

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

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

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Abstract. Havrilesky's (1990, 1993) work on the response of the Federal Reserve to pressure from the financial sector via the monetary policy recommendations of the Federal Advisory Council is extended. I find that the correlation between FAC recommendations and the federal funds rate persists throughout the Volcker-Greenspan era, but that it disappears when variables that the Fed uses to forecast inflation and output are controlled for. A new database is constructed to measure pressure from nonfinancial groups. The Fed does not respond in a systematic way to nonfinancial pressure groups, nor does it respond to public opinion. The results support the public interest view of Federal Reserve behavior.

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To what extent do private sector pressure groups influence the Federal Reserve's monetary policy? Drawing from the political economy and public choice literatures, a number of authors – including Woolley (1984), Beck (1987), Kane (1996), Morris (2000), and others – contend that monetary policy decisions are driven by politics as much as economics. According to the view expressed by these authors, monetary policy is susceptible to political influence because monetary policy actions have important distributional implications. Private sector interests attempt to influence monetary policy through public statements, demonstrations, and lobbying of members of Congress. Of course, it is precisely to insulate the Federal Reserve from this type of political pressure that Congress created the Fed as a quasi-independent agency. The question above can be restated, does the Fed's statutory independence enable it to resist the entreaties of outside pressure groups?

Havrilesky (1990, 1993) tests the hypothesis that the Federal Reserve responds systematically to pressures from the banking industry. The banking industry, he argues, has an especially strong interest in monetary policy. In addition, through the Federal Advisory Council (FAC), the banking industry has a forum for making its views concerning monetary policy known to the Federal Reserve's policy-making body. The FAC was established in the Federal Reserve Act of 1913 specifically to provide the banking industry with a powerful voice in monetary policy deliberations. The council is composed of representatives of (primarily) large banks appointed by the board of directors of each of the Federal Reserve banks for one year terms. It meets formally with the Board of Governors four times a year, at which meetings the Board of Governors explicitly asks for the bankers' opinion of the current stance of monetary policy. Havrilesky finds that movements in the federal funds rate are correlated with FAC recommendations as indicated by its responses to the Board of Governors' monetary policy

question. Havrilesky's research provides important empirical support to adherents of the view that monetary policy is politically determined over what Toma (1991) terms the "public interest" view that politics is irrelevant to the day-to-day monetary policy actions of the Federal Reserve.

This paper extends Havrilesky's work in three ways. First, Havrilesky focuses on the period 1969-1985. I update Havrilesky's data set to 1998. This allows me to test for influence from the FAC during the Volcker-Greenspan period as well as the earlier years. Second, it is possible that the correlation between FAC recommendations and monetary policy actions is due to the Fed and the FAC responding to the same set of economic indicators. I therefore control for a number of variables that the Fed and the FAC might plausibly use to forecast movements in inflation and real output. Third, this paper tests whether other, non-financial groups are able to influence the Federal Reserve's monetary policy. I develop a measure of monetary policy pressure from nonfinancial groups based on statements from representatives of major business and labor organizations that appear in Associated Press wire service reports. I investigate whether the federal funds rate responds systematically to these sources of pressure, as well as to movements in public opinion as measured by the Gallup Poll.

The major findings of the paper are as follows. The correlation between the FAC recommendations and movements in the federal funds rate is as strong in the Volcker-Greenspan era as in the period studied by Havrilesky. However, the correlation disappears in both periods when variables that help forecast inflation and output are controlled for. Policy recommendations of non-financial pressure groups are frequently at odds with those of the banking industry. However, there is no evidence that the Federal Reserve responds to advocacy from these groups either, nor does the Fed appear to respond to movements in public opinion. These results are consistent with the public interest view. Section 1 of the paper replicates and extends

Havrilesky's work on the effect of the FAC on the Federal Reserve's monetary policy decisions. Section 2 describes the data concerning non-financial pressure groups and tests for an effect on the federal funds rate. Section 3 concludes.

