the Fed. That is, we can test whether from month to month the Fed's medium range policy objectives (lowering inflation or stimulating growth) are consistent with the stated objectives of various interest groups. Based on the analysis in the preceding section, for example, we might expect that the Fed's policy priorities were closer to those of non-financial interest groups before 1979 and closer to those of the banking industry after 1979. This would be consistent with the view (substantiated by Clarida, Gali and Gertler 2000) and numerous other studies) that the Fed became more "hawkish" regarding inflation after 1979.

The Boschen-Mills index (Boschen and Mills 1995) provides a summary measure of the stance of monetary policy derived from FOMC directives and the Record of Policy Actions of the FOMC. The index takes the value -2 when policy is motivated by a strong desire to reduce inflation, +2 when the policy is geared toward aggressive promotion of growth, and 0 when it is neutral. It takes the value -1 (+1) when there is a mild emphasis on inflation reduction (growth promotion).<sup>3</sup>

The minutes of Federal Advisory Council meetings with the Board of Governors provide some evidence as to the banking industry's policy priorities (comparable evidence of the

preferred stance of the non-financial pressure groups is not available). Throughout 1968-2000, the minutes include the FAC's prepared analysis of economic conditions, which usually indicate whether the FAC's primary concern at the time is inflation or growth. From 1968-1978 the minutes also include a summary of the discussion between Board members and Council members that followed the presentation of the prepared responses. These discussions often contain useful information about the FAC's preferred monetary policy stance.

I used the minutes from FAC meetings to construct an index of the FAC's preferred policy stance analogous to the Boschen-Mills index for the Fed's stance. The resulting index is included in an appendix available from the author along with selections from the minutes that form the basis for my judgment. Figure 2 plots (two times) the FAC stance and the Boschen-Mills index for the pre-Volcker and post-Volcker periods. In the early period the FAC's preferred stance was for the most part tighter than the actual policy adopted by the Federal Reserve, while after 1979 the FAC's preferred stance and the Fed's policy were closely aligned. During the 1968-79 period the FAC proposed the same stance as the Federal Reserve 44 percent of the time, a more restrictive stance 50 percent of the time, and a less restrictive stance just 6 percent of the time. From 1979-2000, the FAC proposed the same stance as the Fed 62 percent of the time, a more restrictive stance 15 percent of the time, and a less restrictive stance 23 percent of the time. While it is possible that this pattern results from a change in the preferences of the banking industry representatives, a more plausible interpretation is that the Fed became more concerned with controlling inflation after 1979, bringing its policy priorities more closely in line with those of the banking industry.

## **5. Interpretation and conclusions**

The preceding sections provide strong evidence that policy actions by the Federal Reserve are correlated with signals from non-financial interest groups before 1979 but not after and with signals from the banking industry after 1982 but not before. The results lend themselves to two alternative interpretations. One is that the Fed adjusts monetary policy in response to pressure from economic interest groups, whose public statements serve as a proxy for lobbying efforts directed at the Federal Reserve. Alternatively, interest group signals may reflect information about inflation and unemployment that is publicly available but not reflected in Greenbook forecasts. Suppose that nonfinancial groups raise alarms primarily when this information indicates concerns about rising unemployment while the banking industry responds more to indications of rising inflation. Then the correlation between Fed actions and interest group signals would constitute evidence for a change in the Fed's policy priorities after 1979 towards greater concern for inflation stability relative to unemployment stability. The close correspondence between the desired monetary policy stance of the FAC and the actual stance of the Federal Reserve after 1979, documented in Section 4, lends support to this view.

Further research to distinguish between these explanations is warranted. Regardless of whether the correlations found in this paper constitute evidence of direct political manipulation of monetary policy or shifts in the preferences of the Federal Reserve that align its priorities with those of competing interest groups, the evidence presented here suggest that more attention should be paid to political influences on monetary policy decisions.

---

<sup>1</sup> Woolley (1984) discusses the arguments and evidence in favor of the theory that the banking industry has a stronger interest in a low inflation monetary policy than non-financial groups.