1. The effect of FAC recommendations on monetary policy

Havrilesky collected data on the Federal Advisory Council's monetary policy recommendations from February 1969 to May 1988 using the minutes of the quarterly FAC meetings. At the meetings, the FAC submits answers to a list of questions from the Board of Governors. The last question asks whether the FAC sees any need for a change in the current stance of monetary policy. Havrilesky assigned numerical scores to the FAC's response to the monetary policy question: 0 if the statement offered unqualified support for the Fed's current policy stance, +1 (-1) if the FAC explicitly encouraged the Fed to ease (tighten), and +1/2 (-1/2) if the FAC offered qualified support for current monetary policy, with a bias toward more easing (tightening). I extended Havrilesky's data set to include data up to August 1998. The data came from the Federal Reserve and the Financial Markets Center website. Answers to the monetary policy question were scored according to Havrilesky's criteria; an undergraduate student scored the responses independently, arriving at the same judgment in the vast majority of cases. Havrilesky (1993) provides excerpts from FAC answers to the monetary policy question and the scores these answers were assigned for 1969-1988. Similar selections and scores for 1988-1998 are provided in an appendix to this paper.

Havrilesky, using quarterly data, runs regressions of the federal funds rate on its own lagged value and the FAC index. For several different specifications, he finds that the FAC index enters the regression equation with a negative and statistically significant coefficient, indicating

that FAC calls for easing (tightening) are on average followed by a reduction (increase) in the federal funds rate. The work in this paper uses monthly rather than quarterly data. The FAC index is the most recent recommendation of the FAC; that is, if the FAC recommends tightening in its February meeting, the FAC variable takes a value of -1 each month from February until the next meeting.

In Table 1 Havrilesky's regression equation is estimated for three different sample periods: the 1973:01-1985:12 sample used in Havrilesky (1990), the full sample (1969:01-1998:08), and the Volcker-Greenspan years (1979:09-1998:08).¹ In all three cases, the FAC index is negative and statistically significant. The differences in magnitude of the effect of FAC are small, especially between Havrilesky's sample and the Volcker-Greenspan sample. Given that the smallest values for FAC appear in the sample that includes data from the 1970's, the results would suggest that the FAC has retained and perhaps increased its influence during the Volcker-Greenspan era.

One explanation for the results in Table 1 is omitted variable bias. That is, the FAC and the Federal Reserve respond to the same signals of future inflation and output, and therefore come to the same policy recommendations. When variables useful in forecasting inflation and output are omitted from the regression, the correlation of these variables with both the FAC recommendation and the movement in the federal funds rate shows up in the coefficient on the FAC index. Table 2 adds a number of controls to the regressions in Table 1, namely the average over the preceding twelve months of the federal funds rate (FF12), inflation rate (INF12), growth rate of industrial production (DIP12), unemployment rate (UR12), capacity utilization (IPX12), growth rate of M2 (DM12), the spread between long-term bond rates and interest rates on three

¹ The federal funds rate and all other economic data is from the S&P/DRI Basics Full database on CD-ROM, November 2000.

month Treasury bills (SPREAD12), and the index of leading economic indicators (LEAD12). Regressions are run over the same three time periods as in Table 1.

These regressions show that the FAC index continues to exert an independent effect on the federal funds rate even in the presence of a large number of control variables. But the inclusion of one variable, the index of leading economic indicators, completely extinguishes the effect of the FAC index. Interestingly, the index of leading economic indicators is not sufficient in itself to eliminate the effect of FAC; regressions (not shown) with just LEAD12 in addition to FF(-1) show a significant effect of FAC. One can conclude from these regressions that the relationship that Havrilesky found to exist between the FAC recommendations and the federal funds rate is due to the fact that the desired monetary policy stance of both the FAC and the Fed is conditioned by the index of leading economic indicators in conjunction with other important economic variables. There is no support for the hypothesis that the banking industry exerts an independent effect on monetary policy.

2. The effect of non-financial pressure groups on monetary policy

Non-financial business interests, labor, and the public also have an interest in monetary policy. Business and labor groups in the nonfinancial sector benefit from high levels of output and low unemployment. They may have an interest in low inflation as well, though the banking industry is probably more sensitive to inflation. Unlike the banking industry, however, non-financial groups do not have a formal advisory role on monetary policy within the Federal Reserve system. But some groups do make their views on monetary policy known through public statements, press releases, and Congressional testimony. 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 actions as well. I interpret such public statements as attempts by these organizations to influence monetary policy; alternatively, they can be thought of as the manifestation of a more wide-ranging lobbying effort focused on Congress or the executive branch. The frequency of public advocacy from representatives of organizations with an interest in monetary policy relative to, say, academic economists, would seem to support this interpretation.

Using Lexis-Nexis, I collected statements on monetary policy reported by the Associated Press from 1978 to 2001 from three organizations representing non-financial economic interests: the AFL-CIO, National Association of Manufacturers (NAM), and the U.S. Chamber of Commerce (COC). These groups were chosen because of their public prominence, broad membership, and frequent public statements concerning monetary policy. The AFL-CIO is the largest coalition of labor unions in the United States. The NAM “is the nation’s largest industrial trade association. The NAM represents 14,000 members (including 10,000 small and mid-sized companies)...” (www.nam.org). The COC claims to represent three million businesses in all sectors of the economy (www.uschamber.org). Together, these three groups represent the interests of workers and companies in a broad array of industries in the non-financial sector. Other organizations were considered, but these three were by far the most active. The National Association of Home Builders, which represents an especially interest rate sensitive industry and therefore would seem to have a strong interest in monetary policy, is an interesting case. Representatives of the NAHB are quoted widely in AP reports, but they rarely advocate a particular monetary policy action. Over the period 1978-2001, their lobbying activities tended to be focused more on the legislative and executive branch than on the Federal Reserve. For

example, during the early 1980's when high interest rates caused a collapse in housing construction, the NAHB refrained from criticizing the Federal Reserve, instead calling on the government to provide direct subsidies to the housing industry through special programs for first-time home buyers and lower rates on FHA or VA loans. The NAHB, because of its narrow membership base, apparently viewed lobbying for direct subsidies as a more productive use of its resources. Such sector-specific legislation would not serve the interests of groups with a broader membership, so these groups – the NAM, COC, and AFL-CIO – focused their efforts on influencing macroeconomic policy.

Among the hundreds of statements concerning monetary policy made by the three groups, I selected only those that included an explicit policy recommendation or those that, considering the context, were clearly normative. A statement containing merely neutral economic analysis of the current stance of monetary policy or possible future moves – for example, a statement that the current stance of monetary policy is causing a slowdown in economic growth – was ignored. The statements I collected were then scored using Havrileski's criteria. Because the statements were not prompted by an explicit question, as the FAC statements are, and because many of the statements were given in response to Federal Reserve policy moves, interpretation was more nuanced than in the case of the FAC. As a rule, a statement cautioning the Fed against raising or lowering interest rates at the next FOMC meeting was taken as qualified support for the current stance of monetary policy and scored as a $-1/2$ or $+1/2$. Ex ante condemnation of a policy move was scored as a -1 or $+1$. Explicit ex post approval of a Federal Reserve action, or approval of the general stance of monetary policy, was assigned a score of zero. I interpreted the absence of an explicit policy recommendation in a given month as

an implicit endorsement of the current stance of monetary policy (resulting in a score of zero). Excerpts from the statements and the assigned scores are included in appendices.

Another source of outside pressure on the Federal Reserve is public opinion. Public concern over inflation or unemployment may in principle result in political pressure being brought to bear on the Federal Reserve from Congress or the President. The Fed may also respond pre-emptively to public opinion to avoid being placed in the difficult position of having to acquiesce to or rebuff this pressure. This paper uses data from the Gallup Poll to gauge public attitudes towards inflation and unemployment. On an irregular basis averaging about twice a year over the period 1979-2001, the Gallup organization conducts a poll in which it poses what it refers to as the “most important problem” question. Typically, the question is worded “What do you think is the most important problem facing the country today?”. Respondents are permitted to give more than one answer. I recorded the percentage of respondents mentioning inflation or the “cost of living” as the most important problem, as well as unemployment or “recession”. These numbers are also listed in an appendix. In the empirical work, the polling variable for each month represents the figure from the most recent Gallup poll.