<sup>2</sup> A number of exceptional features mark the period October 1979 – September 1982, among them the adoption of non-borrowed reserves targeting, banking industry deregulation, and dramatic disinflation. I therefore exclude this period from my empirical analysis. The pre-Volcker sample begins in March 1968, when Greenbook forecasts become available for unemployment, and ends in September 1979, just before the adoption of non-borrowed reserves targeting. The post-Volcker sample begins in October 1982 with the abandonment of non-borrowed reserves targeting and ends in June 2000, the last period for which the FAC signaling variable can be constructed. See Goodfriend and King (2005) for a chronology of the Volcker disinflation period.

<sup>3</sup> The data were obtained from John Boschen's website (<http://mason.wm.edu/homepage.asp?PID=416>) through January 1996. I updated the index through December 2000.

## References

- Boschen, John F., and Leonard O. Mills. (1995) "The Relation Between Money Market and Narrative Indicators of Monetary Policy." *Economic Inquiry*, 33, 24-45.
- Caporale, Tony, and Kevin B. Grier. (2005) "Inflation, Presidents, Fed Chairs, and Regime Shifts in the U.S. Real Interest Rate." *Journal of Money, Credit, and Banking*, 37:6, 1153-1163.
- Clarida, Richard, Jordi Gali, and Mark Gertler. (2000) "Monetary Policy Rules and Macroeconomic Stability: Evidence and Some Theory." *The Quarterly Journal of Economics*, 115:1, 147-180.
- Froyen, Richard T., and Roger N. Waud. (2002) "The Determinants of Federal Reserve Policy Actions: A Re-Examination." *Journal of Macroeconomics*, 24, 413-428.
- Froyen, Richard T., Thomas Havrilesky, and Roger N. Waud. (1997) "The Asymmetric Effects of Political Pressures on US Monetary Policy." *Journal of Macroeconomics*, 19, 471-493.
- Goodfriend, Marvin, and Robert King. (2005) "The Incredible Volcker Disinflation." NBER Working Paper 11562.
- Havrilesky, Thomas. (1990) "The Influence of the Federal Advisory Council on Monetary Policy." *Journal of Money, Credit, and Banking*, 22:1, 37-50.

\_\_\_\_\_. (1993) *The Pressures on American Monetary Policy*. Boston: Kluwer Academic Publishers.

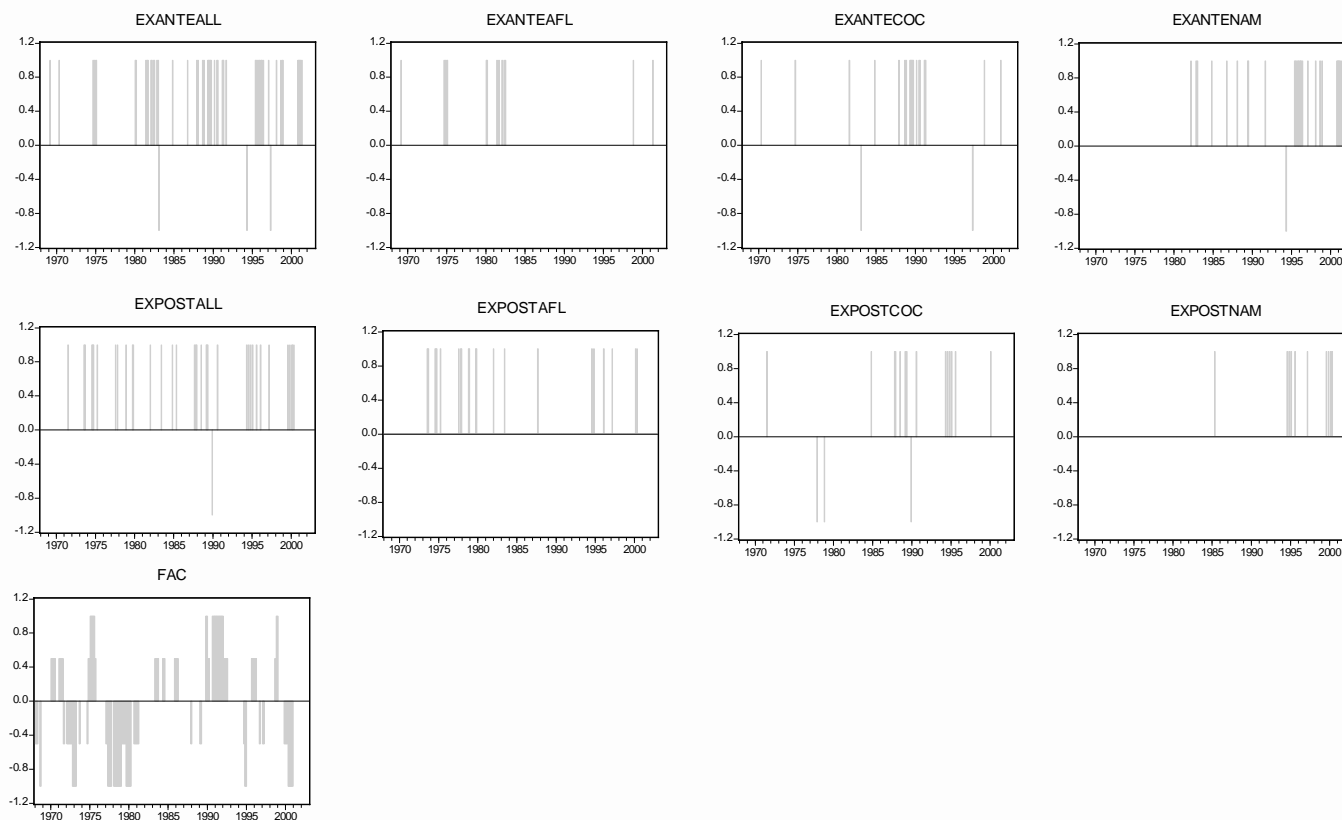
Newey, Whitney, and Kenneth West. (1987) “A Simple Positive Semi-Definite, Heteroskedasticity and Autocorrelation Consistent Covariance Matrix.” *Econometrica*, 55, 703-708.