Figures 1 and 2 show the policy recommendation and polling data described above in relation to the FAC recommendations. In Figure 1, the nonfinancial pressure variable equals the sum of the scores assigned to public statements of representatives of the three nonfinancial groups included in the study. Hypothetically it ranges from -3 to $+3$ (only one statement per month per group is counted), but in actuality there are only three occasions (1983:02, 1989:12, and 1994:05) on which the variable takes negative values, and in each case the score is $-1/2$, indicating that one group expressed qualified support for current policy with a bias toward tightening. The FAC data, on the other hand, show a distribution of recommendations that is

much more balanced between tightening and loosening. The figure shows clearly the divergence of views between representatives of the banking industry and representatives of nonfinancial pressure groups. The data suggest that nonfinancial pressure groups favor a much more expansionary monetary policy than the banking industry. On several occasions, such as late 1979, late 1987, early 1989, late 1994, and early 1997, nonfinancial groups were calling for more expansionary monetary policy at precisely the time that the FAC was recommending a tighter policy. On other occasions, however, such as 1990-91 and late 1995 to early 1996, the FAC and nonfinancial pressure groups were calling simultaneously for more expansionary monetary policy.

Figure 2 plots the difference between the percent of Gallup poll respondents identifying inflation as the most important problem facing the nation and the percent identifying unemployment as the most important problem, again in comparison with the FAC recommendations. One interesting feature of the data is that the public cares a great deal about inflation. As early as 1960, according to the Gallup Poll, 63 percent of the public viewed inflation as the most important problem facing the nation. In all but one poll from 1973 to 1982 inflation was identified as the single most important problem facing the nation. This fact runs counter to the assumption made in the political business cycle and time inconsistency literatures that the lack of public concern for inflation relative to unemployment imparts an inflationary bias to monetary policy, and raises the question why presidents from Johnson to Carter didn't try to curry public favor by taking a stronger stand against inflation.² Figure 2 shows that in several important episodes, such as 1979-81, 1991-93, and 1997, the FAC recommendations were

² One possible explanation is that the public does not understand what inflation is, or at least does not understand what the poll takers mean by inflation. Gallup frequently treated inflation as synonymous with a rise in the cost of living. Responders who ranked inflation or the cost of living high may have been expressing displeasure with the reduction in growth of real incomes over this period as a result of the productivity slowdown.

consistent with public expressions of concern over inflation and unemployment. At other times, such as 1987 and 1994, the FAC took a position that was at odds with public opinion.

Tables 3 and 4 test whether the Federal Reserve alters its monetary policy (represented again by the federal funds rate) in response to signals from non-financial pressure groups and public opinion. Each column tests the effect of a different variable. The pressure group variables are lagged because in many cases the value of these variables correspond to a statement made in response to a monetary action on the part of the Federal Reserve. Since most of these ex post comments were critical of the Fed's action, using contemporaneous values would bias the estimated coefficients upwards.³ The polling variables are lagged as well for consistency, but the results are virtually identical when contemporaneous values are used.

In Table 3 the only control variable is the lagged federal funds rate, as in Havrilesky's regressions. The first four columns show that the Fed does not respond in a systematic way to signals from the pressure groups, either singly or when they are combined in the PRESS variable. By contrast, the Fed does seem to respond to public concern over inflation: in column 5, the coefficient on the percentage of respondents who identify inflation as the most important problem (GAL_P) is positive and statistically significant. Other things equal, a ten percentage point rise in the percent identifying inflation as the most important problem is associated with a one tenth of a percentage point increase in the federal funds rate. There is essentially no response to the percentage most concerned with unemployment (GAL_U), and a statistically significant positive response to the difference between the percentages most concerned with inflation and unemployment (GAL_DIF). The effect of GAL_P and GAL_DIF is robust to changes in the

³ That is, we would observe many periods during which the Federal Reserve raised interest rates at the same time that the pressure groups were calling for an easing of policy.

sample range; for example, the results are essentially the same if the regression is run over the period 1985:01 to 1998:08.