Orphanides, Athanasios. (2002) “Monetary policy rules and the Great Inflation.” *American Economic Review*, 92:2, 115-120.

Saeki, Manabu, and Steven A. Shull. (2003) “Who Influences the Fed? Presidential Versus Congressional Leadership.” *Journal of Public Policy*, 23:3, 261-278.

Woolley, John T. (1984) *Monetary Politics: The Federal Reserve and the Politics of Monetary Policy*. New York: Cambridge University Press.

**Figure 1. Statements by private sector groups**



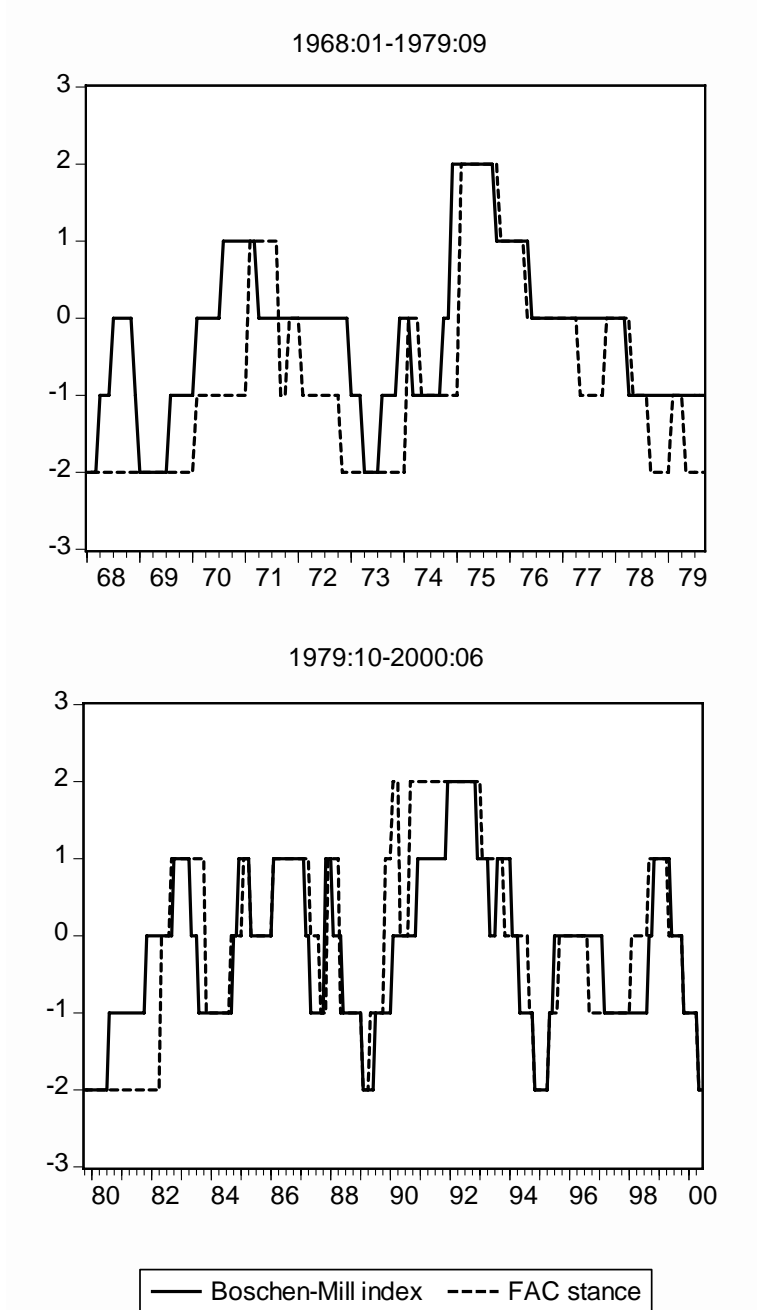
**Notes:**

Top row: Ex ante statements by non-financial interest groups (all groups, AFL-CIO, COC, and NAM) reported in AP wire service, New York Times, Washington Post, and Wall Street Journal. +1=call for easier policy, -1=call for tighter policy, 0=call for continuation of current policy or no statement.

Middle row: Ex post statements by non-financial interest groups. +1=criticism of recent policy action for being too tight, -1=criticism of recent policy action for being too loose, 0=approval of recent policy action or no statement.

Bottom row: Policy recommendations by FAC, from FAC Minutes. +1=call for easing, +1/2=approval of current stance with bias toward easing, 0=unqualified approval of current stance, -1/2=approval of current stance with bias toward tightening, -1=call for tightening.

**Figure 2. Preferred monetary policy stance of the FAC and Boschen-Mills index.**



Note: Boschen-Mill index from John Boschen's website and Records of Policy Actions. FAC stance from FAC Minutes. +2=aggressive pro-growth policy, +1=generally neutral policy shaded toward promotion of growth, 0=neutral policy, -1=generally neutral policy shaded toward inflation reduction, -2=aggressive anti-inflation.