Table 4 repeats the regressions in Table 3, but adds the same control variables that were used in the FAC regressions in the previous section. Inclusion of the control variables eliminates the effect of the Gallup poll variables. One interpretation of this result is that public concern over inflation and unemployment is to some extent related to the public's sense of the future direction of these variables. The public bases its informal forecasts on some of the same variables the Fed uses in its formal forecasts, and as a result the policy actions of the Fed are found to be correlated with public opinion when these variables are not accounted for. The results in Table 4 reinforce the finding in Table 3 that the Fed ignores signals from nonfinancial pressure groups. In fact, one could interpret the positive and statistically significant coefficient on the AFL-CIO signalling variable as an indication that the Fed purposely takes a position opposite to that advocated by the AFL-CIO. More likely, this coefficient is driven by the early years in the sample when the AFL-CIO was most vocal in its criticism of Fed policy and the Fed was raising interest rates to reduce inflation. When the same regression is run for the period 1985:01-1998:09, the coefficient becomes statistically insignificant.

3. Conclusions

There is no evidence that the Fed responds in a systematic way to policy recommendations of the banking industry via the Federal Advisory Council once variables that help forecast inflation and output are controlled for. Similarly, the Federal Reserve does not appear to respond to signals from non-financial pressure groups or public opinion. These results are consistent with the public interest view of Federal Reserve behavior.

One question that this research raises is why pressure groups continue to engage in the futile exercise of attempting to influence the Federal Reserve's monetary policy decisions. It is possible that the real purpose of these organizations' frequent criticism of Fed policy is to maintain a high public profile or to convince their membership that they are playing an active role in national policy debates.

The results of this paper do not preclude more subtle avenues by which pressure groups and public opinion may affect monetary policy. The fact that the FAC recommendations and public opinion lose their independent effect only when variables are added that the Fed uses in forecasting inflation and output may indicate that the Fed's preferences over inflation and output are similar to those of the financial sector and the public at large. By contrast, the fact that signals from non-financial pressure groups are never significantly correlated with Fed policy may be due to the preferences of these groups being at odds with the Fed, the financial sector, and the public. A more rigorous investigation of the revealed preferences of the Fed, the financial sector, the non-financial sector, and the public is the subject of ongoing research.

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Figure 1. Monetary policy recommendations from nonfinancial pressure groups and the FAC, 1979-1998.