**Captions:**

Figure 1. Statements by private sector groups

Figure 2. Preferred monetary policy stance of the FAC and Boschen-Mills index.

**Table 1. Taylor rule estimation.**

|  | 1968:3-1979:9   | 1982:10-2000:6  |
|--|-----------------|-----------------|
| constant   | 1.21<br>(3.56)  | 0.29<br>(1.66)  |
| $f_{t-1}$  | 1.16<br>(10.11) | 0.81<br>(5.07)  |
| $f_{t-2}$  | -0.30<br>(2.94) | 0.14<br>(0.93)  |
| $E_t\pi_{t,t+3}$   | 0.19<br>(4.25)  | 0.08<br>(1.02)  |
| $E_tu_{t,t+3}$   | -0.21<br>(3.71) | -0.04<br>(1.16) |
| # observations   | 139             | 213             |
| $R^2$  | 0.96            | 0.96            |
| Breusch-Godfrey test (up to 12 <sup>th</sup> order serial correlation) |                 |                 |
| $\chi^2(12)$   | 13.36           | 11.32           |
| P-value  | -0.34           | 0.50            |
| $\beta$  | 1.36            | 1.59            |
| $\alpha$   | 1.54            | 0.77            |
| $\pi^*$  | 5.5             | 4.6             |

Note: Regression equation is

$$\hat{f}_t = a_0 + a_1 f_{t-1} + a_2 f_{t-2} + a_3 E_t \pi_{t+k_1, t+k_2} + a_4 E_t u_{t+h_1, t+h_2} + \varepsilon_t$$

with  $h_1=k_1=0$ ,  $h_2=k_2=3$ . OLS with Newey-West (1987) T statistics in parentheses. Structural parameters are derived from reduced form with  $r^* = 2.0$  for 1968-79 and 4.0 for 1979-2000,  $u_n = 5.8$  for 1968-79 and 6.45 for 1979-2000.

**Table 2. Taylor rule estimation with FAC index.**

|                        | $h_1=k_1=0, h_2=k_2=3$ |                    | $h_1=h_2=0, k_1=k_2=1$ |                    | $h_1=k_1=0, h_2=k_2=3u_n$<br>time-varying |                    |
|------------------------|------------------------|--------------------|------------------------|--------------------|---|--------------------|
|                        | 1968:3-<br>1979:9      | 1982:10-<br>2000:6 | 1968:3-<br>1979:9      | 1982:10-<br>2000:6 | 1968:3-<br>1979:9                         | 1982:10-<br>2000:6 |
| constant               | 1.31<br>(3.56)         | 0.24<br>(1.31)     | 1.22<br>(3.40)         | 0.19<br>(1.19)     | 0.27<br>(1.62)                            | 0.08<br>(0.71)     |
| $f_{t-1}$              | 1.16<br>(10.04)        | 0.77<br>(5.02)     | 1.17<br>(10.06)        | 0.78<br>(4.94)     | 1.19<br>(10.53)                           | 0.77<br>(4.96)     |
| $f_{t-2}$              | -0.31<br>(2.97)        | 0.18<br>(1.22)     | -0.32<br>(3.25)        | 0.19<br>(1.21)     | -0.30<br>(3.04)                           | 0.18<br>(1.19)     |
| $E_t\pi_{t+k_1,t+k_2}$ | 0.20<br>(4.15)         | 0.10<br>(1.49)     | 0.17<br>(3.91)         | 0.03<br>(0.65)     | 0.12<br>(3.59)                            | 0.09<br>(1.55)     |
| $E_tu_{t+h_1,t+h_2}$   | -0.23<br>(3.71)        | -0.03<br>(0.93)    | -0.18<br>(3.52)        | -0.01<br>(0.54)    | -0.17<br>(3.32)                           | -0.03<br>(0.90)    |
| $FAC_t$                | 0.05<br>(0.68)         | -0.23<br>(3.13)    | -0.03<br>(0.50)        | -0.21<br>(2.96)    | 0.07<br>(0.81)                            | -0.23<br>(3.17)    |
| # observations         | 139                    | 213                | 139                    | 213                | 139                                       | 213                |
| $R^2$                  | 0.96                   | 0.96               | 0.96                   | 0.96               | 0.96                                      | 0.96               |

Note: Regression equation is

$$\hat{f}_t = a_0 + a_1\hat{f}_{t-1} + a_2\hat{f}_{t-2} + a_3E_t\pi_{t+k_1,t+k_2} + a_4E_tu_{t+h_1,t+h_2} + a_5FAC_t + \varepsilon_t$$

with alternative values for  $h_1, h_2, k_1, k_2$ . OLS with Newey-West (1987) T statistics in parentheses. Time-varying natural rate of unemployment measured as 36-month trailing moving average of actual unemployment rate.