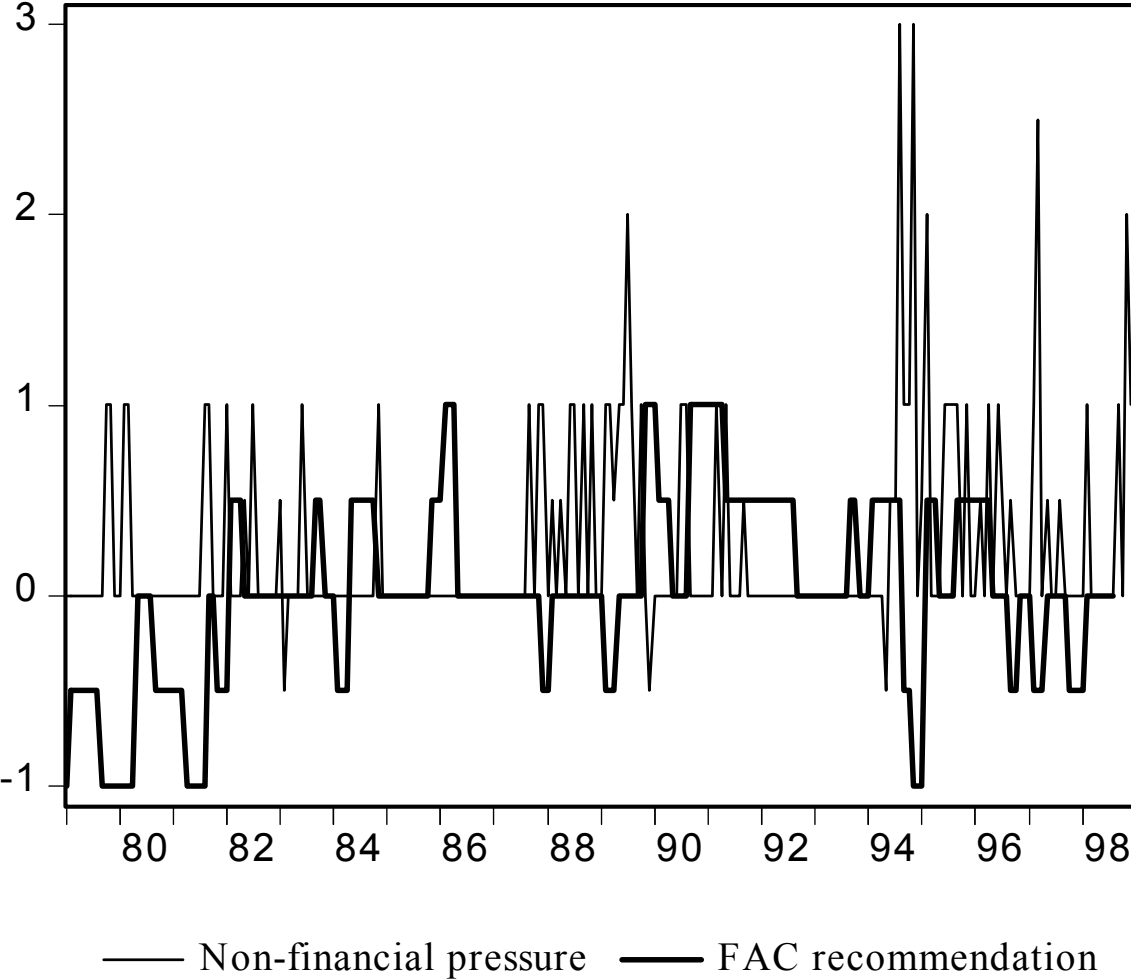


Figure 2. Gallup poll (difference between percent identifying inflation and percent identifying unemployment as most important problem) and FAC index 1979-1998.