**Table 3. Taylor rule estimation with ex ante nonfinancial group statements.**

|                        | All groups        |                    | AFL-CIO           |                    | COC               |                    | NAM                |
|------------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|--------------------|
|                        | 1968:3-<br>1979:9 | 1982:10-<br>2000:6 | 1968:3-<br>1979:9 | 1982:10-<br>2000:6 | 1968:3-<br>1979:9 | 1982:10-<br>2000:6 | 1982:10-<br>2000:6 |
| constant               | 1.15<br>(3.37)    | 0.28<br>(1.57)     | 1.18<br>(3.43)    | 0.31<br>(1.73)     | 1.16<br>(3.46)    | 0.30<br>(1.70)     | 0.28<br>(1.56)     |
| $f_{t-1}$              | 1.13<br>(10.94)   | 0.81<br>(5.04)     | 1.13<br>(10.07)   | 0.81<br>(5.06)     | 1.18<br>(11.81)   | 0.81<br>(5.08)     | 0.81<br>(5.05)     |
| $f_{t-2}$              | -0.26<br>(2.86)   | 0.14<br>(0.91)     | -0.26<br>(2.68)   | 0.14<br>(0.94)     | -0.30<br>(3.49)   | 0.14<br>(0.95)     | 0.14<br>(0.92)     |
| $E_t\pi_{t,t+3}$       | 0.18<br>(4.32)    | 0.08<br>(1.02)     | 0.19<br>(4.28)    | 0.07<br>(0.95)     | 0.18<br>(4.43)    | 0.08<br>(1.07)     | 0.08<br>(1.04)     |
| $E_tu_{t,t+3}$         | -0.20<br>(3.64)   | -0.04<br>(1.11)    | -0.21<br>(3.67)   | -0.04<br>(1.19)    | -0.21<br>(3.74)   | -0.04<br>(1.24)    | -0.04<br>(1.15)    |
| Statement <sub>t</sub> | -0.42<br>(2.18)   | 0.01<br>(0.31)     | -0.29<br>(1.81)   | -0.13<br>(0.95)    | -0.78<br>(3.91)   | -0.05<br>(0.83)    | 0.01<br>(0.24)     |
| # observations         | 139               | 213                | 139               | 213                | 139               | 213                | 213                |
| $R^2$                  | 0.96              | 0.96               | 0.96              | 0.96               | 0.96              | 0.96               | 0.96               |

Note: Regression equation is

$$\hat{f}_t = a_0 + a_1\hat{f}_{t-1} + a_2\hat{f}_{t-2} + a_3E_t\pi_{t+k_1,t+k_2} + a_4E_tu_{t+h_1,t+h_2} + a_5\text{Statement}(\text{ex ante}) + \varepsilon_t$$

with  $h_1=k_1=0$ ,  $h_2=k_2=3$ . OLS with Newey-West (1987) T statistics in parentheses. NAM statements not available for 1968:3-1979:9 period.

**Table 4. Taylor rule estimation with ex post nonfinancial group statements.**

|                    | All groups        |                    | AFL-CIO           |                    | COC               |                    | NAM                |
|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|--------------------|
|                    | 1968:3-<br>1979:9 | 1982:10-<br>2000:6 | 1968:3-<br>1979:9 | 1982:10-<br>2000:6 | 1968:3-<br>1979:9 | 1982:10-<br>2000:6 | 1982:10-<br>2000:6 |
| constant           | 1.14<br>(3.26)    | 0.31<br>(1.68)     | 1.13<br>(3.22)    | 0.29<br>(1.61)     | 1.21<br>(3.55)    | 0.30<br>(1.71)     | 0.31<br>(1.74)     |
| $f_{t-1}$          | 1.16<br>(10.57)   | 0.82<br>(4.97)     | 1.16<br>(10.61)   | 0.81<br>(4.91)     | 1.16<br>(10.04)   | 0.82<br>(4.98)     | 0.82<br>(4.97)     |
| $f_{t-2}$          | -0.29<br>(3.11)   | 0.14<br>(0.88)     | -0.29<br>(3.10)   | 0.14<br>(0.92)     | -0.30<br>(2.93)   | 0.14<br>(0.88)     | 0.14<br>(0.89)     |
| $E_t\pi_{t,t+3}$   | 0.19<br>(4.30)    | 0.07<br>(1.00)     | 0.19<br>(4.31)    | 0.08<br>(1.04)     | 0.19<br>(4.24)    | 0.08<br>(1.05)     | 0.07<br>(0.98)     |
| $E_tu_{t,t+3}$     | -0.20<br>(3.48)   | -0.04<br>(1.19)    | -0.20<br>(3.47)   | -0.04<br>(1.16)    | -0.21<br>(3.70)   | -0.04<br>(1.23)    | -0.04<br>(1.20)    |
| Statement $_{t-1}$ | -0.24<br>(2.29)   | -0.06<br>(0.84)    | -0.26<br>(2.28)   | 0.04<br>(0.27)     | 0.00<br>(0.03)    | -0.08<br>(0.84)    | -0.04<br>(0.72)    |
| # observations     | 139               | 213                | 139               | 213                | 139               | 213                | 213                |
| $R^2$              | 0.96              | 0.96               | 0.96              | 0.96               | 0.96              | 0.96               | 0.96               |

Note: Regression equation is

$$\hat{f}_t = a_0 + a_1\hat{f}_{t-1} + a_2\hat{f}_{t-2} + a_3E_t\pi_{t+k_1,t+k_2} + a_4E_tu_{t+h_1,t+h_2} + a_5\text{Statement}(\text{ex post}) + \varepsilon_t$$

with  $h_1=k_1=0$ ,  $h_2=k_2=3$ . OLS with Newey-West (1987) T statistics in parentheses. NAM statements not available for 1968:3-1979:9 period.