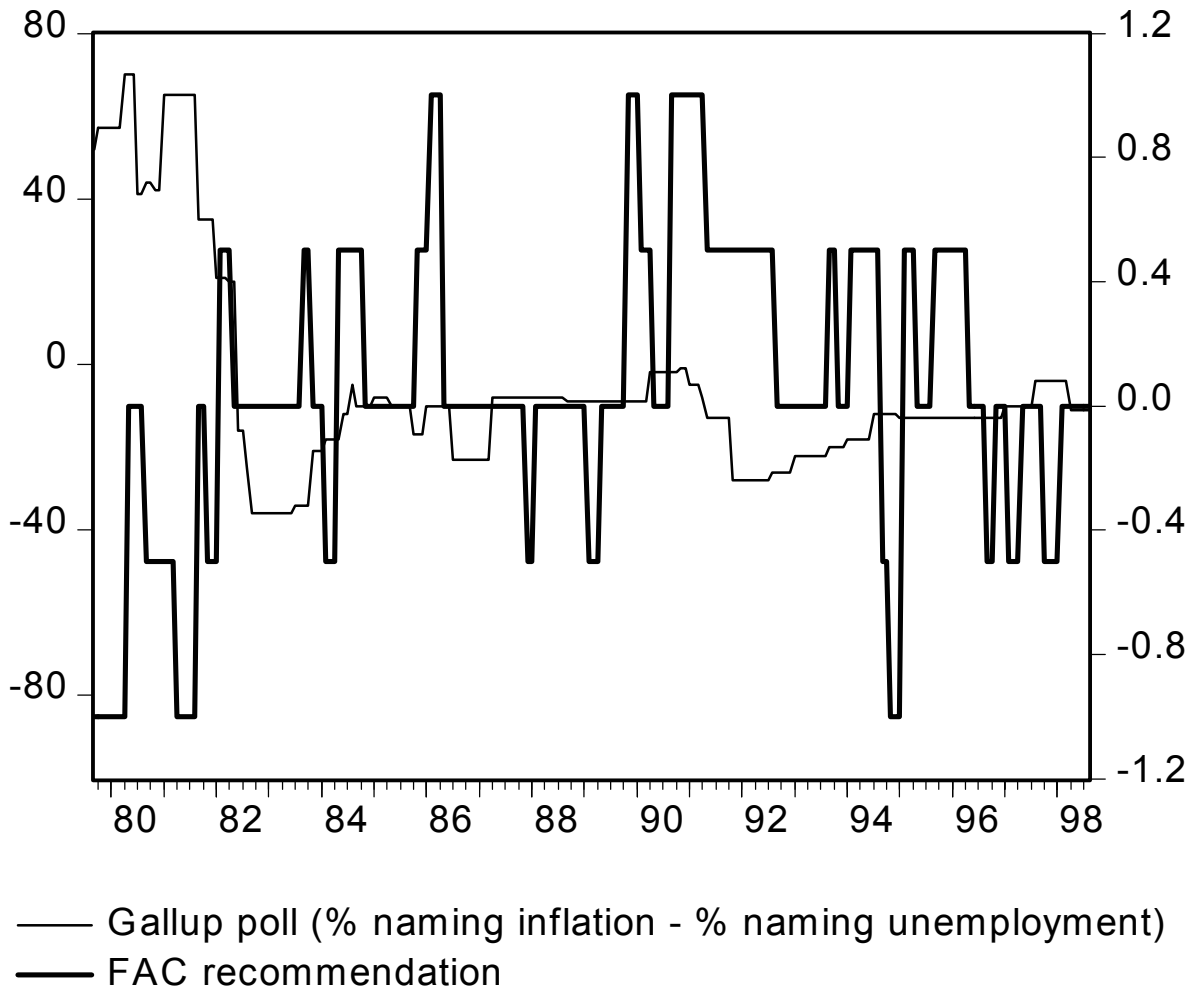


Table 1. The effect of FAC on the federal funds rate; replication of Havrilesky (1990).

	1973:01-1985:12	1969:01-1998:08	1979:09-1998:08
CONSTANT	0.517 (2.32)	0.264 (2.84)	0.372 (2.84)
FF(-1)	0.938 (42.12)	0.964 (84.70)	0.952 (63.04)
FAC	-0.535 (3.79)	-0.378 (5.26)	-0.474 (4.07)
No. observations	156	355	228
R-squared	0.93	0.96	0.96

Dependent variable is the federal funds rate (FF). T-statistics in parentheses.
FAC = most recent policy recommendation of the Federal Advisory Council.

Table 2. The effect of FAC on the federal funds rate with control variables.

	1973:01-1985:12		1969:01-1998:08		1979:09-1998:08	
	(1)	(2)	(1)	(2)	(1)	(2)
CONSTANT	-3.739 (0.39)	-30.040 (3.20)	-5.772 (1.90)	-22.376 (6.52)	-4.447 (0.70)	-31.235 (4.64)
FF(-1)	0.892 (15.31)	0.806 (15.08)	0.923 (25.28)	0.863 (25.34)	0.844 (17.60)	0.802 (18.55)
FF12	0.081 (1.03)	0.216 (2.96)	0.034 (0.80)	0.136 (3.31)	0.009 (0.16)	0.132 (2.46)
INF12	-0.002 (0.03)	0.150 (2.21)	0.000 (0.02)	0.081 (3.00)	0.119 (2.59)	0.159 (3.86)
DIP12	0.002 (0.10)	-0.075 (3.11)	0.003 (0.19)	-0.060 (4.07)	0.022 (1.12)	-0.049 (2.45)
UR12	-0.017 (0.06)	0.171 (0.69)	0.093 (1.08)	0.157 (2.00)	-0.003 (0.02)	0.185 (1.35)
IPX12	0.040 (0.44)	0.341 (3.58)	0.065 (1.93)	0.257 (6.69)	0.051 (0.73)	0.357 (4.79)
DM12	0.088 (1.22)	-0.067 (0.98)	0.022 (1.43)	-0.047 (2.87)	0.119 (3.60)	0.034 (1.07)
SPREAD12	-0.001 (0.00)	0.216 (1.17)	0.025 (0.32)	0.125 (1.71)	0.115 (1.23)	0.225 (2.66)
LEAD12	-- --	0.529 (6.31)	-- --	0.378 (8.24)	-- --	0.487 (7.49)
FAC	-0.481 (2.39)	0.139 (0.68)	-0.298 (3.30)	-0.026 (0.29)	-0.332 (2.62)	-0.031 (0.26)
No. observations	156	156	343	343	228	228
R-squared	0.93	0.94	0.96	0.97	0.96	0.97

Dependent variable is the federal funds rate (FF). T-statistics in parentheses.
FAC = most recent policy recommendation of the Federal Advisory Council.
Other variables as described in text.

Table 3. Effect of nonfinancial pressure groups on monetary policy, 1979:09-2000:9.

X=	NAM(-1)	COC(-1)	AFL(-1)	PRESS(-1)	GAL_P(-1)	GAL_U(-1)	GAL_DIF(-1)
CONSTANT	0.174 (1.46)	0.173 (1.52)	0.174 (1.55)	0.157 (1.35)	0.433 (2.77)	0.202 (1.54)	0.401 (2.45)
FF(-1)	0.975 (71.07)	0.975 (72.38)	0.972 (71.55)	0.976 (72.38)	0.926 (37.67)	0.976 (72.40)	0.949 (49.55)
X	-0.018 (0.11)	-0.033 (0.21)	0.301 (1.50)	0.041 (0.47)	0.010 (2.41)	-0.002 (0.48)	0.006 (1.95)
Nobs	253	253	253	253	253	253	253
R-square	0.95	0.95	0.95	0.95	0.96	0.95	0.96

Dependent variable is federal funds rate (FF). T-statistics in parentheses.

NAM = policy recommendation of National Association of Manufacturers

COC = policy recommendation of U.S. Chambers of Commerce

AFL = policy recommendation of AFL-CIO

PRESS = NAM+COC+AFL

GAL_P = percent of Gallup Poll respondents identifying inflation as most important problem

GAL_U = percent of Gallup Poll respondents identifying unemployment as most important problem

GAL_DIF = GAL_P-GAL_U

Table 4. Effect of nonfinancial pressure groups on monetary policy with control variables, 1979:09-2000:9.

X=	NAM(-1)	COC(-1)	AFL(-1)	PRESS(-1)	GAL_P(-1)	GAL_U(-1)	GAL_DIF(-1)
CONSTANT	-18.743 (4.82)	-18.659 (4.81)	-18.942 (4.91)	-18.793 (4.84)	-18.944 (4.81)	-18.591 (4.79)	-18.953 (4.84)
FF(-1)	0.810 (19.50)	0.811 (19.48)	0.804 (19.45)	0.807 (19.41)	0.813 (19.31)	0.813 (19.33)	0.815 (19.19)
FF12	0.127 (2.49)	0.130 (2.53)	0.140 (2.74)	0.126 (2.48)	0.125 (2.42)	0.127 (2.48)	0.123 (2.39)
INF12	0.208 (5.91)	0.207 (5.89)	0.204 (5.85)	0.208 (5.93)	0.219 (4.92)	0.212 (5.77)	0.224 (4.97)
DIP12	-0.029 (1.60)	-0.028 (1.58)	-0.029 (1.64)	-0.029 (1.62)	-0.028 (1.55)	-0.027 (1.48)	-0.027 (1.49)
UR12	-0.071 (0.83)	-0.080 (0.93)	-0.079 (0.94)	-0.063 (0.74)	-0.061 (0.68)	-0.107 (0.96)	-0.081 (0.95)
IPX12	0.219 (4.97)	0.219 (4.96)	0.222 (5.07)	0.220 (4.98)	0.221 (4.97)	0.219 (4.97)	0.222 (4.99)
DM12	0.038 (1.29)	0.034 (1.16)	0.032 (1.11)	0.040 (1.36)	0.039 (1.31)	0.036 (1.24)	0.039 (1.32)
SPREAD12	0.271 (3.42)	0.274 (3.40)	0.281 (3.58)	0.266 (3.38)	0.257 (3.11)	0.270 (3.42)	0.257 (3.18)
LEAD12	0.442 (7.92)	0.445 (7.93)	0.452 (8.13)	0.441 (7.91)	0.444 (7.95)	0.443 (7.94)	0.444 (7.95)
X	0.058 (0.40)	-0.050 (0.34)	0.343 (1.98)	0.072 (0.91)	-0.003 (0.46)	0.005 (0.45)	-0.003 (0.60)
Nobs	253	253	253	253	253	253	253
R-square	0.97	0.97	0.97	0.97	0.97	0.97	0.97

Dependent variable is federal funds rate (FF). T-statistics in parentheses. X variables as described in notes to Table 3. Other variables as described in text.