**Table 5. Taylor rule estimation with FAC index and nonfinancial group statements.**

|   | h <sub>1</sub> =k <sub>1</sub> =0, h <sub>2</sub> =k <sub>2</sub> =3 |                    | h <sub>1</sub> =h <sub>2</sub> =0, k <sub>1</sub> =k <sub>2</sub> =1 |                    | h <sub>1</sub> =k <sub>1</sub> =0, h <sub>2</sub> =k <sub>2</sub> =3,<br>u <sub>n</sub> time-varying |                    |
|---|--|--------------------|--|--------------------|--|--------------------|
|   | 1968:3-<br>1979:9  | 1982:10-<br>2000:6 | 1968:3-<br>1979:9  | 1982:10-<br>2000:6 | 1968:3-<br>1979:9  | 1982:10-<br>2000:6 |
| constant  | 1.21<br>(3.25)   | 0.27<br>(1.33)     | 1.09<br>(3.06)   | 0.22<br>(1.24)     | 0.19<br>(1.16)   | 0.09<br>(0.77)     |
| f <sub>t-1</sub>  | 1.13<br>(11.04)  | 0.77<br>(4.90)     | 1.16<br>(11.24)  | 0.79<br>(4.83)     | 1.17<br>(11.23)  | 0.78<br>(4.83)     |
| f <sub>t-2</sub>  | -0.27<br>(3.08)  | 0.17<br>(1.15)     | -0.29<br>(3.45)  | 0.18<br>(1.14)     | -0.27<br>(3.04)  | 0.17<br>(1.12)     |
| E <sub>t</sub> π <sub>t+k<sub>1</sub>,t+k<sub>2</sub></sub> | 0.21<br>(4.21)   | 0.10<br>(1.46)     | 0.16<br>(4.07)   | 0.03<br>(0.66)     | 0.13<br>(3.52)   | 0.09<br>(1.50)     |
| E <sub>t</sub> u <sub>t+h<sub>1</sub>,t+h<sub>2</sub></sub> | -0.23<br>(3.53)  | -0.03<br>(0.97)    | -0.17<br>(3.31)  | -0.01<br>(0.64)    | -0.16<br>(3.07)  | -0.03<br>(0.93)    |
| FAC <sub>t</sub>  | 0.07<br>(0.97)   | -0.23<br>(3.17)    | -0.02<br>(0.40)  | -0.22<br>(3.01)    | 0.07<br>(0.92)   | -0.24<br>(3.19)    |
| Ex ante <sub>t</sub>  | -0.41<br>(1.95)  | -0.001<br>(0.02)   | -0.32<br>(1.78)  | 0.004<br>(0.08)    | -0.35<br>(1.58)  | 0.01<br>(0.13)     |
| Ex post <sub>t-1</sub>                                      | -0.20<br>(2.19)  | -0.09<br>(1.18)    | -0.21<br>(2.25)  | -0.09<br>(1.16)    | -0.20<br>(2.16)  | -0.08<br>(1.13)    |
| # observations  | 139  | 213                | 139  | 213                | 139  | 213                |
| R <sup>2</sup>  | 0.96   | 0.96               | 0.96   | 0.96               | 0.96   | 0.96               |

Note: Regression equation is

$$f_t = a_0 + a_1 f_{t-1} + a_2 f_{t-2} + a_3 E_t \pi_{t+k_1, t+k_2} + a_4 E_t u_{t+h_1, t+h_2} + a_5 FAC_t + a_6 \text{Statement}(\text{ex ante}) + a_7 \text{Statement}(\text{ex post}) + \varepsilon_t$$

with alternative values for h<sub>1</sub>, h<sub>2</sub>, k<sub>1</sub>, k<sub>2</sub>. OLS with Newey-West (1987) T statistics in parentheses. Time-varying natural rate of unemployment measured as 36-month trailing moving average of actual unemployment rate.